ANNEX A to E/C.18/2024/CRP.1

Paper for approval from the Transfer Pricing Subcommittee

Transfer Pricing in the Agricultural Products Industry

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Executive summary

This guidance was prepared by the UN Subcommittee on Transfer Pricing in response to the need, often expressed by developing countries, for practical advice in applying the arm's length principle to agricultural products. Agriculture is of great importance to all countries, both developed and developing, and has a huge impact on the global economy, with multinational enterprises (MNEs) active in agricultural production and along agricultural global value chains. Agriculture also intersects with many other industries including chemicals, logistics, and machinery. Given the relevance and size of the agricultural industry in the economy of many developing countries, the UN Subcommittee on Transfer Pricing prepared this guidance on this topic as a practical and concrete supplement to the current version of the United Nations Practical Manual on Transfer Pricing for Developing Countries ("the UN TP Manual").

This document commences by giving an overview of agricultural products and the industry in general, and then focuses on case studies of two specific agricultural industries: coffee and soybeans. The guidance provides an overview of the two industries, discussing their global value chains and key value drivers. Practical issues relating to transaction delineation, comparability analysis, and the application of transfer pricing methods in the agriculture industry are addressed, followed by example designed to illustrate these issues.

Where possible, this guidance and the cases have been developed to meet the needs and fit the particularities of developing countries. The analysis contained in this document, however, cannot reflect the particularities specific to all countries, but instead takes a systematic approach by describing what arguably may be the most pertinent features with regards to agricultural products and related transfer pricing issues. It is important to highlight that the UN TP Manual is applicable to the agriculture industry and the guidance provided in this document is based on, and should be read in conjunction with, the most recent version of the UN TP Manual. References in this document are to the 2021 UN TP Manual.

Appendix 1 includes a list of abbreviations used in this guidance. Appendices 2 and 3 provide statistics on agricultural production, sales and international trade. Appendix 4 provides a list of questions that may be used in a transfer pricing analysis.

1. Introduction

1.1. Preliminary remarks

Agriculture includes "all forms of activities connected with growing, harvesting and primary processing of all types of crops, with the breeding, raising and caring for animals, and with tending gardens and nurseries."[1]

The document discusses global value chains (GVCs) and business value drivers for multinational enterprises (MNEs) in the agricultural products industry, particularly as the GVCs and value drivers may affect developing countries. The involvement of MNEs in an industry's GVC varies from product to product and from country to country, and value creation is affected by a range of value-driving factors including technology. These factors include among others: natural conditions in countries, farming know-how, technology development, marketing intangibles, group synergies, cost savings, and hub structures. The share of the value added generated in, and retained by, developing countries in the agricultural products industry is of great importance for economic development and long-term growth of developing countries, and for the achievement of the Sustainable Development Goals (SDGs).

Agricultural GVCs cover a broad range of activities, such as seed development, breeding, cultivation, planting, harvesting, and composting. The activity segments (e.g., harvesting, ripening, freezing, distillation, blending, bioplastic production, animal feeding, and distribution) may also involve relevant R&D and marketing activities. Technology development can be an important value driver in primary production activities, covering many issues from seed adaptation to various climates, variety breeding, herbicides, fish shoal surveillance, and precise fertilization, among others. Environmental, labor and fair-trade standards have an increasing impact on both production costs and reputational risks for agricultural producers that may also necessitate additional local functions. Financial operations can also be of material importance since international trade in commodities and some specialty products (e.g., malt) relies mostly on financial marketplaces (e.g., hedging activities).

This document discusses why it is important to delineate the way companies within an MNE group add value, and whether and how actual DAEMPE[2] functions performed should be assessed by tax administrations. The document provides guidance on practical issues relating to accurate delineation of the controlled transaction, comparability analysis, and the application of transfer pricing methods to the agricultural products industry through the use of industry-related transfer pricing examples. The examples examine a variety of common transfer pricing issues in agricultural products from a developing country perspective.

1.2. Selection of the coffee and soybean industries

[1] Joint ILO/WHO Committee on Occupational Health (1962). Occupational health problems in agriculture: Fourth report of the Joint ILO/WHO Committee on Occupational Health. World Health Organization. Available from https://apps.who.int/iris/handle/10665/40546

[2] DAEMPE stands for development or acquisition, enhancement, maintenance, protection, and exploitation of intangibles. See UN TP Manual 6.3.3.1.

The global production value of agricultural products in 2021 was 4.2 quintillion U.S. dollars, up from about 1.5 quintillion U.S. dollars in 2000.[3] Trading data by UN Comtrade[4] enables the analysis of each country's GVC participation as a percentage of the country's gross exports. In these calculations, the GVC is defined as a series of stages of production of a commodity or service that encompasses at least three countries.

Table 3 in Appendix 3 provides an analysis of GVC participation data by region. The table shows that, depending on the region, the GVC participation rates for agricultural products, and in particular for food and beverages, range from 27 to 37 percent in 2022.[5] The data demonstrates the importance of international trade and that a high portion of country-specific value added come from agricultural products. Given that the shares of agricultural products trade flows and GVCs taking place within MNEs can be high, the transfer pricing question of how to properly price transactions between associated enterprises is of high relevance for all countries.

This guidance focuses on two agricultural products: soybeans (part of the protein foods group) and coffee (part of the beverages group). Tables 1 and 2 in Appendix 2 on global production values in 2020 and 2021 indicate the increasing relevance of soybeans and coffee globally. Soybeans rank among the top products in the agricultural products sector, with an increase from 1.9 to 3.4 percent of global production value over two decades.[6] For some economies such as Brazil and Argentina, soybean production ranks second after meat with a share of 20 to 25 percent of total production value for 2021. Coffee has risen from 43rd to 35th place in global production value rankings, with a compound annual growth of nearly 6.5 percent. For several countries, coffee ranks among their top 10 agricultural products since it is grown in and exported from many developing countries.

Based on this analysis, it was concluded that transfer pricing guidance for those two products, as examples within the agricultural sector, would be useful. Both the coffee and soybean industries are important in terms of their global production value in absolute and relative figures and both industries highlight aspects of relevance for other agricultural products. MNEs are active along the GVCs of both industries, in developed and developing countries. By examining GVCs in two different but important agricultural products industries, this guidance aims to highlight many of the global and local challenges faced by tax administrations when pricing cross-border transactions involving associated enterprises.

2. Transfer pricing analysis for agricultural products

2.1. Overview

The industry background provided in this guidance is designed to be helpful to tax administrators in conducting a transfer pricing analysis within the agricultural products industry. Transfer pricing

[3] Statistics are from the Food and Agricultural Organization (FAO) of the United Nations (UN) available from https://www.fao.org/faostat/en/#data/QV.
[4] Statistics are from the UN Comtrade Database available from https://comtradeplus.un.org.
[5] GVC participation is defined as the sum of backward and forward GVC linkages. When measured in US dollars, it is the GVC participation level; the GVC participation rate is derived from this level by dividing by gross exports.
[6] See Appendix 2.

analysis[7] involves, first, a comparability analysis based on (i) developing an understanding of the accurately delineated controlled transaction and (ii) comparing prices and further conditions with those prices and other conditions in uncontrolled transactions taking place under comparable facts and circumstances, and second, selecting and applying the most appropriate transfer pricing method to reach an arm's length result.

It is therefore necessary to carry out a detailed transfer pricing analysis starting with a comparability analysis. The comparability analysis, following section 3.1 of the UN TP Manual, involves two "distinct but related analytical processes":

- Developing an understanding of the accurately delineated transaction, which includes:
    - Identifying the economically significant characteristics and circumstances of the controlled transaction, i.e. the transaction between associated enterprises; and
    - Identifying the respective roles and responsibilities of the parties to the controlled transaction, as part of a functional analysis.
- Comparing the prices and other conditions of the controlled transaction (established in the first step) with those prices and other conditions in uncontrolled transactions taking place under comparable circumstances; the latter transactions are referred to as "comparable uncontrolled transactions" or "comparables".

The comparability analysis is then used in the selection of the most appropriate transfer pricing method and in applying that method to arrive at the arm's length result. Selected aspects of this guidance are outlined below for the agricultural industry.

2.2. Accurate delineation of the transaction

The first step in transfer pricing analysis is accurate delineation of the transaction, which involves defining a transaction (or group of transactions) between two or more commonly controlled entities (typically, affiliates in an MNE group). Defining and accurately delineating the relevant transaction frames the scope of the transfer pricing analysis and the application of the arm's length principle since the arm's length price for a transaction between two or more associated enterprises must be based on the actual transaction (or transactions) between the related parties.

The examination of the controlled transaction involves analyzing the written contract, as a starting point, as well as the conduct of the parties and other relevant factors. If the conduct of the parties is inconsistent with the written contract, the conduct of the parties should be treated as the best evidence of the actual controlled transaction. In the case of multiple transactions, the transfer pricing professional must also decide whether the transactions should be evaluated separately or if they can be reasonably aggregated.

[7] See section 3 "Comparability Analysis" in the UN Practical Manual on Transfer Pricing for Developing Countries (2021) [hereinafter the UN TP Manual]. Available from https://desapublications.un.org/publications/united-nations-practical-manual-transfer-pricing-developing-countries

Accurately delineating transactions can be complex in the agricultural products industry, as key activities in relation to economically significant risks may be fragmented between or among different entities within a multinational group. It will also be necessary to take into account the business model used by the taxpayer, and contractual arrangements may be difficult to analyze due to their technical nature and language.

The types of controlled transactions in a particular industry and country will vary depending on the industry's GVC, the importance of countries and MNEs at different stages in the industry GVC, and how MNEs configure their affiliates and transactions at the country level within the industry GVC. The agricultural products GVC includes a wide range of upstream and downstream activities. Cross-border trade and related-party transactions can take place at any of these stages.

Typical activities along the agricultural products GVC include:

- Upstream activities in the GVC include, for example, seed cultivation, planting, farming and harvesting. This may include cross-border and related-party transactions such as granting rights to use protected seeds, sales of non-processed and processed products such as green coffee and roasted coffee, and related activities such as intercompany sourcing of intermediate products such as fertilizers and machinery.

- Intermediate stages involve processing, preparation and packaging. MNE affiliates start by purchasing semi-processed or non-processed products and add further value through processing. The products are also packed, possibly labeled / marked, and sold to wholesalers, retailers or other industrial customers for additional downstream processing or resale.

- Downstream stages include marketing, distribution and retailing. Typical cross-border transactions are central sourcing, sale of products from production to distribution entities, granting of trademark licenses.

2.3. Comparability factors for the controlled transaction

Five comparability factors must be analyzed as they affect the delineation of the transaction, and selection and application of the most appropriate transfer pricing method. The following provides examples for each of the comparability factors, with respect to the agricultural industry:

- **Contractual terms**: date of delivery; port of delivery / destination; incoterms; quotation period, price reference (e.g. a C-price on an ICE exchange may need significant adjustment before the price can be considered as a comparable for transfer pricing purposes) etc.

- **Product characteristics**: stage of processing (raw, intermediate, final); labeled / unlabeled; single / bulk; volume; packed / unpacked; quality level /grade (and any related quality features such as variety, size, oil content, etc.); patented / unprotected crop; region; country of origin

- **Functions, assets and risks**

    - Functions: crop / plant development; protection; sourcing of supplies such as fertilizers, pesticides, irrigation water; harvesting; processing; packaging; storing; transport; brand development; labeling; quality testing; wholesale; distribution

    - Assets: tangible assets (property, plant, equipment, etc.); intangibles (patents; tradenames / trademarks; know-how; plant breeders' rights; geographic / sustainability certifications)

    - Risks: development risk; risk of expiring / perishing; processing risk; pricing risk; risk of disease, storage risk; market risk; environmental risk / contamination / pollution, reputational risk

- **Economic/market conditions**: weather; regional insect or fungal infestations which might also have an impact on the product quality; agricultural, trade or environmental policies and standards; subsidies; global market conditions; price controls, timing

- **Business strategies**: market penetration, expansion, and maintenance strategies

2.4. Transfer pricing method selection and application

The most appropriate method for the delineated transaction must be selected, taking into account the functions, risks and assets of the parties. Method selection depends on the facts and circumstances of each case and should be determined on a case-by-case base.

In this section, two transfer pricing methods are discussed with respect to agricultural products: the comparable uncontrolled price (CUP) method and the transactional net margin method (TNMM). The fact that the following outlines topics around the CUP and TNMM method does not imply that only those two methods are applicable for agricultural products but does provide useful specifics when applying one of these methods.

2.4.1. Comparable Uncontrolled Price (CUP) Method

Comparability analysis for agricultural products focuses on both the price and conditions of the transaction. The CUP method is often seen as the best method for standardized and publicly traded products, often referred to as commodity transactions,[8] when external market information is

[8] Even though the term commodity is not clearly defined, it typically refers to standardized products such as raw materials or basic merchandise that are traded on commodity exchanges such as the Intercontinental Exchange, Buenos Aires Grain Exchange and the Chicago Board of Trade. See U.S. Library of Congress, Commodities: A Resource Guide. Available from https://guides.loc.gov/commodities/markets-instruments.

available.[9]the lack of information and/or reliable comparable transactions on external markets, however, can limit the reliability of the CUP method.

For many MNEs in the agricultural industry, comparable uncontrolled transactions may be obtained by the taxpayer from its own transactions with unrelated parties. Where the controlled entity buys and/or sells the same product with unrelated parties, this creates an "internal comparable" that may be used in the comparability analysis.

The CUP method for agricultural commodities needs, for comparability, a price or set of prices for the same or similar product under the same or similar circumstances. Crucial comparability factors are the date, the quality of the products and the incoterms. Typical incoterms are CIF (price includes insurance and freight) and FOB (free on board).[10]

Comparability analysis for agricultural products also focuses not only on price but on the conditions of the transaction. Not all the conditions of transactions with unrelated parties are likely to be similar to those with related parties. Differences may be found regarding volumes, product quality, contractual terms, geographical markets, or business strategies. When these differences in facts and circumstances would have a material effect on the price or results of the transaction between unrelated parties, the internal comparable suffers a loss in reliability.[11] The loss in reliability may lead to either rejection of the method or the need for adjustments to increase comparability.

As many agricultural commodities have publicly quoted prices, an external CUP can be a reliable measure, especially in the upstream segment. However, material differences in the conditions, such as contractual terms, product quality, location and quotation periods should be taken into account when considering using a publicly quoted price as an external CUP. A typical problem relates to the date of the transactions as discussed in Box 1 below.

Box 1: Differences in Contract Date / Consistent Pricing

Lack of reliable documentation as to the contract date could lead the taxpayer to undertake its transfer pricing analysis using the contract date that yields the most tax beneficial quoted price, particularly where the taxpayer is able to select the pricing date with the benefit of hindsight. This could lead to transfer mispricing. In some countries, local legislation requires that the date of the shipment (or some other specific date) is used for determining the date of pricing for transfer pricing purposes, as such a specific date is certain and can be evidenced by official documents, such as boarding and customs papers. An alternative approach could be to require that export

[9] Platform for Collaboration on Tax (2017). A Toolkit for Addressing Difficulties in Accessing Comparables Data for Transfer Pricing Analyses. Available from https://www.oecd.org/tax/toolkit-on-comparability-and-mineral-pricing.pdf

[10] Cf. The International Chamber of Commerce publishes a set of rules that clearly define the responsibilities of sellers and buyers in the trade of goods. These rules encompass all types of trade transactions including shipment, insurance, and where to collect and deliver the traded goods. The rules are simplified into acronyms for different situations called "incoterms". Periodically the rules are updated. See International Chamber of Commerce Incoterms Rules, available from https://iccwbo.org/business-solutions/incoterms-rules/.

[11] UN TP Manual, section 3.5.2.4/5.

contracts (including date of completion) are included in an official register in advance of the transactions.

Sometimes, local rules need to be included in the comparability factor adjustments. The UN TP Manual in paragraph 3.5.2.15 provides additional guidance on the appropriateness of quoted prices.

2.4.2. Transactional Net Margin Method (TNMM)

The TNMM examines the net profit margin relative to an appropriate base (e.g. costs, sales, assets) that a taxpayer realizes from a controlled transaction (or transactions that are appropriate to be aggregated).[12] Because the TNMM compares net margins, it is less sensitive towards differences within the comparability analysis on a transactional level and different accounting standards than gross margin approaches.

The TNMM is often identified as the most appropriate transfer pricing method when there is one party to the transaction that is performing relatively routine, benchmarkable functions (taking into account the assets used and risks assumed). In cases where both entities employ unique and valuable intangibles, the TNMM is not an appropriate transfer pricing method. In the agricultural products industry, the TNMM is typically applied in cases where no internal or external comparable transactions for use of the CUP method can be identified.

The application of the TNMM entails an analysis of the tested party, typically the entity that is less complex in terms of its functions performed, assets employed and risks assumed. Examples may be producing entities that are harvesting or further processing agricultural products at the direction of a central entity in the MNE group. Another example could be a distribution entity with no or limited influence on pricing, market and product strategy, which does not bear market and bad debt risk.

In applying the TNMM, the functions, asset and risk profile of the tested party needs to be analyzed. Comparable entities should be identified using a benchmarking study. For more details on benchmarking studies, see section 3.5 of the UN TP Manual.

In some countries including several developing countries, comparables to apply the TNMM may be difficult to find for several reasons.[13] It is even more difficult to find reliable comparables when

[12] UN TP Manual, section 4.5.2.

[13] First, the information relevant to a specific jurisdiction may only be accessible through the purchase of a license from database providers and the financial cost of acquiring access to such databases is typically high. Second, the existing databases may have little relevant information for a specific country or even region; in some cases the available data is limited to some industries. Reasons could be lack of reporting obligations or the availability of similar companies. Third, in-country reliable comparables are often missing because the local market has few uncontrolled buyers or sellers or the local market may be distorted due to differences in availability of information. Fourth, where local information does exist, it may exhibit material differences compared to the transactions under review, requiring transfer pricing practitioners to use imperfect data or data from foreign markets. The Platform for Collaboration on

the geographical location of the activity (e.g., farming or processing) is a material comparability factor as the databases often do not cover all regions sufficiently. Furthermore, for several crops hardly any comparables can be obtained. During the selection of suitable comparables, it needs to be determined whether a function assumed by a potential comparable is sufficiently comparable to the tested party or not. It should also be considered that the concept of the interquartile range already factors in that comparability may not be perfect; hence, in specific cases, geographical location and the specific crop may be less relevant to identify suitable comparables.

2.5. Use of hub structures for centralized activities

MNEs will often centralize certain business activities within the MNE group, where one entity acts as a service provider to the rest of the group.[14] Examples of hub structures may include, for example, administrative functions (e.g., human resource management, finance, accounting), supply chain activities (e.g., purchasing, logistics, distribution) and strategic business activities (e.g., R&D and intellectual property (IP) activities, marketing and brand management, business development).

In the agricultural products industry, centralized procurement (purchasing) hubs are a common organizational structure within MNE groups.[15] In agricultural products, raw materials, packaging and services must be in the right place at the right time; however, global supply chains can easily be disrupted by natural events (e.g., hurricanes, floods) and macroeconomic shocks (e.g., exchange rate crises). Such disruptions can lead to price volatilities and /or capacity constraints; such risks can be reduced through centralized purchasing hubs. Purchasing hubs may have strategic responsibility for managing the MNE's global sourcing function and / or operational responsibility for "source to pay" procurement for specific supply chains within the MNE's global value chain.

The UN TP Manual provides advice on transfer pricing of centralized activities in section 5.2.4 (centralized services) and sections 5.6 through 5.14 (group procurement activities and pricing methods). Centralized procurement activities may offer significant cost savings from economies of scale in bulk purchasing if one entity in the MNE group buys raw materials on behalf of the group and sells them to related parties for further processing.

However, as the UN TP Manual notes in paragraph 5.6.2, developing countries may encounter aggressive tax arrangements whereby a centralized procurement agency appears to lack economic substance. The fact that procurement is a mobile activity enables the MNE to locate the centralized hub in a low-tax jurisdiction and engage in profit shifting. An important consideration for the tax administration is whether there are cost savings, the size of the cost savings and whether such savings can be attributed to the centralized procurement agency. Two important issues are (1) the fee for procurement activities and whether and how the fee should be related to the per unit cost-savings, and (2) the compensation to be provided to the procurement services provider in

Tax has a useful toolkit for addressing these difficulties (cf. Platform for Collaboration on Tax (2017). A Toolkit for Addressing Difficulties in Accessing Comparables Data for Transfer Pricing Analyses. Available from https://www.oecd.org/tax/toolkit-on-comparability-and-mineral-pricing.pdf)

[14] Lagarden, M., and Risse, R. (2022). Transfer pricing in the fast-moving consumer goods sector. In Petruzzi, R., et al. (editors) Fundamentals of Transfer Pricing, Volume II: Industries, Regions, New Technologies, and Other Topics. Kluwer Law International.

[15] Lagarden and Risse, op cit. Section 3.3.1.

compensation for its functions, assets and risks. These issues are discussed in depth in the UN TP Manual sections 5.6 through 5.14.

Depending on the facts and circumstances it is possible that centralized sales, marketing or distribution activities are centralized for economic reasons. However, as noted by paragraph 5.2.4.4 of the UN TP Manual, offshore marketing companies often require further analysis. As discussed in the UN TP Manual, "the attribution of sales and marketing functions and risks to a centralized entity should be carefully analyzed, especially if the arrangements are not common between independent enterprises in the industry or the potential for profit shifting is significant because of the taxation regime to which the centralized entity is subject.[16]

2.6. Hedging in the agricultural industry

A further relevant aspect for several agricultural businesses is hedging. As such, fundamentals of hedging are outlined below and typical questions for the transfer pricing analysis are added.

Currencies, shares, portfolios and commodities can be traded "on the spot" or via futures. In a spot transaction, delivery and payment occur close in time (immediately or a few days) to the trade. In a futures contract, the seller agrees to sell a specific commodity at a fixed price on an agreed date in the future. The buyer agrees to take delivery. Both the Intercontinental Exchange (ICE) in New York and the Brazilian Mercantile and Futures Exchange (BM und FBOVESPA) are relevant e.g. for coffee derivatives. The prices in the local markets such as Colombia, Mexico, Guatemala, Ethiopia and Tanzania are calculated on the basis of the exchange prices by adding or deducting discounts / premia for qualities, transport and storage costs and grades ("differentials"). The conclusion of a futures contract can either be used to limit a company's exposure to price or exchange rate risks (so-called hedging) or for speculative reasons.

Hedging requires good knowledge of the market structure and market developments. Typical situations are contango and backwardation. In a contango situation, the future price is higher than the spot price, e.g. due to storage costs or increased demand expectations. In a backwardation situation, the spot price is higher than the future price. Depending on the structure, arbitrage opportunities may arise. If futures are to be used for price hedging, the hedging strategy must be closely interlinked with purchasing or sales planning. Extensive know-how is required to be able to buy or sell the right quantities at the right time and at the best possible price in close coordination with production planning and sales commitments, taking into account the forward price curve. If the same quality is to be maintained in mixed processes, production planning taking into account the seasons and the market situation is needed.

[16] On transfer pricing in centralized procurement hubs in the apparel industry see McClure, J.H. (2023). Centralized procurement hubs: A co-sourcing model. Tax Management Memorandum (April 10). On transfer pricing for distribution hub structures see McClure, J.H. (2018). Distribution hubs, sandwich transactions, and the co-distribution model. Journal of International Taxation, 29(10).

With a successful hedging strategy, cost advantages and / or lower volatility on the purchasing side can also be achieved. Typical tasks of traders in the hedging area or the treasury department include, for example:

- Development of the hedging strategy with the use of future contracts for hedging price risks with regard to the purchase and sale of raw materials as well as the sale of processed products
- Support in hedging the value of stored goods (inventory hedging)
- Support in hedging exchange rate risks (FX hedging)
- Support in the purchase and sale of raw materials and other products for further processing

The objective of the arm's length analysis of hedging transactions is, firstly, to allocate hedging gains or losses to the group entities and, secondly, to determine the remuneration of group entities engaged in the transactions that are related to hedging, i.e. the traders. To answer these two questions, a functional and risk analysis must be performed. Among others, the following aspects have to be considered:

- Description of hedging (what (commodity) is hedged, how (e.g. future), where (e.g. Chicago), and at what conditions (price)?).
- What are the hedging gains or losses?
- How did the profit or loss occur?
- Are futures used for hedging or speculation purposes?
- Which entity sets the hedging strategy?
- Are there written guidelines for the hedging strategy? Are there centrally created hedging policies that are implemented by the traders?
- What autonomy do traders have?

2.7. Summary

Section 2 has discussed selected topics for transfer pricing for the agricultural products industry in general. The following two sections provide detailed studies of two agricultural products industries: coffee and soybeans. The global value chains and typical related party transactions for each industry are outlined. The characteristics to be considered in a transfer pricing analysis are discussed with a focus on the delineated transactions, the comparability factors, and selection and application of the arm's length transfer pricing method. In addition, Appendix 4 provides a list of questions that may be helpful for tax administrations and taxpayers with respect to different functions along the global value chain.

The guidance provided below for the coffee and soybeans industries is meant to provide useful advice not only for these products but also for other agricultural products. However, the transfer pricing analysis provided below should be read together with the UN TP Manual and applied within the domestic legislative framework. It should also be noted that, as the UN TP Manual suggests for transfer pricing audits in paragraph 2.5.6.1, the analysis for coffee, soybeans or any other product or industry should be performed on a case-by-case basis.

3. Transfer pricing in the coffee industry

3.1. Introduction

Coffee has been called "the world's favorite beverage, with an estimated 400 billion cups consumed per year" and an industry that "provides livelihoods for at least 60 million people, across dozens of countries."[17] Coffee is also the world's "most widely traded tropical agricultural commodity".[18] Statistics on global production, consumption and international trade are first presented, followed by a discussion of the global value chain (GVC) in this industry. Implications of the coffee industry's GVC for transfer pricing analysis and examples follow.

3.2. Global production and consumption

In 2022, global coffee production was 171.3 million 60-kg bags of coffee beans, close to global consumption of 167.6 million 60-kg bags, with Europe (31%) and North America (18%) together totaling more than half of global consumption.[19] Global coffee consumption was 175.6 million bags, exceeding production that year. In 2019-2020, coffee bean prices reached their highest level in 10 years (about $US 2.04 per pound).[20]

In 2022, 58 percent of world coffee production was Coffea Arabica (Arabica coffee); the other 42 percent was Coffea Canephora (Robusta coffee). Figure 1 shows the production of Arabica and Robusta coffee beans, in 60-kg bags, by region, in 2021/2022.

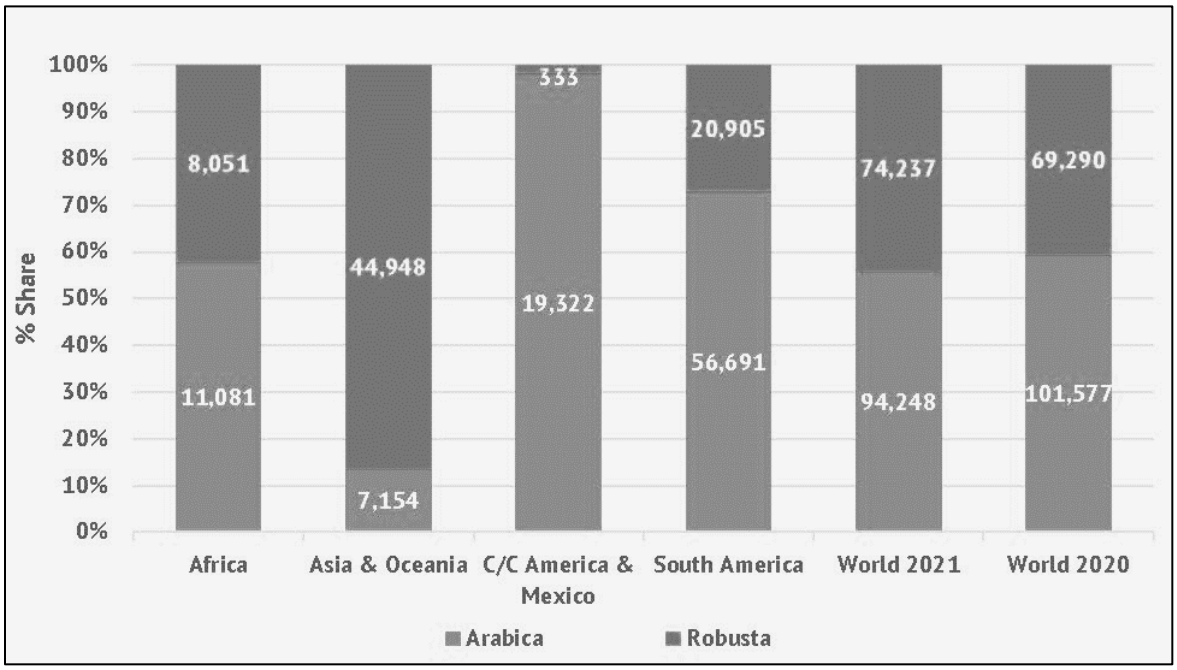
[17] Sachs, J, Cordes, K. Rising, J. Toledano, P. and Maenning, N. (2019). Ensuring Economic Viability and Sustainability of Coffee Production. Available from https://scholarship.law.columbia.edu/sustainable_investment_staffpubs/53

[18] Ishwarya, S.P., & Anandharamakrishnan, C. (March 2015). Spray-Freeze-Drying approach for soluble coffee processing and its effect on quality characteristics. Journal of Food Engineering. Available from http://dx.doi.org/10.1016/j.jfoodeng.2014.10.011.

[19] Data are from various tables in International Coffee Organization (April 2023). Coffee Report and Outlook. Available from https://icocoffee.org/documents/cy2022-23/Coffee_Report_and_Outlook_April_2023_-_ICO.pdf.

[20] International Coffee Organization (2023). Coffee Market Report – March 2023. Available from https://www.icocoffee.org/documents/cy2022-23/cmr-0323-e.pdf

Figure 1: Production of Arabica and Robusta coffee by region, 2021/2022[21]
(thousands of 60-kg bags and percent share)



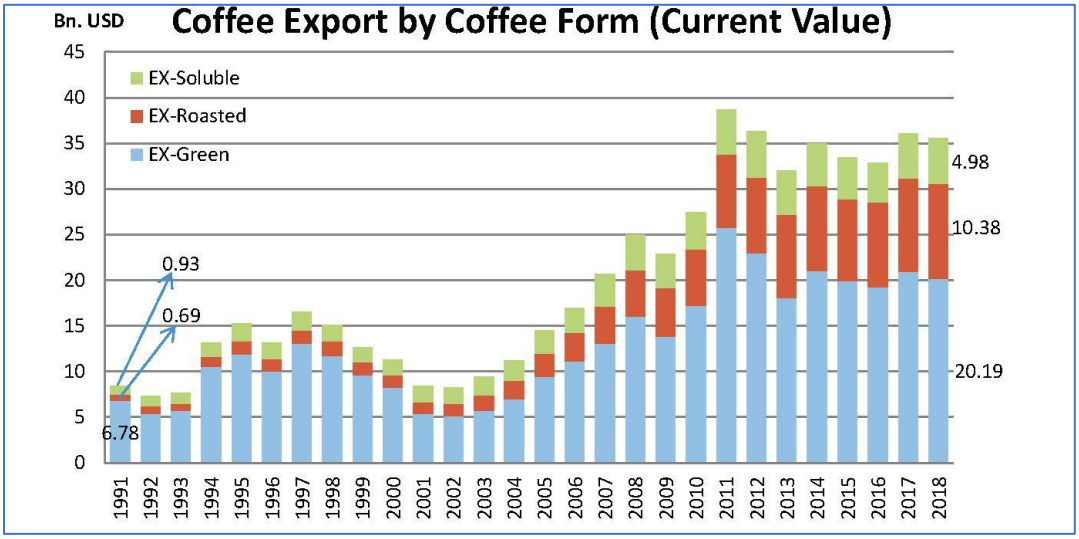
The production of coffee is limited to several countries due to weather conditions. Arabica coffee is grown primarily in Brazil, Colombia, Ethiopia, Honduras, Rwanda, Mexico, Guatemala, El Salvador, Costa Rica, Panama and Peru; Robusta coffee in Vietnam, Brazil, Indonesia, Uganda and India.[22] Arabica coffee is more vulnerable to environmental shocks; i.e., it grows at higher altitudes and has lower resistance to pests, diseases and variabilities in the weather. Robusta coffee is easier and less costly to grow, producing more fruit with higher yields per tree. Arabica prices typically are nearly twice Robusta prices.[23] Weather conditions affect production quantities and hence global coffee prices significantly.

The top ten coffee-producing countries in 2018-2019 were Brazil, Vietnam, Colombia, Indonesia, Ethiopia, Honduras, India, Uganda, Mexico, and Perú. In 2019, Brazil and Vietnam accounted for nearly 50 percent of world coffee production; another three countries (Colombia, Indonesia and Honduras) accounted for another 25 percent.[24] Exports from coffee producing countries go primarily to Europe (46%) followed by North America (22%) and Asia and Oceania (22%) in

[21] International Coffee Organization (2023). Coffee Report and Outlook. Available from https://icocoffee.org/documents/cy2022-23/Coffee_Report_and_Outlook_April_2023_-_ICO.pdf.
[22] International Coffee Organization (2020). Coffee Development Report. The Value of Coffee. Sustainability, Inclusiveness, and Resilience of the Coffee Global Value Chain. Available from https://www.icocoffee.org/wp-content/uploads/2022/11/CDR2020.pdf
[23] International Coffee Organization. Daily Coffee Prices. ICO Indicator Prices. Available from https://www.ico.org/coffee_prices.asp?section=Statistics
[24] Panhuysen, S. and Pierrot, J. (2020). The Coffee Barometer. Available from https://hivos.org/assets/2021/01/Coffee-Barometer-2020.pdf.

2020/2021.[25] More than 90 percent of coffee exports are in the form of green beans; the remaining exports are processed coffee (either roasted or soluble). Thus, most coffee is exported as a bulk commodity (green beans in 60-kg bags) from developing countries. See Figure 2 below.

Figure 2: Coffee exports by form (green, roasted and soluble coffee, 1991-2018[26]



The number of coffee farms worldwide is estimated to be 12.5 million[27] with 84 percent of the farms smaller than 2 hectares (4.9 acres) and 95 percent smaller than 5 hectares (12.4 acres); coffee farms larger than 50 hectares (123.6 acres) are rare outside of Central and South America.[28] Smallholder farms, those with less than 5 hectares, produce 70 percent of all coffee, typically either Robusta or Arabica beans.[29]

3.3. The global value chain in the coffee industry

The GVC is designed to highlight all activities that generate revenue either directly or indirectly along the coffee value chain. In addition to the stages in direct production, there are other stages that add value such as technology development, marketing, and distribution. The global value

[25] International Coffee Organization (2021). Coffee Development Report. The Future of Coffee: Investing in youth for a resilient and sustainable coffee sector. Available from https://www.icocoffee.org/wp-content/uploads/2022/11/coffee-development-report-2021.pdf.

[26] Gorlich, D., Hanley, A., Lui, W-H, & Semrau, F.O. (2020). Fostering the development of the coffee global value chain. Kiel Working Paper No. 2070. Kiel Institute for the World Economy. Available from https://www.ifw-kiel.de/

[27] Enveritas (https://www.enveritas.org/) (reported in Sachs, J, Cordes, K. Rising, J. Toledano, P. and Maenning, N. (2019). Ensuring Economic Viability and Sustainability of Coffee Production. Available from https://scholarship.law.columbia.edu/sustainable_investment_staffpubs/53). See also Panhuysen, S. and Pierrot, J. (2020). The Coffee Barometer. Available from https://hivos.org/assets/2021/01/Coffee-Barometer-2020.pdf.

[28] Panhuysen, S. and Pierrot, J. (2020). The Coffee Barometer. Available from https://hivos.org/assets/2021/01/Coffee-Barometer-2020.pdf.

[29] Utrilla-Catalan, R., Rodríguez-Rivero, R., Narvaez, V., Díaz-Barcos, V., Blanco, M., and Galeano, J. (2022). Growing Inequality in the Coffee Global Value Chain: A Complex Network Assessment. Sustainability. Available from https://www.mdpi.com/2071-1050/14/2/672

chain for coffee is complex, with a large number of production stages and a wide variety of actors involved along the stages, ranging from small producers to large multinational enterprises. We first discuss the production process for green and roasted coffees and then look at soluble coffee.

3.3.1. The production process for green and roasted coffee

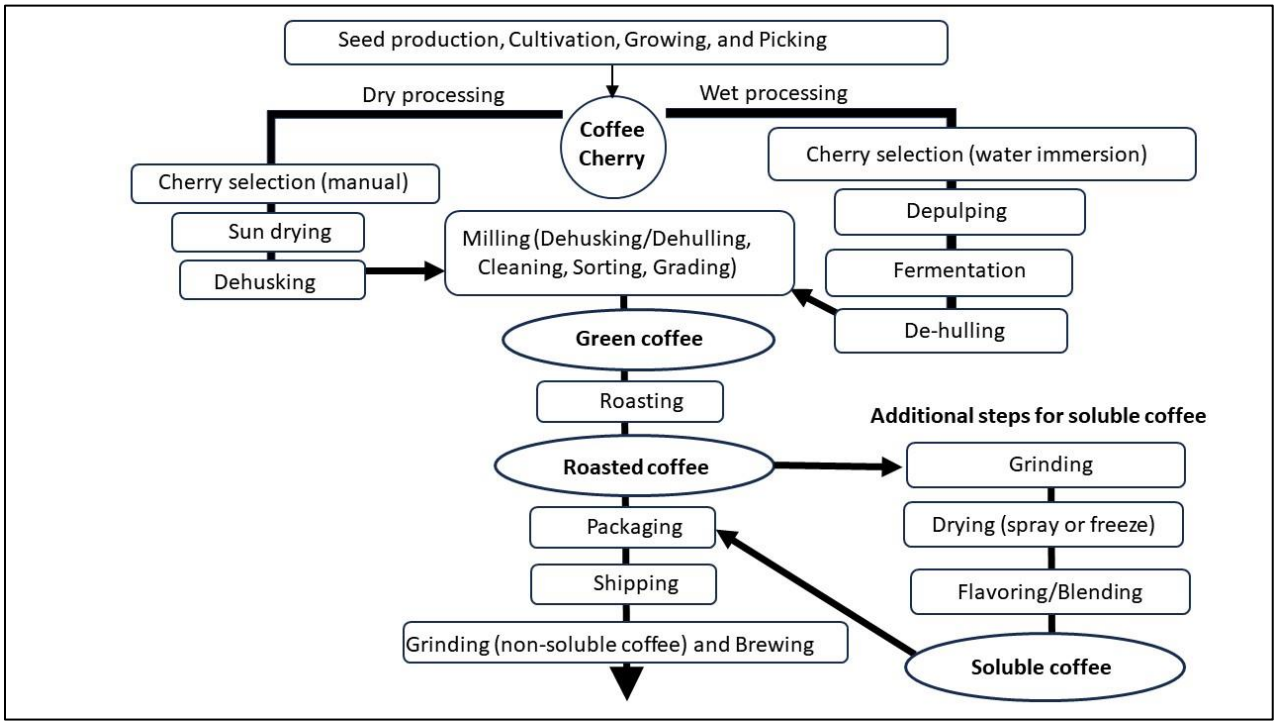
Value chain analysis, as developed by Michael Porter,[30] describes the value-adding activities needed to bring a product from inception to final consumption.[31] Porter's value chain separates value-adding activities into Primary and Support activities. Primary activities are the direct activities along the supply chain, ranging from upstream inbound logistics to downstream sales and service. Secondary activities are support activities which also provide value including, for example, strategic management, infrastructure and support services.

GVCs in agriculture involve multiple primary activities from upstream stages (e.g., inbound logistics, farming) through intermediate stages (e.g., operations involving processing, preparation and packaging) to downstream stages (e.g., distribution, retailing). The support activities include infrastructure (the management of firm infrastructure) value chain governance, government policies, and the organization of firms and other actors in the industry.

The major sources of value commonly lie not in the upstream production and processing of coffee but rather in the downstream activities dominated by MNEs.[32] To explain why this could be the case we start by exploring the production process for coffee. The steps outlined in Figure 3 below describe the set of activities involved in creating a raw product and turning it into one or more finished goods, with respect to the production process for coffee.[33]

[30] Porter, M. (1985). Competitive Advantage: Creating and Sustaining Superior Performance. NY: Free Press.
[31] On the value chain, see also UN TP Manual. Chapter 1. pp. 1-27.
[32] Boudreau, L., Cajal-Grossi, J., and Macchiavello, R. (2023). Global value chains in developing countries: A relational perspective from coffee and garments. Journal of Economic Perspectives, 37.3: 59-86; Gereffi, G. (2015). Global value chains, development and emerging economies, UNCTAD Research, Statistics and Industrial Policy Branch, Working Paper #18; Moreira Lima, U., and Lee, K. (2023). Governance and asymmetry in global value chains of the coffee industry: Possibility for catch-up by emerging economies. Seoul Journal of Economics, 36.1: 79-111.
[33] Zettwoch, D. (2012). How Coffee Works. Available from http://zettwoch.blogspot.com/2012/11/how-coffee-works.html. Barreto Peixoto, J., Silva, J, Oliveira, B. and Alves, R. (2022). Sustainability issues along the coffee chain: From the field to the cup. Comprehensive Reviews in Food Science and Food Safety. Available from https://doi.org/10.1111/1541-4337.13069

Figure 3: Stages in the coffee production process [34]



The key steps in the production process are:

- Seed production: Seed production and selection of varieties or hybrids and management of coffee plant nurseries.
- Cultivation: Crop cultivation, including shade and pest management, pruning, fertilization, and soil and water management.
- Growing and picking: Coffee producers (individual growers, small and medium farms, and large estates) plant and grow bushy evergreens from which the producers harvest red coffee berries called cherries, mostly by handpicking methods. Key inputs are land, labor, materials (fertilizer, pesticides, herbicides), and irrigation. The right level of cherry maturation needs to be considered.
- Processing: Once picked, the outer covering and pulpy fruit are removed from the cherries, leaving the seeds or beans. The two most common processing methods are dry (natural) or wet processing, although some farms are experimenting with so-called "emerging processing methods".[35] Dry processing is the older, slower and more labor-intensive

[34] Author's depiction based on Barreto Peixoto, J., Silva, J, Oliveira, B. and Alves, R. (2022). Sustainability issues along the coffee chain: From the field to the cup. Comprehensive Reviews in Food Science and Food Safety. Available from https://doi.org/10.1111/1541-4337.13069 and WMF UK Coffee Machines Blog (October 2015). How Coffee Works! Steps from Shrub to Mug. Available from https://blog.wmf-coffeemachines.uk.com/how-does-coffee-work-have-a-look-at-this-image-guide. See also Verite (2019). Commodity Report. Coffee. Available from https://verite.org/africa/explore-by-commodity/coffee/

[35] Pereira, G. V.d. M., Neto, D. P. D. C., Júnior, A. I. M., Vasquez, Z. S., Medeiros, A. B. P., Vandenberghe, L. P. S., & Soccol, C. R. (2019). Exploring the impacts of postharvest processing on the aroma formation of coffee bean – A review. Food Chemistry. Available from https://doi.org/10.1016/j.foodchem.2018.08.061

method, where beans are sorted and dried in the sun for 2-4 weeks. Wet processing is a water-intensive, faster method where the berries are fermented and washed to move the covering and pulp, and then dried. Post-harvest processing (e.g., timing, method, drying and storage processes) can significantly affect the quality (e.g., aroma, flavor) of the green coffee beans.[36]

- Milling: The beans are then milled to remove any remaining fruit or parchment and refined (that is, polished, sorted, washed and dried) to become "green coffee" beans.
- Roasting: Large commercial machines are used to roast the green coffee beans.
- Packaging: The roasted beans are packaged into cool, dark, dry, airtight containers with escape valves for gases, mainly CO2.
- Shipping: The packages are shipped and sold to a variety of wholesale and retail outlets.
- Grinding and brewing: Roasted coffee beans are then ground, either before or after retail sale, and brewed to make coffee using coffee filters, brewing machines, and water.

3.3.2. The production process for soluble coffee

About ten percent of world coffee exports are soluble (a.k.a. instant) coffee.[37] Producing soluble coffee requires additional manufacturing steps after the roasting stage (see Figure 3 above). Roasted coffee beans are ground to obtain an extract, which is dried by evaporation (spray drying) or by sublimation (freeze drying).[38] Freeze drying is more expensive but better at conserving quality. The soluble coffee is then packaged for final sale.[39] Soluble coffee can also be flavored or blended with milk powders to create different types of instant coffees such as cappuccino, mocha coffee and café latte.

3.3.3. Trading activities

World coffee production is highly unstable due to crop fluctuations, resulting from rain patterns, diseases, and climate change, which together with the long time to maturity of coffee cherries, diminish harvest volumes, and create financial risks for coffee growers.

A coffee may be traded under a futures contract: "a legally binding agreement to buy or sell a specified quantity of a particular commodity for delivery in a specified time in the future."[40] Coffee futures have been traded on mercantile exchanges for more than 140 years, starting with the New York Coffee Exchange in 1882. Futures contracts have been an important way to manage the mismatches between the expenditures and timing of planting, growing and harvesting agricultural crops and the income received from the sales of agricultural produce.

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[36] Pereira, G. V.d. M., Neto, D. P. D. C., Júnior, A. I. M., Vasquez, Z. S., Medeiros, A. B. P., Vandenberghe, L. P. S., & Soccol, C. R (2019). Exploring the impacts of postharvest processing on the aroma formation of coffee beans – A review. Food Chemistry.

[37] Samper, L.F., Giovannucci, D., & Vieira, L.M. (2017). The powerful role of intangibles in the coffee value chain. Economic Research Working Paper No. 39. World Intellectual Property Organization (WIPO).

[38] Wolf de Almedia Neves, L., Hamacher, S., & Scavarda, L.F. (2014). Outsourcing from the perspectives of TCE and RBV: A multiple case study. Production. Available from http://dx.doi.org/10.1590/S0103-65132013005000082

[39] Ishwarya, S.P., & Anandharamakrishnan, C. (2014). Spray-Freeze-Drying approach for soluble coffee processing and its effect on quality characteristics. Journal of Food Engineering. Available from http://dx.doi.org/10.1016/j.jfoodeng.2014.10.011.

[40] Folmer, B. (Ed.)(2017). The Craft and Science of Coffee. Elsevier.

Between 1962 and 1989, the International Coffee Agreement (ICA), which was signed by most coffee producing and consuming countries, regulated the world price of coffee and allocated export quotas to producers.[41] The ICA quota system collapsed in 1989 over a disagreement about quotas and later prices have fluctuated widely in response to demand and supply shocks and the bargaining power of producers and customers.[42] After the collapse of the ICA as quota setter, coffee futures trading became even more important as a way for producers, traders, and customers to manage trading risks.

Coffee bean futures are now traded on a global commodity exchange, the Intercontinental Exchange (ICE), referred to as the "C Market".[43] The C-Market is a global market for coffee and many other commodities and there are ICE exchanges in several locations (e.g., New York City, Singapore, London). The two main markets are commodity exchanges in New York (Arabica beans) and London (Robusta beans), involving both current and futures contracts.[44] Both physical trades and trading of coffee futures take place on the C Market.[45] The C-price of coffee is therefore the price of green coffee beans on the C Market, recorded as both spot and futures prices that change minute by minute. The C-price is used as the reference price that forms the basis for purchase offers to producers and other sellers in producing countries.[46] The "open market price" for coffee therefore refers to the C-price, the price for commercial coffee. Robusta coffee can be purchased more easily in bulk form than Arabica coffee.

From a transfer pricing perspective, a C-price on an ICE exchange may need significant adjustment before the price can be considered to constitute a comparable for transfer pricing purposes. This aspect often creates difficulties for both taxpayers and tax administrations, as export (or import) transactions of some products may frequently involve related parties, making external comparables more difficult to find. The reasons why the C-price for coffee may need adjustments to arrive at an arm´s length price are explored below in the sections on "Technology development" and "Marketing."

3.3.4. Technology development

Technology development in the coffee industry affects every stage of the coffee global value chain. At the upstream stages, technology affects the breeding and selection of seed varieties, the use and types of fertilizers and pesticides, the design and efficiency of farming and agro-industrial equipment, management of soils and water resources, and methods of harvesting and storage. Coffee producers – like all firms – are incentivized to invest in technology development only when the expected returns exceed the expected costs. Technology development at the growing and

[41] Utrilla-Catalan, R, Rodríguez-Rivero. R., Narvaez, V., Díaz-Barcos, V., Blanco, M., & Galeano, J. (2022). Growing inequality in the coffee global value chain: A complex network assessment. Sustainabilit*y*. Available from https://doi.org/10.3390/su14020672.

[42] Ghoshray, A. and Mohan, S. (2021). Coffee price dynamics: an analysis of the retail-international price margin. European Review of Agricultural Economics.

[43] Nadelberg, E.,Polit, J., Orjuela, J. and Ranitzsch, K. (2017). Trade and transaction – market and firm dynamics in Britta Folmer (Ed.)(2017). The Craft and Science of Coffee. Elsevier.

[44] Utrilla-Catalan, R, Rodríguez-Rivero. R., Narvaez, V., Díaz-Barcos, V., Blanco, M., & Galeano, J. (2022). Growing inequality in the coffee global value chain: A complex network assessment. Sustainabilit*y*. Available from https://doi.org/10.3390/su14020672.

[45] ICE Futures U.S. Coffee "C". Available from https://www.ice.com/publicdocs/ICE_Coffee_Brochure.pdf.

[46] For more information on the ICE exchange see https://www.ice.com/products/15/Coffee-C-Futures.

harvesting stages has been slow and assistance from governments and international agencies has been necessary to encourage upstream value creation.

i. Environmental regulation

The situation of coffee producers has been "vulnerable and uncertain in the face of climate change, price instability and rising costs", which has discouraged technology development.[47] Coffee farming, like other forms of agricultural production, faces climate and environmental challenges from weather extremes (too much or too little water, sunshine, variations in temperature, etc.), climate change, and plant pests and diseases. Prices of coffee beans on the C-market can vary wildly from one season to the next. Coffee harvests can be wiped out and smallholder farmers are the most vulnerable. Coffee is also a perishable product where time leads to deterioration in product quality. The size of the average coffee farm is often too small to profitably introduce technological developments in milling, packaging, and transportation. In addition, the distribution of net profits along the coffee GVC has been primarily to downstream buyers, not upstream farmers.[48]

Environmental regulations have also affected technology development in the coffee industry. Food and beverage industries have, arguably, been one of the earliest groups in the agricultural products industry to be affected by the growing importance of sustainability and Environmental, Social and Governance (ESG) regulations. Coffee, in particular, has been a bellwether industry given the importance of both consumer tastes and branding at the downstream stages and of growing conditions at the upstream stages of the industry.

Non-profit organizations specializing in environmental and ESG have been important actors in creating IP rights for coffee farmers. For example, the non-profit organization Enveritas created a sustainability verification platform for coffee farmers that provides producers with free verification of their sustainability practices, using data and field assessments.[49] Enveritas visits smallholder coffee farms and verifies producers in terms of their ESG practices, with the assessments paid by coffee roasters.[50] Sustainable business practices are intended to redistribute income up the coffee GVC, particularly to smallholder farmers; evidence suggests that adoption of more sustainable practices is greater for coffee farmers who belong to cooperatives.[51] Once certified, coffee

[47] Samper, L., Giovannucci, D. and Marques Vieira, L. (2017). The powerful role of intangibles in the coffee value chain. WIPO Economic Working Paper No.39 (2017). World Intellectual Property Organization. Available from https://www.wipo.int/publications/en/details.jsp?id=4229

[48] Zografos Johnson, D. (2012). Using Intellectual Property Rights to Create Value in the Coffee Industry. Marquette Intellectual Property Law Review. Available from https://scholarship.law.marquette.edu/iplr/vol16/iss2/6.

[49] Enveritas (2023). Sustainability Standards for Coffee Producers. Available from https://www.enveritas.org/library/standards/static/data/printable/EnveritasStandards-Coffee-English.pdf

[50] Enveritas (2023). Sustainability Standards for Coffee Producers. Available from https://www.enveritas.org/library/standards/static/data/printable/EnveritasStandards-Coffee-English.pdf

[51] Evidence suggests that adoption of more sustainable practices is higher for coffee farmers who belong to cooperatives. See for example, Bro, A., Clay, D., Ortega, D. and Lopez, M. (2019). Determinants of adoption of sustainable production practices among smallholder coffee producers in Nicaragua. Environment Development and Sustainability.

producers can use certification trademarks (e.g., "fair trade", "rainforest alliance") as part of their marketing and promotion efforts, to differentiate their coffee beans in the eyes of the consumer.[52]

Technological change from digitalization is also affecting the coffee industry. Smart farming technologies are providing new ways to track environmental hazards and improve coffee production. For example, Internet of Things (IoT) sensors can monitor, collect and analyze data on growing conditions (e.g., soil moisture, sunlight, temperature) to make adjustments and improve the productivity.[53] New information and digital technologies now enable coffee producers to collect specific data on their own growing and harvesting (e.g., precise locations, soil moisture levels, harvesting dates) and share that information and best practices with other coffee growers and downstream buyers.[54] Coffee traders[55] and roasters[56] are using digital technologies to improve coffee grading inspections and lot evaluations, as are coffee manufacturers, wholesalers, and retailers in assigning stock keeping units (SKUs) to better track stock and inventory.[57]

ii. Intellectual property rights based on geography and plant varieties

Creating intellectual property rights (IPR) in the coffee industry has been an important way to create value and incentivize technology development.[58] For example, *origin coffees* are associated with a particular geographic location, and charge a price premium for being location specific. Single-origin coffees may come from a single farm, region or country.[59] Coffee producers can receive intellectual property (IP) protection based on Geographic Indications for a specific location, region or country under the TRIPS (Trade-Related Aspects of Intellectual Property Rights) Agreement. TRIPS Article 22.1 states that Geographic Indications are "indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its

[52] Zografos Johnson, D. (2012). Using Intellectual Property Rights to Create Value in the Coffee Industry. Marquette Intellectual Property Law Review. Available from https://scholarship.law.marquette.edu/iplr/vol16/iss2/6.

[52] Zografos Johnson, D. (2012). Using Intellectual Property Rights to Create Value in the Coffee Industry. Marquette Intellectual Property Law Review. Available from https://scholarship.law.marquette.edu/iplr/vol16/iss2/6.

[53] See Rodríguez, J., Montoya-Munoz, A., Rodriguez-Pabon, C., Hoyos, J. and Corrales, J. (2021). IoT-Agro: A smart farming system to Colombian coffee farms. Computers and Electronics in Agriculture. Available from https://doi.org/10.1016/j.compag.2021.106442.

[54] For example, CROPSTER is a mobile application available to key actors along the coffee GVC (producers, traders, buyers, roasters). The app enables coffee professionals to share information and best practices. For coffee producers see https://www.cropster.com/products/origin/features-details/. On specialty coffees see https://www.cropster.com/products/origin/.

[55] Cropster (2022). Green Grading Coffee. Available from https://www.cropster.com/news/article/green-grading-coffee/

[56] Young, M. (2023). Lot Evaluation, Sample Types & Sample Groups. Cropster. Available from https://www.cropster.com/news/article/lot-evaluation-sample-types-sample-groups/

[57] Cropster (2021). Introduction to Stock Keeping Units (SKUs). Available from https://www.cropster.com/news/article/introduction-to-stock-keeping-units-skus/

[58] Zografos Johnson, D. (2012). Using Intellectual Property Rights to Create Value in the Coffee Industry. Marquette Intellectual Property Law Review. Available from https://scholarship.law.marquette.edu/iplr/vol16/iss2/6.
See also Puranik, I. (2020). Intellectual property in the coffee industry. International Journal of Law Management and Humanities.

[59] Mowery, L. (2017). Here's Why Single Origin Coffee Is More Expensive But Worth Your Dollars. Forbes. Available from https://www.forbes.com/sites/lmowery/2017/02/28/heres-why-single-origin-coffee-is-more-expensive-but-worth-your-dollars/?sh=6313ff44749e

geo-graphical origin. The purpose of Article 22.1 is to create collective intellectual property through which coffee and other agricultural producers can capture the location-related value embodied within their products. While time consuming, locational certification can be a useful way to differentiate products such as coffee by their geographic location. Certification and collective marks can be registered and protected at the national level (e.g., Jamaica Blue Mountain Coffee).[60] See, for example, the Geographic Indications obtained for coffees from Colombia, Indonesia, and Kenya.[61]

The development of new plant varieties offers the opportunity for IPR for coffee plant breeders, which give the creator control over how the new variety is distributed. The International Union for the Protection of New Varieties of Plants (UPOV) is an international organization that provides and promotes plant variety protection rights in order to encourage new varieties of plants including coffee plants.[62] Breeders' rights require that the breeder make the new variety available to other breeders for their research, encouraging diffusion of new plant varieties to other producers.

3.3.5. Marketing

Coffee prices are affected not only by demand and supply but also by the quality of coffee beans, which depends on their physical, chemical and sensory properties.[63] Coffee beans are classified based on size, appearance, and quality. Product differentiation based on origin, quality, and certification enables segmentation of the global coffee market into different categories, strategies, and prices.[64]

Quality-based certifications are an important method of differentiation in addition to the Geographic Indications discussed in section 4.2.4. Determining the quality of coffee beans is "labor-intensive and time-consuming"[65], requiring physical analysis by trained panelists using

[60] Zografos Johnson, D. (2012). Using Intellectual Property Rights to Create Value in the Coffee Industry. Marquette Intellectual Property Law Review. Available from https://scholarship.law.marquette.edu/iplr/vol16/iss2/6. See also Chen, J. (2018). Intellectual property in coffee: Who really owns the story? Sprudge. Available from https://sprudge.com/intellectual-property-in-coffee-who-really-owns-the-story-134768.html.

[61] See Quinones-Ruiza, X.F., Penker, M., Belletti, G., Marescotti, A., Scaramuzzi, S., Barzini, E., Pircher, M., Leitgeb, F., Samper-Gartner, L.F. (2016). Insights into the black box of collective efforts for the registration of Geographic Indications. Land Use Policy. Barjolle, D., Quinones-Ruiz, X.F., Bagal, M., and Comoé, H., (2016). The role of the state for Geographic Indications of Coffee: Case studies from Colombia and Kenya. World Development. Neilson, J., Wright, J., and Aklimawati, L. (2018). Geographic indications and value capture in the Indonesia coffee sector. Journal of Rural Studies.

[62] See International Union for the Protection of New Varieties of Plants (UPOV) https://www.upov.int/portal/index.html.en and UPOV (2011). Draft Guidelines for the Conduct of Tests for Distinctiveness, Uniformity and Stability: Coffee. Available from https://www.upov.int/meetings/en/details.jsp?meeting_id=9969.

[63] See also Febrianto, N.A., and Zhu, F. (2023). Coffee bean processing: Emerging methods and their effects on chemical, biological and sensory properties. Food Chemistry. Available from https://doi.org/10.1016/j.foodchem.2023.135489

[64] Bureau for the Appraisal of Social Impacts for Citizen information (2018). Coffee: The hidden crisis behind the success: Study on sustainability within the coffee industry. Available from https://lebasic.com/en/coffee-the-success-story-hiding-a-crisis/

[65] See also Febrianto, N.A., and Zhu, F. (2023). Coffee bean processing: Emerging methods and their effects on chemical, biological and sensory properties. Food Chemistry. Available from https://doi.org/10.1016/j.foodchem.2023.135489

cup-testing standards first introduced in 2004 by the International Coffee Organization (ICO). The cup testing or "cupping" standards assess coffees on a 0-100 score in terms of their sensory attributes (e.g., aroma, flavor, aftertaste, sweetness). Certifying a coffee rated by cupping professionals above some minimum cupping score is also a differentiator. For example, *specialty coffees* are single-origin coffees with cupping scores of 80 or more.[66] The Specialty Coffee Association is currently introducing a new Coffee Value Assessment designed to score coffee on four aspects (physical, descriptive, affective and extrinsic), which will enable further differentiation among coffees.[67]

Within the category of specialty coffees are *certified coffees* that have been produced in compliance with internal or external specifications that can be verified by an independent third-party auditor. There are a variety of certification standards, most of which are associated with sustainability along the coffee GVC.[68] The "Fair Trade" designation is perhaps the best-known standard by consumers worldwide. Launched as a social movement by non-governmental organizations (NGOs), its purpose was to promote inclusive and sustainable globalization through "fair trade", i.e., international trade that took into account the interests of all stakeholders and protected the most vulnerable (e.g., small shareholders).[69] The fair trade designation (similar to other certifications) was designed to differentiate the product in the eyes of the consumer, segmenting the market, and enabling a higher price. Consumers would pay a price premium for fair trade coffee, knowing that coffee growers were to receive a higher share of the net income created along the GVC. Evidence to date suggests that the coffee farmer receives about one-sixth of the price premium paid by consumers of fair-trade coffee.[70]

As a result of these technological changes that have encouraged product differentiation, the coffee industry, from a marketing perspective, is currently divided into three market segments:[71]

- First wave (conventional) coffees: This is the largest segment of coffee consumption by volume and value, representing 65 to 80 percent of global consumption and 45 percent of total market value. The target consumers drink their coffee at home. Products are standardized as packaged coffee beans (whole or ground), soluble coffees, and single-serve coffee capsules. Coffee buyers purchase green coffee beans based on price and coffee

[66]For coffee cupping protocols see Specialty Coffee Association of America (December 2015). Protocols and Best Practices: Cupping Protocols. Available from https://sca.coffee/research/protocols-best-practices.

[67] Gibbs, E. (2023). Understanding the new Specialty Coffee Association Coffee Value Assessment. Available from https://mtpak.coffee/2023/09/coffee-value-assessment-sca-new-protocol/. See also Specialty Coffee Association (April 2023). A New System to Assess Coffee Value. Available from https://sca.coffee/value-assessment

[68] Coffees may be certified under a variety of standards including fair trade, organic, rainforest alliance, Smithsonian bird friendly, Utz Certified, and 4C Common Code. Each standard has its own mission, market focus, scope, traceability, and accreditation standards.

[69] Zhu, R., Li Sun, S. and Huang, Y. (2021). Fair trade coffee and inclusive globalization: a metamorphosis of institutional entrepreneurship. Multinational Business Review.

[70] Naegele, H. (2020). Where does the Fair Trade money go? How much consumers pay extra for Fair Trade coffee and how this value is split along the value chain. World Development.

[71] Samper, L, Giovannucci, D. and Marques Vieira, L. (2017). The powerful role of intangibles in the coffee value chain. WIPO Economic Working Paper No.39 (2017). Available from https://www.wipo.int/publications/en/details.jsp?id=4229. WIPO (2017). World Intellectual Property Report 2017: Intangible Capital in Global Value Chains. Chapter 2 (Coffee). Available from https://www.wipo.int/publications/en/details.jsp?id=4225

origin is typically not important for this segment. Roasting and packaging, using standardized mass production techniques, produces standardized quality coffee that is sold through grocery stores and food service outlets.

- Second wave (differentiated) coffees: This segment, from a marketing perspective, targets individuals consuming coffee (typically expresso-based beverages) in social settings such as coffee shops and cafés. The quality of beans tends to be higher and more attention is paid to geographic locations, sustainability, and specialty coffees. Coffee products are available through specialty coffee chains, online, and grocery stores.

- Third wave (experiential) coffees: This marketing segment focuses on sophisticated coffee consumers who have distinct preferences and are willing to pay premium prices, similar to consumers in the wine industry. Trained coffee servers (baristas), similar to wine stewards, focus on service and providing an experience. Marketing intangibles are most important at this stage and coffee roasting companies can use storytelling techniques to market the certified coffee beans to consumers.[72] Third wave coffee businesses tend to buy single-origin coffee beans directly from farmers to ensure a stable, high-quality supply of particular coffee beans. Blending and roasting is done in-house using sophisticated know-how and techniques. Coffee products are available through independent coffee retail operations and online.

Production and marketing intangibles (e.g., patents, industrial designs, trademarks and trade names) are more relevant to downstream stages. Since ownership of intangibles is merely the starting point for the transfer pricing analysis and contributions, particularly in the form of important DAEMPE functions, need to be considered. This might for downstream activities coffee exporters and importers, roasters and soluble coffee manufacturers, located mainly in coffee-importing countries.[73] Over 90 percent of all coffee-related patents are concentrated in the processing and final distribution stages of the coffee GVC; less than two percent of patent filings are at the farming and harvesting/post-harvesting stages.[74] Trademark filings are rising much faster than patent filings, reflecting the growth of second and third wave coffee segments and the importance of branding in product differentiation.

3.4. Implications for transfer pricing analysis

Related party transactions in the coffee GVC and applicability of the CUP method are discussed in this section.

[72] Chen, J. (2018). Intellectual property in coffee: Who really owns the story? Sprudge. Available from *https://sprudge.com/intellectual-property-in-coffee-who-really-owns-the-story-134768.html*.
[73] WIPO (2017). World Intellectual Property Report 2017: Intangible Capital in Global Value Chains. Chapter 2 (Coffee). Available from https://www.wipo.int/publications/en/details.jsp?id=4225
[74] WIPO (2017). World Intellectual Property Report 2017: Intangible Capital in Global Value Chains. Chapter 2 (Coffee). Available from https://www.wipo.int/publications/en/details.jsp?id=4225

3.4.1. Related party transactions in the coffee GVC

There are six main groups of actors involved in the coffee GVC:

- Seed producers and coffee plant nurseries – helps to mitigate the frequent lack of genetic purity in the varieties that producers plant.
- Producers – coffee producers who grow and harvest coffee cherries.
- Processors – firms that use wet or dry processes to convert coffee cherries to green coffee.
- Exporters/importers/trading companies – handle international trade in green coffee.
- Roasters – Buy and roast green coffee and package and sell roasted coffee.
- Wholesalers and retailers – purchase roasted coffee for sales to customers (B2B) and consumers (B2C) sales.

Of the production stages illustrated in Figure 3 above, the initial stages (growing and picking, processing and milling) typically take place in the coffee-producing country. The green coffee beans are then generally exported and shipped to coffee-consuming countries where the remaining steps (roasting, packaging, shipping, grinding, and brewing) take place.[75]

The small share of roasted coffee bean exports from coffee producing countries can be explained by difficult access to grocery store distribution chains in coffee consuming countries and shorter shelf life of roasted coffee beans. As a result, most coffee roasting takes place closer to consumers.[76]

The trend over the last several decades has been the concentration of market power in MNEs at the trading (export/import) and roasting stages.[77] In 2019, five trading companies[78] handled more than 50 percent of total green coffee exports, with Switzerland being the headquarters location for most of the trading houses where members of the Swiss Coffee Trade Association handled more than 50 percent of global coffee exports. At the roasting stage, in 2014, the five largest companies had a combined share of 48 percent of the world coffee market. Two of them together represented 38 percent of their market.[79]

Some of the factors that favor shifting the downstream stages are less important for soluble coffee, e.g., the shelf life of soluble coffee is longer than for green beans or roasted coffee. Slightly more

[75]Borrella, I., Mataix, C. and Carrasco-Gallego, R. (2015). Smallholder farmers in the specialty coffee industry: Opportunities, constraints and the businesses that make it possible. IDS Bulletin. 46.3 (May).
[76] Samper, L.F., Giovannucci, D., & Vieira, L.M. (2017). The powerful role of intangibles in the coffee value chain. Economic Research Working Paper No. 39, World Intellectual Property Organization (WIPO).
[77] Ghoshray, A. and Mohan, S. (2021). Coffee price dynamics: an analysis of the retail-international price margin. European Review of Agricultural Economics.
[78] Panhuysen, S. and Pierrot, J. (2021). The Coffee Barometer 2020. Available from https://hivos.org/assets/2021/01/Coffee-Barometer-2020.pdf. The five trading firms are, in order of market share: Neumann Kaffee Gruppe, Ecom Agroindustrial (ECOM), Olam, Volcafe Ltd/ED&F Man, Louis Dreyfus Company (LDC). See also Goldstein, D. (2018). Who Moves the Coffee Markets? Meet the World's Largest Green Coffee Traders. Available from https://commoditytrading.guru/commodities/who-moves-the-coffee-markets-meet-the-worlds-largest-green-coffee-traders/
[79] Ghoshray, A. and Mohan, S. (2021). Coffee price dynamics: an analysis of the retail-international price margin. European Review of Agricultural Economics.

than 30 percent of the world's coffee production is consumed in coffee producing countries[80], suggesting that many producing countries may also have the opportunity to develop their own coffee roasting and instant coffee manufacturers. This suggests that coffee producing countries can capture a higher share of value added in this industry by capturing more of the downstream stages of production, such as production of soluble coffee, as well as a greater volume of roasting and packaging.

There are two ongoing upgrading trends in the coffee GVC. First is functional upgrading to include more processes such as roasted coffee and soluble coffee. The second is product quality upgrading leading to higher prices. Coffee industry experts suggest that functional upgrading may be more promising for Robusta than Arabica coffees.[81]

3.4.2. Applicability of the CUP method

Given the differentiated nature of coffee as a commodity market, it might be useful to provide more input on the application of the CUP method as it applies in the coffee industry.

When comparable uncontrolled prices are available, the CUP method might be the most appropriate transfer pricing method for the coffee transactions between related companies . As outlined in section 4.2.2 of the UN TP Manual, the CUP method requires a high degree of product comparability next to other comparability factors.

The C-price on the ICO virtual market is readily available as spot, futures and options price on a daily basis but may or may not be an appropriate external comparables. As discussed in section 3.2, the coffee market is segmented into different categories based on origin, quality, and certifications. Prices may vary enormously depending on these characteristics. In addition, the costs of doing business abroad (e.g., transportation and tariff costs) will affect external market prices. Domestic market prices may thus not be useful comparables since the transactions may involve different market conditions and types of coffee.

Prices vary along the coffee GVC. In the coffee industry, prices at the various stages are typically referred to as:[82]

- Farm gate price: Price paid to producers that grow, pick and process cherries.
- Factory gate price: Price paid to processors for further processed cherries sold as green coffee beans.
- FOB (free on board) price: Price paid to exporters/intermediaries selling green coffee beans on international markets.

[80] International Coffee Organization (2023). Coffee Report and Outlook. Available from https://icocoffee.org/documents/cy2022-23/Coffee_Report_and_Outlook_April_2023_-_ICO.pdf

[81] Gorlich, D., Hanley, A., Lui, W-H, & Semrau, F.O. (2020). Fostering the development of the coffee global value chain. Kiel Working Paper No. 2070. ECONSTOR. Section 4 (Policy implications). Available from http://hdl.handle.net/10419/229167

[82] Byrnes, W (2019). Boiling Starbucks' Roasting Down to the Essence of its Residual. Texas A&M School of Law Legal Studies Research Paper Series. Research Paper No 19-49.

- CIF (cost, insurance and freight) price: Price paid by importers/intermediaries buying green beans on international markets.
- Roaster price: Price that roasters pay to importers (or producers) of green coffee, when the importer and roaster are not the same entity
- Wholesale price: Price of roasted beans sold to wholesalers or retail distributors.
- Retail price: Price of coffee sold by retail distributors to final consumers.

The application of the CUP method to related party transactions in the coffee industry depends on the availability of sufficiently detailed information on the product characteristics, the transaction terms, and further comparability factors.

3.5. Transfer pricing examples in the coffee industry

This section provides examples of how to deal with topical questions that may arise in the transfer pricing analysis for the coffee industry. Please note that these are stylized examples focusing on certain problems that may arise in practice. In each individual case the functions, risks and assets and the relevant intercompany transactions need to be analyzed.

3.5.1. Example 1: General applicability of the CUP method

i. Facts

Assume that Firm A, an independent enterprise, sells unbranded coffee beans to unrelated parties at $2.00 per pound. The coffee beans are of a similar type, quality, and quantity as those sold by Firm B to its affiliate Firm C. Assume that the controlled and uncontrolled transactions occur at about the same time, at the same stage in the global supply chain, and under similar conditions. Both coffees are rated as "commercial coffees," or both rated as "specialty coffees with approximately the same cupping scores".

ii. Analysis

The CUP method may be a particularly reliable method when independent enterprises sell or buy the same or similar product, under the same or similar circumstances, as compared to the controlled transaction between two associated enterprises; that is, the price charged or paid by the independent enterprise may be a good external comparable for the related party transaction.

Adjustments should be made for material differences that affect the price. For example, the source of the coffee beans might command a price premium or require a discount on the open market, or there may be a difference in INCO terms (i.e., which entity assumes the CIF (insurance and freight) costs). Such information may be obtainable from commodity markets or may be deduced from dealer prices. If this difference does have a material effect on price, adjustments would be appropriate. If a reasonably accurate adjustment cannot be made, the reliability of the CUP method would be reduced, and it might be necessary to select a less direct method such as the resale price method or the TNMM instead.[83]

[83] See UN TP Manual, section 4.5.1.4 for the advantages of the TNMM in contrast to the CUP method.

In this case, delineation of the transaction and the comparability analysis suggest that the CUP method is appropriate, and the transfer price should be based on the C-price of $2.00 per pound.

3.5.2. Example 2: Transfer pricing of commodities with reference prices

iii. Facts

Assume that TRADE CO, located in Country A, is the trading entity within MNE GROUP. TRADE CO is responsible for buying Robusta green coffee beans in bulk and selling them to related parties in MNE GROUP.

ROAST CO, located in Country C and another member of MNE GROUP, is a coffee roaster that purchases bulk beans from TRADE CO, and roasts and packages the beans for sale to related and unrelated distributors throughout the European Union.

TRADE CO and ROAST CO have a related party agreement that specifies the type, quality and volume of green coffee beans that ROAST CO imports from TRADE CO. The transfer price specified in their agreement is fixed on an annual basis and is tied to the International Coffee Organization's indicator price for mild Robusta (the C-price on the ICE Exchange), which is an average of the ex-dock New York and Bremen/Hamburg markets in US dollars.[84] The contract specifies that the origin for the coffee beans must be country B. Under the INCO terms in the related party contract, ROAST CO is responsible for insurance and freight (CIF) costs. The CIF transfer price is $4.00 U.S. dollars per kilogram (USD/kg).

The open market price for Robusta coffee (the C-price on the ICE exchange) for long-term contracts is currently $3.50 USD/kg for coffee exported from County B, which is the factory gate (FOB) price.

Country C's tax authority is concerned that the price that ROAST CO is paying for green coffee beans from TRADE CO may be too high and launches an investigation of the transfer pricing arrangements between TRADE CO and ROAST CO.

iv. Analysis

The tax authority, after delineation of the transaction and a comparability analysis, concludes that the long-term C-price is an acceptable comparable because the country of origin is the same (Country B) and the quality and volume of coffee beans are similar. The tax authority proposes that the CUP method be used with an adjustment made for the difference in the INCO terms. The authority determines that the CIF costs are $ 0.20 USD/kg. The tax authority concludes that the arm's length transfer price should be $3.50, with an adjustment for the difference in INCO terms of $0.20, for a total price of $3.70 USD/kg.

[84] YCHARTS. Coffee Arabica Price. Available from https://ycharts.com/indicators/world_coffee_arabica_price. International Coffee Organization. Daily Coffee Prices. Available from https://www.ico.org/coffee_prices.asp

3.5.3. Example 3: Transfer pricing with external comparables

i. Facts

TRADE CO, located in Country X, is the trading entity within MNE GROUP, responsible for buying Robusta green coffee beans in bulk and selling them to related parties in MNE GROUP.

ROAST CO, located in Country Y and another member of MNE GROUP, is a coffee roaster that purchases bulk beans from TRADE CO, and roasts and packages the beans for sale to related and unrelated distributors throughout the European Union.

TRADE CO and ROAST CO have a related party agreement that specifies the type, quality and volume of green coffee beans that ROAST CO imports from TRADE CO. The transfer price specified in their agreement is fixed on an annual basis and tied to the International Coffee Organization's forward market price for mild Robusta, which is an average of the ex-dock New York and Bremen/Hamburg markets in US dollars.[85] The transfer price, set in 2021 for 2021/2022, was $4.00 USD/kg.

In 2022, the open market price for Robusta coffee (the C-price on the ICE market) is $3.00 USD/kg. Country Y's tax authority is concerned that the transfer price that ROAST CO is paying for green coffee beans from TRADE CO is too high and launches an investigation of the transfer pricing arrangements between TRADE CO and ROAST CO.

ii. Analysis

ROAST CO submits a transfer pricing study to Country Y's tax authorities that includes the delineation of the controlled transaction and a comparability analysis including the global value chain (GVC) and a FAR (functions, assets and risks) analysis. ROAST CO's transfer pricing economist concludes that the CUP method is the best method for determining an arm's length price. The economist argues, however, that the appropriate CUP is not the open market price C-price in 2022 of $3.00 USD/kg.

Instead, the economist proposes that the prices negotiated by two independent distributors ALPHA and BETA, which are also located in Country Y, should be used as comparable transactions. These firms are independent roasters that have long-term contracts with coffee bean exporters of Robusta green beans from Colombia. The uncontrolled transactions occur at about the same time and under similar conditions to the controlled transactions. Both firms have long-term contracts where they pay more than the spot price on the open market: ALPHA ($3.70 USD/kg) and BETA ($3.80 USD/kg).

The transfer pricing economist argues that these transactions are better comparables than the spot price on the Intercontinental Exchange (ICE) market. The economist argues that a long-term contract with TRADE CO is necessary for two business reasons: (1) to ensure that ROAST CO's coffee roasting facilities can work at full capacity and (2) that ROAST CO can provide its buyers

[85] YCHARTS. Coffee Arabica Price. Available from https://ycharts.com/indicators/world_coffee_arabica_price. International Coffee Organization. Daily Coffee Prices. Available from https://www.ico.org/coffee_prices.asp

with a secure source of roasted high-quality Robusta coffee. The appropriate transfer price should be based on long-term contracts not on spot prices.

Country Y's tax authority investigates the case and concludes that the open market spot price for Robusta green coffee beans is the best transfer price and proposes a tax adjustment using a price of $3.00 USD/kg. ROAST CO disagrees with the tax authority's decision and the transfer pricing dispute eventually goes to Country Y's tax court.

The decision issued by the tax court judge concludes that the business reasons provided by ROAST CO as to why the spot price is not a good arm's length comparable are reasonable under the circumstances and that the prices paid by the two uncontrolled distributors are possible comparables.

The tax court judge then considers whether there might be factors that could have had a material impact that could create a difference between the transfer price and the uncontrolled prices. The judge determines that the only material difference is in the INCO terms. The controlled transactions are based on delivered price whereas the uncontrolled transactions are FOB factory gate. The judge concludes that the difference due to the pricing arrangements is a material difference, equivalent to 30 cents per kilogram.

The court therefore adjusts the uncontrolled import price for ALPHA to $4.00 USD/kg and to BETA to $4.10 USD/kg. As a result, the tax court concludes that the transfer price between TRADE CO and ROAST CO is arm's length and finds in favor of the taxpayer.[86]

3.5.4. Example 4: Centralized purchasing of coffee beans

i. Facts

TRADECO, a wholly owned affiliate of BEV (Beverages) GROUP, is located in country B. TRADECO is a centralized procurement entity within BEV GROUP, responsible for purchasing green coffee beans in bulk and on-selling them to related parties in BEV GROUP and to independent licensees. TRADECO buys coffee beans for BEV GROUP and also for independent licensees. TRADECO buys green beans on the world market but specializes in Robusta green beans of top quality. Prices of these beans have risen rapidly over the past decade. However, because TRADECO buys on behalf of all entities in BEV GROUP, it buys in large quantities and has been able to negotiate a lower price for the Robusta green beans. TRADECO charges a 20 percent gross markup on its purchases that are sold to associated enterprises in BEV GROUP and 25 percent on sales to unrelated buyers.

ii. Analysis

TRADECO purchases green coffee beans at arm's length at open market prices. Because TRADECO sells the coffee beans to independent licensees at a higher price than to related parties in BEV GROUP (cost plus 25% versus cost plus 20%), the entity may have mispriced its sales to

[86] See UN TP Manual, section 4.2.2 for the application of the CUP method and its requirements and adjustments.

members of BEV GROUP. The firm, however, benefits from the additional bargaining power generated by its large volume of purchases.

Accurate delineation of the transaction would involve determination of the activities performed by the centralized purchasing hub, and whether bulk-buying (pooling) discounts are common in this industry. If pooling discounts are common practice, the transfer pricing issue is determination of the size of the discount and how the pooling gain should be shared. In this example, the transfer pricing issue also involves whether the bulk-buying discount should be shared with the related parties but not with unrelated parties.

The UN TP Manual in sections 5.9 through 5.16 provides detailed guidance for centralized procurement entities. In this case, the functions, assets and risks incurred by TRADECO are the same for both its related party and arm's length sales. The transfer pricing professional concludes that the sales to unrelated licensees are sufficiently comparable that they can serve as an internal comparable.

The UN TP Manual outlines that a cost-based TNMM is commonly used for purchasing functions. Net cost plus (operating profit divided by total cost) may be an appropriate profit level indicator for compensating TRADECO for its activities. The Cost Plus Method (gross profit divided by total cost) may also be an appropriate method if data are available on gross markups in this industry.

Since data on gross markups are not available, the transfer pricing economist recommends the TNMM with a profit level indicator of operating profit over total cost. The question then becomes the size of the net markup over costs, given that the markups are different for arm's length and related party sales.

The relevant issues are (1) the value of the pooling gain, (2) whether the addition of non-related parties over and above BEV GROUP should be added to that gain or not, and (3) the extent to which any of the gain belongs to the purchaser (TRADECO) or must all be shared with all members of the pool or only the related party members. These are fact-intensive issues may warrant further investigation. The UN TP Manual, section 5.14.2.3 provides more details on appropriate remuneration for purchasing versus sourcing companies.

3.5.5. Example 5: Transfer pricing of roasted coffee

MFG is a coffee roasting (manufacturing) entity that is part of BEV GROUP. MFG is located in country C, which offers a significantly lower corporate income tax (CIT) rate for manufacturing enterprises. MFG is responsible for roasting all of BEV GROUP's purchases of green coffee beans. MFG's functions include supply chain operations such as planning, sourcing and buying inputs including green beans, coffee roasting, and distribution of roast coffee. MFG roasts and packages the beans and ships them to warehouses in countries where BEV GROUP has distribution and sales affiliates (e.g., coffee shop operators).

MFG sells roasted coffee in bulk and in packaged form to both related and unrelated coffee shop operators. MFG is very profitable. For the tax year under review, its coffee bean sales were 300 million euros (80 percent of sales were to associated entities in BEV GROUP), its cost of goods

sold (COGS) was 60 million euros and operating expenses (OE) 30 million euros, for an operating profit of 210 million euros and return on sales of 70 percent.

Given that MFG charges the same prices for its roasted coffee products to both related and unrelated coffee shop operators, the conditions appear to be met for considering MFG's sales to unrelated parties to be internal comparables.

An economic expert was hired to do an estimate of the returns that should accrue to MFG on an arm's length basis from its activities as coffee roaster, supply chain functions, and other ancillary activities (e.g., packaging and distribution to coffee shops). The economist decided to unbundle the firm's activities into three different activities: coffee roasting, packaging and distribution. After performing a functional analysis, the economist concluded that none of the activities performed by MFG were entrepreneurial and all were potentially benchmarkable functions.

In the absence of third-party transactions, the economist therefore proposed that the TNMM be used to determine the appropriate arm's length return to MFG for each of its activities. Using local databases for comparable entities (unrelated parties in the same 4-digit industry code; making adjustments for inventory, etc.) the economist's estimate for the coffee roasting activity broke down the average costs and profits per pound of coffee as the following[87]: average cost $8.73; average sales price $9.40; net profit before tax $.044 for a net return on sales (EBIT) of 7.1 percent. The economist therefore proposed a TNMM of 7.1 percent on net sales. This rate of return was significantly lower than that recorded by MFG.[88]

3.5.6. Example 6: Application of the Profit Split Method to coffee bean exports[89]

i. Facts

Firm A, a member of MNE Group, is incorporated in Country A. The firm's principal activity is the growing and processing of coffee beans.

At the farming stage, Firm A identifies, acquires and cultivates land with extremely good soil for growing coffee. Firm A has developed extensive coffee-growing knowhow, including how to emphasize the desirable qualities of the coffee it grows through its cultivation methods. The properties of the soil together with the cultivation methods give Firm A's coffee a highly sought after flavor. Firm A has applied for and received a designation under the TRIPS Agreement for a Geographic Identification (GI) that gives Firm A intellectual property rights for its coffee beans.

[87] Estimates are drawn from the Omri Wallach (2020). The Economics of Coffee in One Chart. Visual Capitalist (2020). Available from https://www.visualcapitalist.com/the-economics-of-coffee-in-one-chart/

[88] See UN TP Manual, section 3.5.29ff for a description of a typical search process to identify comparable profits between unrelated parties.

[89] This example is adapted from the tea example in Annex 2 of Chapter 2 in the OECD Transfer Pricing Guidelines (2022).

Firm A then processes the coffee cherries and converts them into green coffee beans using a proprietary wet processing method that was developed locally and takes advantage of a local clean water supply. These technological and locational advantages provide additional value to Firm A. Its dried cherries need very little milling, are of higher quality, providing a unique and highly sought-after flavour, and are available more quickly than from other coffee processors. Firm A also has applied for and received certification that enables its coffee beans to carry the "Fair Trade" certification trademark.

Finally, Firm A bundles the green coffee beans and exports them to its parent, Firm B, at an FOB export price negotiated between Firm A and its parent.

Firm B is responsible for the downstream stages in the production process, including roasting the coffee beans, and repackaging the coffee beans for sale throughout its target markets. Firm B has extensive proprietary know-how to roast and mix various coffees in order to get blends with the unique tastes that are appreciated by customers of the MNE Group. Coffee produced by Firm B has won international acclaim for its unique taste and aroma.

In addition, Firm B owns and has, by its own efforts, developed the trade name and trademark, which are both unique and valuable. The branding also features the GI and "Fair Trade" certifications and trademarks acquired by Firm A, which recognize the origin, quality and unique taste of its coffee beans. The coffee is marketed as "single origin" coffee from the region of Firm A. In addition, Firm B has carried out extensive advertising campaigns through electronic media, internet, trade fairs and publications in industry magazines resulting in the product range becoming market leader in a number of geographic markets. Coffee sold by MNE Group commands a premium price.

ii. Analysis

The related party transaction is the pricing of the green coffee beans that are exported by Firm A to Firm B. The accurate delineation of the transaction in this particular case determines that both Firm A and Firm B are making unique and valuable contributions. As a result, one-sided methods such as the TNMM may not be appropriate since both parties have unique and valuable intangibles.

If comparable arm's length transactions are available that meet the arm's length principle, the CUP method, which is a two-sided method, may be the most appropriate method. Adjustments must be made for material differences in, for example, the quality of the beans, time to market, and transportation costs. Both parties have valuable trademarks, which may be difficult to value under the CUP method. Where material adjustments cannot be made, the CUP method is less reliable and the tax authority should consider other methods.

If there are no available good-quality comparables, since both related parties are making unique and valuable contributions, the most appropriate transfer pricing method may be the transactional profit split method (TPSM). The TPSM requires determining a return for the routine (benchmarkable) functions performed by each party and then using an allocation key to split the remaining profits between Firm A and Firm B.

Selection of the allocation key for splitting the nonroutine (non-benchmarkable) profits should reflect the relative contribution of the two parties to their respective intangible assets. For a typical situation involving a manufacturer and distributor with intangible assets, the allocation key could be based on their capitalized amortized spending on technological and marketing expenses, for example. Timing differences (multiple-year due to capitalization and one time for marketing expenses) should be considered. In very high-quality coffee, however, determining an appropriate allocation key may be difficult to carry out in practice.[90]

3.5.7. Example 7: Transfer pricing of soluble coffee exports

i. Facts

Firm A, a member of the MNE Group, is incorporated in Country A. The firm's principal activity is the growing and processing of coffee beans. The facts about Firm A in this example are the same as those in Example 6, with the exception that Firm A performs an additional stage of the MNE Group's global value chain: Firm A manufactures soluble coffee in Country A. The soluble coffee is packaged, sold locally under its own brand name, and has a large share of the local market due to its premium branding and high quality.

Firm A's soluble coffee is also exported in bulk form to Firm B, a related party distributor, which packages and distributes the soluble coffee for sale throughout the rest of the world. Firm B is responsible for setting up and managing the distribution network and developing the trade name and trademark recognition in the rest of the world via extensive advertising campaigns.

ii. Analysis

The related party transaction is the pricing of soluble coffee exports from Firm A to Firm B. The accurate delineation of the transaction in this particular case determines that both Firm A and Firm B are making unique and valuable contributions. As a result, one-sided methods such as the TNMM may not be appropriate.

If comparable arm's length transactions are available that meet the arm's length principle, the CUP method, which is a two-sided method, may be the most appropriate method. Adjustments must be made for material differences in, for example, the packing, time to market, and transportation costs. Where material adjustments cannot be made, the CUP method is less reliable, and the taxpayer should consider other methods.[91]

If there are no available good-quality comparables, since both related parties are making unique and valuable contributions, the most appropriate transfer pricing method may be the transactional profit split method. The TPSM requires determining a return for the routine (benchmarkable) functions performed by each party and then using an allocation key to split the remaining profits between Firm A and Firm B. Selection of the allocation key for splitting the nonroutine (non-

[90] See UN TP Manual, section 4.6.4f on how to identify split keys when applying the profit split method and how to identify the profit to be split.
[91] See UN TP Manual, section 4.2.2 for the application of the CUP method and its requirements and adjustments.

benchmarkable) profits should reflect the relative contribution of the two parties to the assets of the two parties (e.g., the technological and marketing intangibles).

4. Transfer pricing in the soybean industry

4.1. Introduction

Soybean production has important characteristics that make it a good case study as an industry within the agricultural sector; namely: close interdependence between production (i.e., farming crops) and its first industrialization process, high costs/income ratio, importance of international trade activity and of MNEs within that industry, and high value-adding activities. Arguably, many other agricultural products (e.g., cereals like maize, wheat and rice) share similar primary production processes to soybeans. However, soybeans also present interesting features regarding the increase of worldwide demand for soybean by-products and the wide range of countries that actually import or produce soybeans for their food (or energy) industries.

Being an oilseed, soybeans can be grown in the same type of soil (e.g., warm, fertile, well-drained, sandy loam[92]) as cereals and other agricultural products, including maize, wheat, sunflowers and sorghum. Producers usually rotate among different crops from year to year, for reasons related to markets, costs, and sustainability. Therefore, some characteristics of soybeans described below share common characteristics with cereal production in general.

Soybeans form the basis of several products, mainly animal feed and human food, but can also be used for energy production. Below, the type of products obtained from soy and their markets are described as a starting point for analyzing the soybean GVC.

4.2. Global production and consumption

4.2.1. Main outputs

Unprocessed whole soybeans are referred to as soybean grains or simply, as soybeans. Soybean by-products are products derived from soybeans following industrial processes.

The two primary by-products of soybean grain are soybean meal (used for animal feed, usually as pellet) and oil. From every soybean grain it is possible to obtain both 77 to 78 percent of soybean meal and 18.5 to 19 percent oil at the same time. The countries which are the largest producers of soybean grain, usually also process the soybean grain to obtain its by–products.[93]

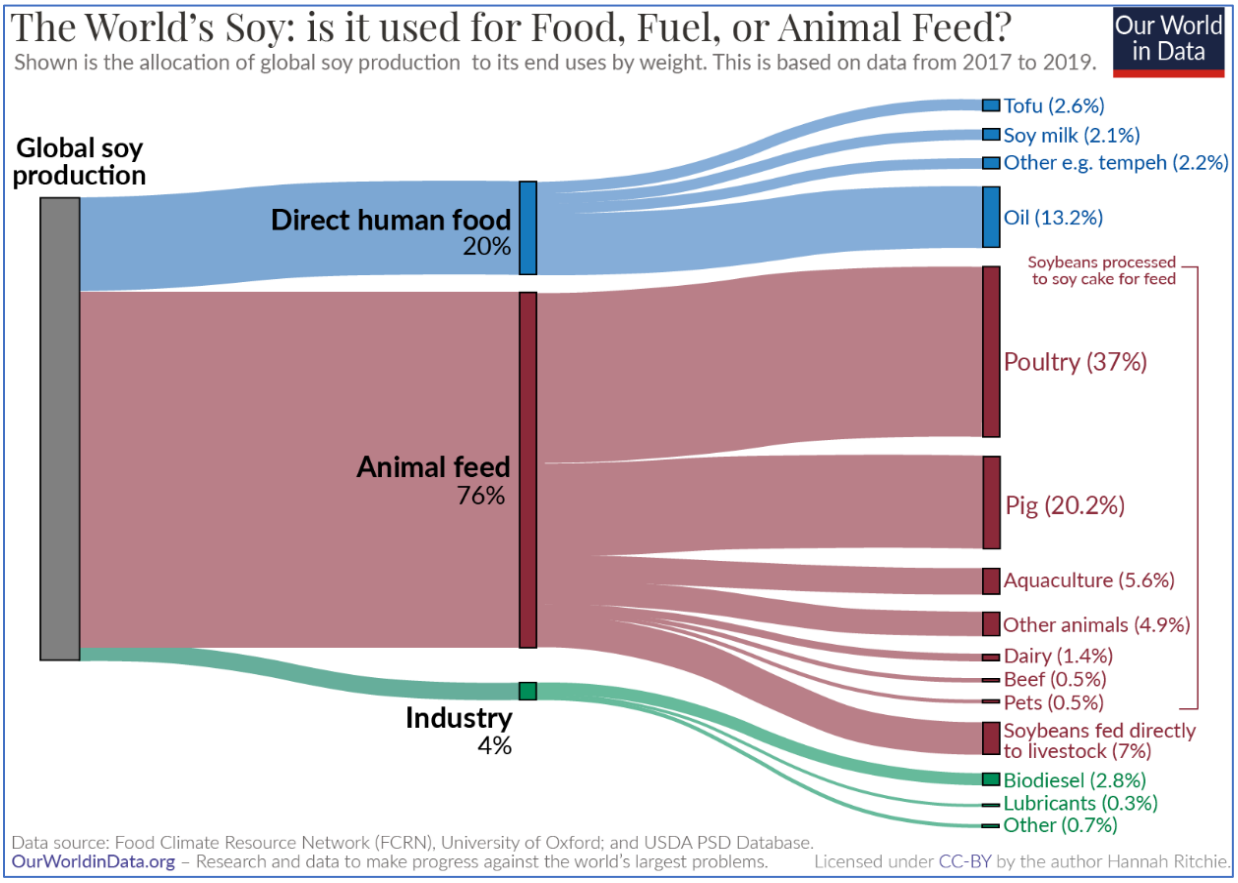
[92] Britannica. Soybean. Available from https://www.britannica.com/plant/soybean

[93] For instance, Brazil crushed 53 million tons of soybean in 2022/2023, generating 41 million tons of meal and 10.2 million tons of oil. Of these totals, 21.5 million tons of meal and 2.45 million tons of oil were exported. In turn, Argentina, which is the world's largest exporter of soybean meal and oil, crushed 30 million tons of soybeans in 2022/2023, producing 23.4 million tons of meal, of which 21.2 million were exported; and 5.9 million soybean oil, of which 3.85 million tons were exported. Quantities not exported are consumed within the two countries, respectably, with meal going to animal feed factories.

In the soybean industry there may be multiple outputs from soybean industrialization that use the same process and take place in the same facility or plant location. For instance, a plant facility may use soybean grain as an input and, in the same facility, also produce soybean meal, oil, and other by-products such as chemical products.

The following sections provide a brief description of the most important products made from soybeans with the data illustrated in Figure 4 below. By end uses, approximately 20 percent of global soybean production is used for human food, 76 percent for animal feed, and the remaining 4 percent for industrial purposes (energy and other products).

Figure 4: Soybean grain destination[94]



Food

Twenty percent of soybean production is used in the production of human food for example to produce cooking oil, tofu and soy milk.[95]

[94] Ritchie, H. and Roser, M. (2021). Forests and Deforestation. Available from https://ourworldindata.org/forests-and-deforestation. Hannah Ritchie and Max Roser (2021). Soy. Available from https://ourworldindata.org/soy

[95] Ritchie, H. and Roser, M. (2021). Forests and Deforestation. Available from https://ourworldindata.org/forests-and-deforestation. Ritchie, H. and Roser, M. (2021). Soy. Available from https://ourworldindata.org/soy

Feed

It is estimated that animal feed (derived from soybeans) provides one-third of the protein consumed by the human population.[96] Animal feed derived from soybean is typically in pellet form (after oilseed industrialization), with a small amount comprising soybeans which are fed directly to livestock. The annual sales of the feed market are over US$ 400 billion globally.[97] The growth in the soybean market in recent decades is due mostly to the increase in demand for processed animal feed (and, to a lesser degree, for biofuel and vegetable oil) with processed soybean production increasing from 88 million to 277 million tons between 1990 and 2013. From 2017 to 2019, 76 percent of global soybean grain production was used for animal feed. Soybeans are a basis for animal feed for poultry (37%), followed by pigs (20.2%), and aquaculture (5.6%) with 14.3 percent used to feed dairy producing animals, beef, household pets and other animals.[98] In the United States (2013), for example, 70 percent of domestic soybean production was used for animal feed, with poultry having the largest share, followed by hogs, dairy producing animals, beef and aquaculture.[99]

Energy

Soybeans are used to produce fuel. The importance of fuel as a use for soybeans varies between countries. In the United States, fuel accounts for 5 percent of the U.S. soybean crop.[100] At the world level, 2.8 percent of soybean production is used as fuel (in the form of biodiesel).[101] For example, in Brazil, the use of biodiesel began in 2006, with the approval of a federal law authorizing this mixture. From Brazil's total national production of soybeans of 10.2 million tons in 2022/2023, approximately 4 million tons of the harvested soybean grain were destined to be biodiesel.

Other products

Other products such as lubricants, industrial cleansers, and non-toxic soy-crayons (for children) account for 1 percent of soybean production. Figure 4 depicts the allocation of global soybean production to its end uses by weight. Despite the fact that most soy grain production is directed to animal feed, the main international market for soybeans and related products is the grain market, which is addressed in the next subsection.

4.2.2. Major markets for soybean grain and its by-products

[96] KPM. (nd). Feed and Feed Ingredients. Available from Feed & Feed Ingredients | KPM Analytics
[97] IFIF. Global Feed Statistics. Available from https://ifif.org/global-feed/statistics/
[98] Ritchie, H. and Roser, M. (2021). Forests and Deforestation. Available from https://ourworldindata.org/forests-and-deforestation. Ritchie, H. and Roser, M (2021). Soy. Available from https://ourworldindata.org/soy
[99] United States Department of Agriculture (2015). USDA Coexistence Fact Sheets. Soybeans. Available from https://www.usda.gov/sites/default/files/documents/coexistence-soybeans-factsheet.pdf
[100] United States Department of Agriculture (2015). USDA Coexistence Fact Sheets. Soybeans. Available from https://www.usda.gov/sites/default/files/documents/coexistence-soybeans-factsheet.pdf
[101] United States Department of Agriculture (2015). USDA Coexistence Fact Sheets. Soybeans. Available from https://www.usda.gov/sites/default/files/documents/coexistence-soybeans-factsheet.pdf

In terms of the major markets for soybean grain and its by-products, it is important to note that the term "by-products" refers to those derived from soybean grain. The reason is because in the soybean industry there may be multiple outputs from soybean industrialization that use the same process and take place in the same facility or plant location. For instance, a plant facility may use soybean as an input and, in the same facility, also produce soybean meal, oil, and other by-products such as chemical products.

The soybean grain market is one of the biggest agricultural commodity markets. According to information published by the United States Department of Agriculture (USDA), soybean production uses 135 million hectares of land compared to 200 million of hectares for corn. The value of the world's trading of soybean products rose to 125 billion U.S. dollars, including 78.5 billion in grain, 17.1 billion in soybean oil and 29.4 billion in soybean meal.[102] This is in comparison to the world's trading value of cereals of 159 billion U.S. dollars in 2021.

The main soybean producing countries are not necessarily the biggest consumers. Table 4 below provides data on production and domestic consumption for the soybean industry in 2022. The higher the ratio of domestic consumption to production, the more the country depends on net imports of soybeans. When the ratio is below one, the country is a net exporter.

Table 4: Soybean grain – Production and domestic consumption (million tons), 2022[103]

Country	Production	Domestic Consumption	Domestic Consumption/ Production
Brazil	155	53	0.342
United States	116	60	0.517
Argentina	27 [104]	31.5	1.167
China	20	91	4.550
India	12	9.9	0.825
Paraguay	8.8	3	0.341
Canada	6.4	Not available	Not available

i. Soybean meal (animal feed)

As mentioned above, soybean meal (used in animal feed) is the main product resulting from soybean grain. The production of animal feed derived from soybean is not necessarily in line with grain production of each country because of soybean imports. Table 5 below provides data on production and domestic consumption for top feed producers in 2022.

[102] OEC. Cereals. Available from https://oec.world/en/profile/hs/cereals?redirect=true. OEC. Soybean oil. Available from https://oec.world/en/profile/hs/soybean-oil. OEC. Soybean meal. Available from https://oec.world/en/profile/hs/soybean-meal. OEC. Soybeans. Available from https://oec.world/en/profile/hs/soybeans

[103] Domestic consumption equals production plus imports minus exports. US Department of Agriculture.

[104] Outlier due to a severe drought. Normally it is between 45 and 50 million tons per year.

Table 5: Soybean feed– Production and domestic consumption (million tons), 2022[105]

Country	Production	Domestic Consumption	Domestic Consumption / Production
China	72.0	71.9	0.999
United States	47.5	35.6	0.749
Brazil	41.2	20.0	0.485
Argentina	24.5	3.5	0.143
India	7.9	6.7	0.848
EU	11.5	27.0	2.348
Mexico	5.1	6.9	1.353

ii. Oil

Production of oil also is not necessarily closely tied to a country's grain production. Table 6 below provides data on production and domestic consumption for top oil producers in 2022.

Table 6: Soybean oil– Production and domestic consumption (million tons), 2022[106]

Country	Production	Domestic Consumption	Domestic Consumption / Production
Brazil	10.2	7.9	0.775
United States	11.8	11.8	1.000
Argentina	6.2	2.3	0.371
China	15.7	16.3	1.038
India	1.7	4.9	2.882
EU	1.8	2.2	1.222
Mexico	1.7	1.2	0.706

4.3. The global value chain of the soybean industry

In addition to agricultural land and local labor supply (workforce), soybean grain production relies on seeds, fertilizers and pesticides, in order to improve the volume and quality of production as well as agricultural machinery. The technology used in planting and raising soybean crops is widely known. The production structure varies from country to country, with some countries being dominated by large producers and others having production spread among small producers.

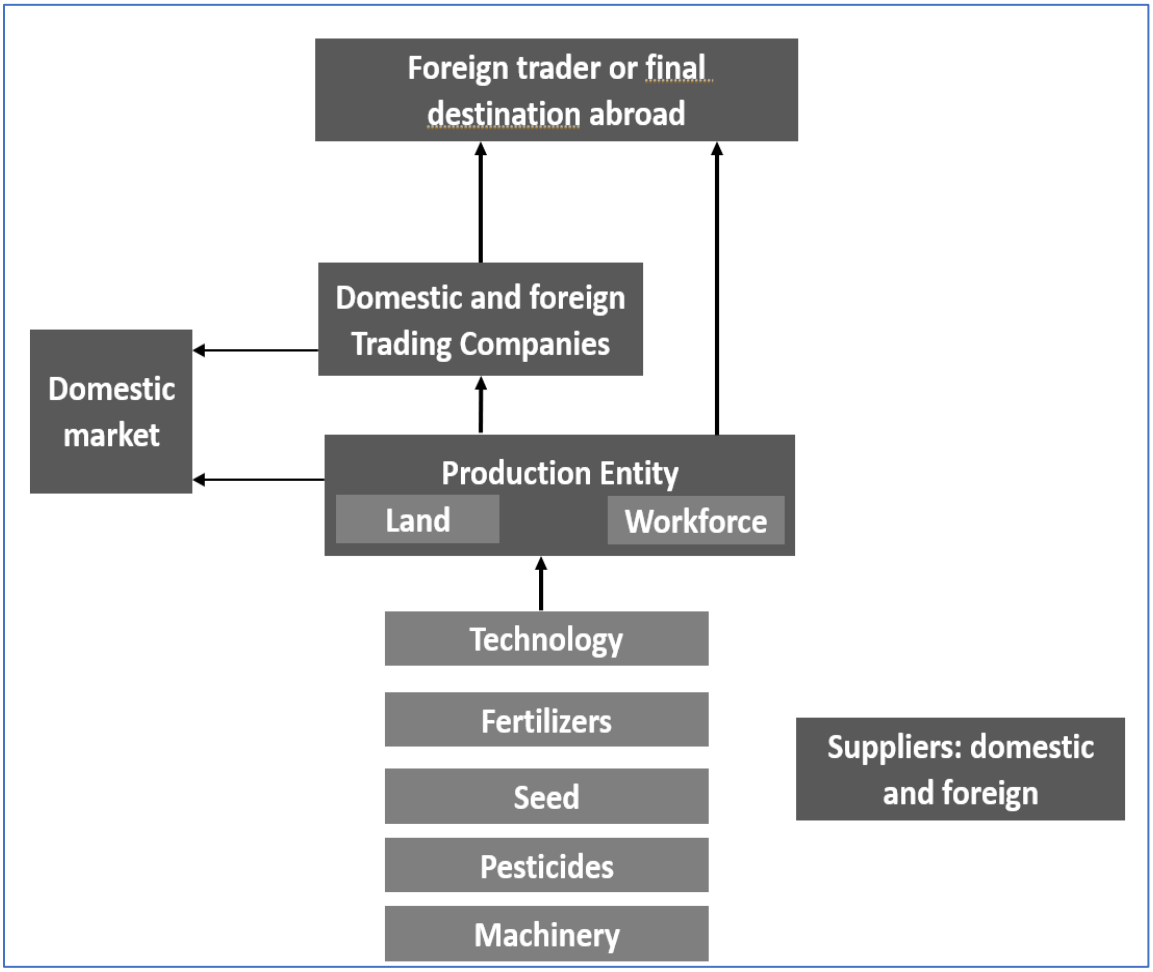
In general, the biggest part of soybean production in developing countries is exported and not consumed domestically. Some developing countries such as Brazil and Argentina are also animal

[105] Domestic consumption equals production plus imports minus exports. US Department of Agriculture.
[106] Domestic consumption equals production plus imports minus exports**.** US Department of Agriculture.

protein producers; therefore, they use part of their soybean production as feed in their poultry, pig and bovine industries.

When the export company is a related party to the import company, transfer pricing issues arise. The following illustration (Figure 5) highlights the key players within the soybean supply chain. Other aspects such as financing, infrastructure (transportation) and the exchange rate will also affect the final price of the soybean grain.

Figure 5: Overview of soybean grain production



The history of soybean grain is one of vertical integration in the major markets. [107]Big firms have evolved from integrating upstream into first handling. Once they dominated sourcing and profit margins were still low, they vertically integrated downstream into ingredients. Some are vertically integrated and achieve high levels of profitability, while other players have struggled turning vertical integration into high levels of profitability. So even with market power in terms of sourcing, vertical integration does not always translate into power and pricing downstream.

[107] How the Global Oilseed and Grain Trade Works, U.S. Soybean Export Council, 2011. https://ussec.org/wp-content/uploads/2015/10/How-the-Global-Oilseed-and-Grain-Trade-Works.pdf.

Overall, based on the industry characteristics, transfer pricing within the soybean industry should consider the competitive nature of the sector, and therefore consider reference pricing of the commodity exchange markets, and survey data, with good reliability. Processors do not integrate upstream into farming, while they do integrate upstream into bulk inputs such as fertilizers.

In this section, we highlight the relevant functions along the global value chain for the soybean industry namely: (i) research and development of variety rights; (ii) soybean cultivation; (iii) storage and trading; (iv) commoditization; and (iv) processing.

4.3.1. Research and development of variety rights

Research in the soybean industry includes, most importantly, research into new, improved seed varieties. The development of robust varieties can, for example, reduce weather risks in production and / or promote lower production costs. By researching and breeding new crops and varieties, new markets can be exploited, and existing market positions may be strengthened. Associated with the R&D activities comes the development risks and product updating risks (e.g., non-compatibility for further developed seed technology).

Variety rights are a key success factor within the soybean industry. The soybean yield has remained stagnant especially due to the use of conventional breeding technologies. Researchers and multinationals alike are looking for novel breeding technologies to improve soybean breeding and develop new varieties. Novel technologies are biotech-based approaches to modify plant characteristics including: molecular design breeding approaches, genome editing and transformation technology, RNA interference approach, Marker-Assisted and Genomics-Selection breeding approaches, machine learning and bioinformatics technology.[108] Some regions such as Sub-Sahara Africa have their own research institutes and private initiatives to develop new varieties which underpin the relevance of new varieties and related research.[109] Such regional efforts are needed to cope with different climates. An article published by the USDA[110] states that genetically engineered seed was planted on almost all soybean farms in the US from at least 2006 onward. As a consequence, per-acre production cost increased. However, the yield also increased with a total expanded productivity. As a consequence of the need for new varieties, MNEs invest massively in new varieties via R&D activities, which are a critical success factor for MNEs.

The development stages can be described in more detail as follows:

- R&D (breeding): Development of new seed varieties with specific characteristics to suite customer needs and remain competitive in the market.

[108] Cf. Fend, X., Yu, D., and Bhattacharyya M.K., (2022). Editorial: Novel technologies for soybean improvement. Sec. Technical Advances in Plant Science. Vol. 13 for a detailed overview of different approaches and the state of research.
[109] Cf. Khojely, D.M., Ibrahim, S.E., Sapey E., and Han, T. (2018). History, current status, and prospects of soybean production and research in sub-Saharan Africa. The Crop Journal. Vol 6, Issue 3.
[110] Cf. Vaiknoras, K. (2023). U.S. Soybean Production Expands Since 2002 as Farmers Adopt New Practices, Technologies. Available from https://www.ers.usda.gov/amber-waves/2023/july/u-s-soybean-production-expands-since-2002-as-farmers-adopt-new-practices-technologies/

- Production of basic seeds: Production of seeds for further multiplication. This may include propagation and testing. Those activities are often of a simple nature

- Production of certified seeds: Multiplication of basic seeds to eventually arrive at marketable certified seeds. This is done often with third party farmers[111]

- Registration: At the end of the development process, a new seed variety is submitted to local authorities, which decides on the approval of the seed for agricultural use. After successful approval, one entity is the sole owner of the seed varieties. It correspondingly also bears the risk of a non-approval. The developed varieties are registered with the authorities in the countries where the respective variety is to be grown or marketed, which entails plant variety protection and thus the right to cultivate these varieties.

- Distribution of certified seeds: Distribution of marketable seeds to final customers.

- Customer service: Advice related to the seeds and promote client relationships.

4.3.2. Soybean cultivation

Soybean production involves a series of inputs, in addition to the land used for planting. This includes labor, agricultural machinery (planters, harvesters, sprinkler machines, and in some cases airplanes), technology, seeds, pesticides, and fertilizer. Excessive rain is a risk inherent in planting soybeans as rain can damage the harvest, especially during the harvest season. In case of too little rain irrigation techniques can be employed, but the risk of excessive rain cannot be managed as it is not feasible to grow soybeans in sheds or greenhouses.

Soybean producers often use technologies that have environmental impacts due to the toxicity of some pesticides. Pesticides can also affect the quality of the soybean produced. Soybeans grow better in certain soils that are better adapted to the root structure of the soybean crop leading to higher level of natural fertility. Land can be adapted to soybean farming with the use of technology but doing so increases the cost of production.

The activities performed in this stage of the GVC can involve transactions between both related and unrelated parties, and sometimes involve cross-border transactions. For example, seeds and other inputs may be purchased from related parties situated in another country.

[111] "Farmer" means the person who owns (or has some form of right over) and exploits a piece of land. In this sense, a farmer is a producer. "Producer" means more broadly the person or group of persons or the company or the joint venture that exploits the land, regardless of the title they legally own to exploit it (e.g., rent, co-ownership, capital contribution, etc.). Since the meaning of "producer" is more general than "farmer" we use producer to avoid confusion.

Land tenure and configuration vary across large soybean producing countries. Some jurisdictions are dominated by a small number of large-scale producers owning large land areas, and other jurisdictions are comprised of a larger number of producers owning smaller land units.[112]

4.3.3. Storage and trading

i. Grain storage

Grain storage is usually provided by the producer or by small cooperatives. The storage process usually requires some kind of specialization, as well as various technologies, such as keeping the correct humidity in storage silos and the grain safe from fungi and other pests. The risk of storage is borne by the producer or the warehousing provider.

Some domestic traders hold warehousing facilities, storing both own and third party crop inside. The producer's right to the harvest in this case is contained in the grain warehousing receipts or maybe a warrant. When the producer or the intermediate domestic trader sells the product to the exporter, the goods leave the producer's silos and go directly to the shipping points.

ii. Trading

Once the soybean grains are produced and processed, they are stored and traded either domestically or exported. In some cases, products are physically shipped directly to the end customers, rather than to an intermediate buyer, i.e. the invoice and physical flow differ. Drop-shipment to the end-customers is not per se evidence of mispricing or fraudulent behavior.

Within the trading activities, domestic traders play a crucial role and constitute a significant part of the trading chain. Exporting traders interact with domestic traders and also with large producers and cooperatives. Usually, large exporting traders buy directly from large producers and cooperatives.

Domestic traders and large producers are mostly the suppliers for export companies. In some countries it is also common that purchase agents acting on behalf and on the account of an export company purchase crops from small to medium producers during the harvesting season.

In the case of soybeans, many transfer pricing issues arise at the trading stage, since the production, processing and storing stage are oftentimes domestic, that is, they do not usually involve cross-border trade.

[112] In Argentina, according to a 2019 Chamber of Commerce report, 80% of soybean producers were responsible for 50% of the production. The other 20% of producers are considered large producers. According to FAO data, large soybean producing countries show significant differences in their land tenure configuration. For example, India's production units vary between 1 and 20 hectares in size and have grown to 46 million, Indonesia has 6.7 million production units, Brazil has 2 million, and the US has 778 thousand. Similarly, according to 2010 data, 1.8 million land producing units above 500 hectares in the US covered 237 million of hectares, much more than 37 million hectares of Brazil, 10 million of Argentina or Paraguay's 1 million.

The selling of soybean grain is very closely related to the downstream by-products (that is, soybean meal and oil). This means that most of the soybean grain crop is acquired by oil and soybean meal producers no matter whether the purchase is in the local or international market and from related or unrelated parties. Individual countries may have distinct activities, exporting the soybean grain itself or the by-products. The level of development of the soybean industry in each country reflects the amount of value added to exports by processing the grain before exporting.

Optimal factory capacity is key to getting the highest margin for companies manufacturing soybean by-products. Procurement functions therefore may have a high level of risks (i.e., to ensure optimal capacity), and it is necessary to separate specific functions between exporter and international trader on how they, on a timely basis and under the agreed conditions, supply the manufacturer.

4.3.4. Commoditization and Pricing

In soybean production, soybean grain and its by-products are usually sold as commodities. Commoditization is the standardization of a product where the product does not have substantial differences in quality. "Each type of commodity has a standardized content that allows them to be equally perceived by buyers and, hence, freely circulate on the markets. In the absence (or minimized influence) of other features, the decisive role to purchase a commodity is dictated by price considerations."[113]

However, differences between products may still be relevant for commoditized products. For instance, quality issues may arise when comparing soybeans from one region with another. It is also possible to have many differences in the trading conditions from one country to another due to, for example, export banning, regulatory restrictions, etc. These circumstances can affect the commodity's price. However, the range of differentiation for commodities is much lower than for other products.

There are several defining characteristics for commodities. First, mass production is a key element.

Second, standardization means that buyers are able to obtain an equivalent product from exchange markets. These exchange markets may operate alongside financial markets including futures markets. The spot price for a commodity reflects the cost of purchasing it on an exchange market to be traded immediately or in a very short time. The price for a futures contract involves the spot price plus the cost of storage through the time; the futures price also reflects expectations about the future supply and demand of the commodity, and the expected rate of return for the commodity holder (i.e., the financial cost of "not having" the money).

Third, an exporter must have a large storage capacity to cushion purchasing and selling bottlenecks; as a result, the exporter typically performs inventory functions. Shipping and

[113] Brodskiy, D. (2019). Transfer Pricing and value creation in the commodities trade sector in Petruzzi, R., Tavares R. (Eds.) (2019). Transfer pricing and value creation. Linde Verlag.

insurance activities are directly related to the export conditions. As a consequence, Incoterms[114] outlining the responsibilities of exporters and importers are crucial at this stage. In several countries, soybeans and its by-products are traded under free-on-board (FOB) conditions, so the exporter does not bear risks beyond the shipping line (water's edge). It is also important to note that certain cereals and oilseeds are available in temperate zones in both hemispheres, so that market players buy and sell the goods throughout the year.

4.3.5. Processing

Processing soybeans involves technology-related value adding functions. The production process for animal feed, soybean oil, meal or other by-products comprises know-how on extrude-grinding stages and preservation of raw material. Other functions related to processing are certification for quality and food safety agencies, environmental regulations accomplishment, labor issues, etc.

4.4. Implications for transfer pricing analysis

When comparable uncontrolled prices are available, the CUP method can be the most appropriate transfer pricing method to for the transaction between related companies. As outlined in section 4.2.2 of the UN TP Manual, the CUP method requires a high degree of product comparability in addition to other comparability factors. In the case of the soybean industry, as a commodity, certainty on the date of the transaction (quotation period) is needed.

It is also critical to identify reliable comparables. In some Latin American countries such as Brazil, Argentina or Uruguay, soybean grain transactions usually take indirect reference to the Chicago Board of Trade (CBOT). The CBOT is one of the oldest future markets in the world. For many products, including soybeans, the CBOT is the world's reference market.

Domestic market prices are typically not useful comparables as these transactions involve different conditions and utilization of the traded goods than those traded on international markets. Further, in many cases producers, inland traders and exporters usually take CBOT price as their reference point. In addition, exchange markets like Rosario, Sao Paulo and Buenos Aires publish their quoted prices or indexes by reference to the CBOT or other international commodity exchanges. In the case of Argentina, various sources are used to value grain and oilseed export transactions. When setting the price of soybeans, Brazilian producers have the CBOT as one of the components of the calculation (although the CBOT price is not always what causes the greatest fluctuations in this price in the internal market). The other two components in the formation of the local price are the exchange rate and the premium at national ports of shipment.

[114] The International Chamber of Commerce publishes a set of rules that clearly define the responsibilities of sellers and buyers in the trade of goods. These rules encompass all type of trade transactions including shipment, insurance, and where to collect and deliver the traded goods. The rules are simplified into acronyms for different situations called "incoterms". Periodically the rules are updated. See International Chamber of Commerce. Incoterms rules. Available from https://iccwbo.org/business-solutions/incoterms-rules/

In some cases, in the absence of a price or index for valuing operations as free on board (FOB), independent operators choose to use the official price published by the Secretariat of Agriculture of the Federal Government of Argentina. In addition, the prices published by the Grain Exchanges of Rosario, Buenos Aires or Bahía Blanca are also used. However, not all of these prices actually reflect the international or export price. In the case of Rosario, which is the most used port in Argentina, the prices collected for publication are those of the domestic market. The latter might lead to necessary adjustments so to use these prices as a transfer price for grain export transactions.

It is common that independent parties settle contracts by looking to prices, published by government agencies or business chambers, which may offer an opportunity to find comparable prices. For example, the Buenos Aires Grain Exchange publishes a useful index. See Box 2 below.

Box 2: Publication of indexes: Buenos Aires Grain Exchange

Since 2016, the Buenos Aires Grain Exchange (Bolsa de Cereales de Buenos Aires) has published an index based on information received from its members (inland exporting companies and international brokers). Many of the exporting companies are local subsidiaries of large multinational enterprises engaged in commodity trade. In the past, the Argentinian Tax Administration has cooperated with the Buenos Aires Grain Exchange to refine and improve price accuracy.

The index is issued on a daily basis, whenever relevant quotations are available, with the values corresponding to the main agricultural products destined for export, both for the current month and for the following months. The price does not necessarily mean that selling transactions take place but informs the pulse of the local export market as perceived by the reporting trader. Average quotes are then calculated to equalize the weight of companies and brokers regardless of the amount of data they report, since brokers always transact with unrelated parties.

4.5. Transfer pricing examples in the soybean industry

This section provides examples that may arise in the transfer pricing analysis for the soybean industry. Please note that these are stylized examples focusing on certain problems that may arise in practice. In each individual case the functions, risks and assets and the relevant intercompany transactions need to be analyzed.

4.5.1. Example 1: TNMM for harvesting of soybean

i. Facts

A local entity is harvesting soybean grain and is classified as a routine entity as it does not have any unique and valuable intangibles, or any economically significant risks. The taxpayer performs a detailed transfer pricing analysis that results in the transactional net margin method (TNMM) being selected as the most appropriate method to test the harvesting activities with the local entity

selected as the tested party. The selected profit level indicator (PLI) is the mark-up on total costs. As no internal comparables are available, the taxpayer wants to use a commercial database to determine the mark-up on total costs and is wondering which industry code to consider.

ii. Analysis

The UN TP Manual provides guidance on the identification process of external comparables.[115] "A key resource […] is that of commercial databases […]. These databases have been developed by various organizations which compile accounts filed by companies with the relevant administrative bodies and present them in an electronic format suitable for searches and statistical analysis. […] Criteria commonly used for initial screening include industry codes, scale or sales volume, ownership and related/associated enterprises, availability of financial data or certain financial ratios."

The UN TP Manual outlines and stresses the relevance of commercial databases. It recognizes that different databases exist. As mentioned by the UN TP Manual a criterion commonly used for screening is the industry code. Two standard-setters for industry codes are the SIC Codes and the NACE Codes. SIC Codes, i.e. the Standard Industrial Classification Codes, are prevailing in the U.S. The Statistical Classification of Economic Activities in the European Community, commonly referred to as NACE[116], is the industry standard classification system used in the European Union. It is based on the UN classification system ISIC (International Standard Industrial Classification of All Economic Activities). Database providers use different industry codes. As the selection of the correct industry code influences the further search process, its selection and documentation are crucial. A SITC (standard international trade classification) code provides more granularity on a product level. However, as the analysis focusses more on functional than product comparability, SITC are hardly used for benchmarking and hence not discussed in more detail.

Under the SIC classification system the soybean industry is listed as SIC 0116 "Agricultural Production – Crop – Soybean". The four-digit code is part of the three-digit SIC 011 "Cash Grains". Others listed under "Cash Grains" on a four-digit level are wheat (0111), rice (0112), corn (0115) and cash grains not otherwise classified (0119). The NACE system is less detailed but has a rather wide cluster named "Growing of cereals (except rice), leguminous crops and oil seeds" (#01.11).[117] If the product is more oil out of soybean, NACE codes in the group #10.4 could be useful. Starch and grain mill products are covered under NACE #10.6.

As can be seen soybean is either part of a group of seeds (NACE) or a disjunct category (SIC). The 011 SIC does not map the 01.11 NACE entirely as for instance rice is included in the SIC 011 but not the NACE 01.11.

[115] See UN TP Manual, section 3.5.2.9ff.

[116] The title in French is nomenclature statistique des activités économiques dans la Communauté européenne.

[117] "This class includes all forms of growing cereals, leguminous crops and oil seeds in open fields. The growing of these crops is often combined within agricultural units. This class includes: growing of cereals such as: wheat, grain maize, sorghum, barley, rye, oats, millets, other cereals, growing of leguminous crops such as: beans, broad beans, chickpeas, cow peas, lentils, lupines, peas, pigeon peas, other leguminous crops; growing of oil seeds such as: **soybeans**, groundnuts, castor bean, linseed, mustard seed, niger seed, rapeseed, safflower seed, sesame seed, sunflower seed, other oil seeds." (emphasis added).

In order to assess the appropriate industry code, it should be determined whether the business model for soybeans matches other mentioned seeds or crops. One may even consider further SIC / NACE codes that includes production of nuts, fruits and sugarcane, depending on the industry specifics. As adding an industry code to the initial search strategy widens the set of potential comparables, an approach often seen is to work with more industry codes and refining the potentially comparable firms through other broad screening criteria and a manual screening of their functional profiles.

4.5.2. Example 2: TNMM for distribution of soybeans

i. Facts

Company A is resident in country A where it is selling soybeans to third party customers. It sources without significant risk and without unique and valuable intangibles from related parties. The customers of company A use the soybeans for industrial use, for further processing as animal feed, and for food production.

Company A conducts a detailed transfer pricing analysis that results in TNMM being selected as the most appropriate method for company A to analyze the arm´s length profit for its distribution function. Company A is selected as the tested party. The taxpayer wants to use a commercial database to determine the arm's length mark-up on revenue and is wondering which industry code to consider.

ii. Analysis

In a first step, the activity is classified as wholesale. This yields to SIC codes in the four-digit SIC code 5153 "Grain and Field Beans". It is described as "establishments primarily engaged in buying and/or marketing grain (such as corn, wheat, oats, barley, and unpolished rice); dry beans; soybeans, and other inedible beans. Country grain elevators primarily engaged in buying or receiving grain from producers are included, as well as terminal elevators and other merchants marketing grain." The others listed under the three digit SIC 515 are livestock and others.

The NACE system is less detailed and does not mention soybean explicitly. However, the closest NACE code seems to be 46.21 which includes wholesale activities for grains and seeds, oleaginous fruits, unmanufactured tobacco, animal feeds and agricultural raw material not elsewhere considered.

Under both SIC and NACE other categories might be considered related to the sale of other agricultural products. However, selling other vegetables and fruits such as pineapple, strawberries, flowers and potatoes seem to differ in terms of perishability of the product, and market structure. As another example, selling livestock and selling beans seems to differ in terms of storing and customer groups. However, in each case a detailed assessment of the functions assumed by the tested party and the potential comparables including market characteristics is needed.

A further problem when it comes to identifying comparable entities selling soybeans or other suitable agricultural products is that the unrelated wholesalers often also sell land machines, fertilizers, promotion materials, lubricants and other items needed by their customers in the agricultural industry. Moreover, segregated financials are seldom available. This is especially the case if the search focuses on seeds / oilseeds and does not consider fruits and vegetables. In order to assess the screening of any comparable entities, other ratios such as return on investment and inventory levels might be considered as a cross-check.

4.5.3. Example 3: Applying TNMM to soybean grain production using year-end adjustments

i. Facts

Company A is tax resident in country A and is engaged in the production of soybean grain. Based on a detailed transfer pricing analysis, company A is classified as a routine entity as it does not own valuable and unique intangibles, works under the direction of the parent company and does not assume significant economic risk. Company A sells the soybeans to related parties in country B. The TNMM is identified as the most appropriate method to determine an arm's length remuneration for company A with net cost plus as the profit level indicator. The targeted mark-up based on actual cost for 2022 is five percent. The mark-up was determined based on a benchmarking study, which showed an interquartile range of three to six percent as a mark-up over total actual cost.

Due to massive loss of crops due to insect damage in 2022 that affected the entire region, the local entity spent much more on pesticides in 2022 than in earlier years. As a result, the entity's actual markup over actual costs was two percent. The parties agreed within the contract on a year-end adjustment ensuring a margin within the target range of three to six percent mark-up on actual cost, where in case the mark-up is too low or too high, a one-time payment is made.

ii. Analysis

Agricultural production (and in particular soybean production) is affected by a host of external factors, not all of which are clearly identifiable or predictable. Prominent examples of such external factors are the weather (including extreme weather events) and the effects of long-term changes in climate. Also, regional insect or fungal infestations can severely affect soybean production. Further external factors, besides those from the natural environment, may include changes in agricultural or environmental policies or shifts in global market conditions among others.

These factors affect the success and profitability of soybean production. In line with the risk profile, this should not affect the profitability. Also, third parties would ensure that an arm´s length margin is reached in line with the risk profile of the entity. As such, they would agree to a true-up mechanism that guarantees the routine entity a minimum remuneration. In order to ensure that their remuneration is not excessive, a third-party production entity would likely request an adjustment mechanism also for profits above the maximum remuneration.

Against that background, it is reasonable to assume that third parties would agree upon year-end-adjustments that ensure that the actual margin falls within an arm´s length range. Third parties would require symmetry for both upward and downward adjustments and would in their agreement include the exact mechanism to adjust the margin.

To the extent that this is considered in the case at hand within the intragroup agreement, an appropriate year-end-adjustment would comply with the arm´s length principle.

4.5.4. Example 4: Contracts and the day of shipment applied to soybean exports

i. Facts

SBCo company, resident in country A, purchases soybean grain in the domestic market through a future contract correlated with the CBOT (Chicago Board of Trade). SBCo resells the soybean grains to its subsidiary SB2Co resident in country B, a low tax jurisdiction. SB2Co then sells the grains bought from SBCo to unrelated third parties in country B.

The sales contract between SBCo and SB2Co was agreed on 1st September in year 1. The contract price was the future price for 15th March of year 2, because the cargo was expected to be shipped in March of year 2. However, at the time of delivery and invoicing on 15th March in year 2, it was determined based on an email that the price for tax reasons should be based on the 10th March of year 2, which is lower than the 15th March future price. Hence, the price was adjusted retroactively to the 10th March price.

SBCo also engages in currency hedging related to this transaction, incurring costs related to its hedging transactions. SB2Co operates in dollars in the resident jurisdiction and does not engage in currency hedging. The delivery contract is CIF (cost, insurance, freight).

The foreign importer (SB2Co) receives the goods in its country of residence through a flexible and endorsable maritime transport contract.[118] As the invoice was adjusted after the shipment was done, how should the tax authorities from country A deal with this situation regarding transfer pricing?

ii. Analysis

The informal change of the purchase date for soybeans that is based on a purportedly ideal price, diverging from the date stipulated in the contract, as well as the contractual variances presented, may give rise to inquiries concerning compliance with transfer pricing regulations.

In this regard, the tax authorities from country A when accurately delineating the actual transaction, may question the modification of the initially agreed date and, if necessary, make tax adjustments to the transaction prices between the related parties. The tax authority should consider

[118] The goods might be physically delivered to the final destination.

the specific facts and circumstances of the transaction, considering the change in the purchase date and whether it aligns with what unrelated parties would agree upon.

The determination of appropriate transfer pricing should take into account the CIF delivery terms and the flexible and endorsable maritime transport contract. Additionally, the currency hedging costs incurred by SBCo with an independent party should be taken into account as part of the usual cost assumed by the exporter. If not, the tax authority must assess whether these costs are reasonable and consistent with what unrelated parties would typically incur under similar circumstances.

SBCo should be required to provide evidence (i) demonstrating the similarity between the contractual terms of the maritime transport and the comparable CIF contract, particularly regarding responsibilities and obligations related to the costs and risks associated with the goods, and (ii) show that the prevailing factors for adopting currency hedging are necessary in the dollar-denominated operation of the comparable transaction.

Tax authorities from country A should evaluate the pricing in relation to the market conditions prevailing on the 10th day of the month, which was deemed the ideal price for the commodity.[119] SBCo should demonstrate the alignment of this benchmark with the arm's length principle. If the taxpayer does not provide reliable evidence for the aforementioned pricing date, the tax authorities from country A may consider the pricing date for the commodity transaction to be the date of shipment as evidenced by the bill of lading.[120]

Additionally, the CIF condition and the flexible and endorsable maritime transport contract should be considered when determining the appropriate transfer pricing. The costs and risks associated with the transportation of the goods should be evaluated to ensure the risks and costs are consistent with what unrelated parties would agree upon, such as the currency hedging costs incurred by exporter (SBCo, resident in country A). The risk allocation should be based on control and financial capacity.

4.5.5. Example 5: Transfer pricing of soybean involving environmental risk

i. Facts

Assume company A tax resident in country A engaged in farming activities and belonged to a multinational group that sold its crop to related parties abroad. Company A was using pesticides that polluted the soil. This was seen as a breach of local environmental standards and a fine of 500,000 U.S. dollars was levied by the environmental authority in country A. The fine was paid

[119] The sixth method was selected as the most appropriate method. The sixth method is a CUP with a fixed date. For more information on the Sixth Method see the UN TP Manual, Subchapter 4.7.
[120] OECD (2022). OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2022. Paragraph 2.22. Available from https://www.oecd.org/tax/transfer-pricing/oecd-transfer-pricing-guidelines-for-multinational-enterprises-and-tax-administrations-20769717.htm

by the local company A, was seen as tax deductible in a first step and hence reduced its taxable income by that amount. A local tax inspector is analyzing whether it is appropriate for entity A to subtract the fine from its local profits.

ii. Analysis

The basis for the arm´s length analysis in the forementioned example is the accurately delineated transaction, including the functions performed, assets employed, and risks assumed. These should be determined during the fact finding.[121]

In the example, the assumption of risks is of special importance. The risk should be allocated to the entity that controls the risks and has the financial capability to bear it as the UN TP Manual states "[…] information relating to the exercise of control over risk and the financial capacity to assume risk are particularly important." [122] In particular, the capability to make decisions to take on, lay off or decline a risk-bearing opportunity, and the capability to make decisions on whether and how to respond to the risks associated with the opportunity, together with the actual performance of that decision-making function, should be taken into consideration.[123]

Against that background a more detailed fact-finding should be undertaken during a tax audit considering inter alia:

- Who decided on the use of the pesticide and the manner in which it was to be used (e.g. quantity, timing etc.)?
- Was entity A able to reject the use of the pesticide or was it based on a group directive?
- Did entity A select the pesticide and source it locally or was that done centrally?
- Does the MNE have a global policy on the use of pesticides?
- Which entity is responsible for environmental standards and monitors them?
- Which entity is responsible for overall risk mitigation and quality assurance?
- Was any legal team involved to handle the claim? If yes, which entity managed the legal process?
- If not as clear as in the example, the general tax deductibility of the fine / penalty under domestic tax legislation has to be considered

With this background information on the facts and circumstances, the auditor can analyze which entity was making the key decisions as regards using the pesticide and controlling the risks. Based on this information, it can be decided who should bear the risk and subsequently the fine of 500,000 U.S. dollars.

4.5.6. Example 6: Variety rights in the soybean industry

i. Facts

[121] See UN TP Manual, section 3.3.1.1.
[122] See UN TP Manual, section 3.4.4.31.
[123] See UN TP Manual, section 3.4.4.33.

Variety rights are a key success factor for soybeans and many other crops. As a consequence of the demand for new varieties, many multinational companies invest particularly in R&D activities to identify new varieties.

Research includes, above all, research into new, improved seed varieties. The development of robust varieties can, for example, reduce weather risks in production and thus promote lower production costs. Furthermore, by researching and breeding new crops and varieties, new markets can be exploited, and existing market positions may be strengthened.
Several multinationals develop and protect new varieties and subsequent seeds that are licensed or sold within the group or to farmers. An additional relevant intragroup transaction is the development of new varieties under contract development agreements steered by a central entity.

With that background, the following simplified situation shall be analyzed: A multinational group develops and registers new soybean varieties. The budget approvals and core decisions are taken by MNE headquarters. The headquarters is also registering the variety rights for several markets. Breeding and research activities are performed by a related party overseas under a contract development agreement. The remuneration is based on actual cost plus an arm´s length mark-up of eight percent. The new varieties are licensed to related party farmers who in turn sell soybeans to external parties.

ii. Analysis

In the case at hand two related party transactions need to be analyzed: the contract development activities and the licensing to related party farmers.

Contract development activities: Assuming that the headquarters provides detailed instruction and guidance, including for the day-to-day decision making, to the development entity and bears the associated risks, a service remuneration is in line with the arm´s length principle for contract development even though this cannot be classified as a low value adding service.[124] The development entity in contrast is classified as low risk entity. A typical remuneration for services is based on actual costs incurred plus a profit element which needs to be benchmarked.[125] The headquarters would be seen as owner of the developed varieties and would be entitled to any profit in relation to the development activities.

Licensing to farmers: Licensing the variety rights to related farmers depends on the classification of the local farmer. In the case where the related party farming activity does not have any unique and valuable intangibles and does not assume any of the economically significant risks, the license payment should be structured in a way to grant the local entity a profit in line with a conducted benchmarking study for its functions (cf. soybean case #1 above) of similar entities. This might result in a license payment below the rates seen between unrelated parties or even a negative license. In such situations, the CUP method would be less appropriate. If, however, the local producer takes decisions on inter alia crop, production volume, selection of customers and pricing, the entity might be accurately delineated as risk taker and local entrepreneur. In that case, a license

[124] See UN TP Manual, section 5.5.2.5.
[125] See UN TP Manual, section 5.4.5.3.

payment based on a CUP search, i.e. the application of the comparable price method, would probably be the most appropriate.

Appendix 1: List of Abbreviations

AMP	Advertising, marketing and promotion
B2B	Business to business
B2C	Business to consumer
BM und FBOVESPA	Brazilian Mercantile and Futures Exchange
CBOT	Chicago Board of Trade
CIF	Cost, insurance and freight
CIT	Corporate income tax
CME	Chicago Mercantile Exchange
COGS	Cost of goods sold
CPM	Comparable profits method
CUP	Comparable uncontrolled price
CUT	Comparable uncontrolled transaction
DAEMPE	Development or acquisition, enhancement, maintenance, protection and exploitation
DS	Domestic supply (Domestic consumption)
FAO	Food and Agriculture Organization
FAR	Functions, assets and risks
FOB	Free on board
FX	Foreign exchange
GI	Geographic Indicators
GVC	Global value chain
ICA	International Coffee Agreement
ICE	Intercontinental Exchange
ICO	International Coffee Organization
IoT	Internet of Things
IPR	Intellectual property rights
ISIC	International Standard Industrial Classification of All Economic Activities
MNE	Multinational enterprise
NACE	Statistical Classification of Economic Activities in the European Community (Nomenclature statistique des activités économiques dans la communauté européenne)
NGOs	Non-governmental organizations
R&D	Research and development
RNA	Ribonucleic acid
RPSM	Residual profit shift method
SIC	Standard Industrial Classification Codes
SKU	Stock keeping units

TNMM	Transaction net margin method
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UN	United Nations
UN TP Manual	United Nations Practical Manual on Transfer Pricing for Developing Countries (2021)
UPOV	International Union for the Protection of New Varieties of Plants
USDA	United States Department of Agriculture

Appendix 2: Global Production Values in the Agricultural Industry

The following tables show the top ten products plus coffee for 2000, and 2021.[126]

Table 1: Production value – year 2000[127]

Rank	Product	Thousands U.S. Dollars	Percent
1	Meat (pig, cattle, chicken)	408,405,984	26.5%
2	Rice	128,552,439	8.3%
3	Milk of cattle	120,247,781	7.8%
4	Corn	89,110,275	5.8%
5	Wheat	89,067,741	5.8%
6	Potatoes	38,405,635	2.5%
7	Eggs	37,900,072	2.5%
8	Grapes	34,154,911	2.2%
9	Tomatoes	33,070,317	2.1%
10	Soybean	29,715,909	1.9%
…			
43	Coffee, green	5,794,798	0.4%
…			
Total		1,541,513,449	100.0%

Table 2: Production value – year 2021[128]

Rank	Product	Thousands U.S. Dollars	Percent
1	Meat (pig, cattle, chicken)	768,623,143	18,6%
2	Milk of Cattle	307,886,655	7.5%
3	Rice	310,472,597	7.5%
4	Corn	242,932,801	5.9%
5	Wheat	182,567,386	4.4%
6	Soybean	142,159,521	3.4%
7	Eggs	107,456,392	2.6%
8	Potatoes	94,131,198	2.3%
9	Tomatoes	90,049,802	2.2%
10	Sugar Cane	83,457,848	2.0%
…			
35	Coffee, green	20,723,831	0.5%
…			
Total		4,125,746,541	100.0%

[126] For illustration purposes meat of cattle, pig and chicken had been combined.
[127] Source: Table created from FAO data, https://www.fao.org/faostat/en/#data/QV
[128] Source: Table created from FAO data, https://www.fao.org/faostat/en/#data/QV

Appendix 3: GVC Participation Rate in the Agriculture Industry

The GVC participation rate can be interpreted as the added value to the entire production process of a certain product. In other words, if a country's gross exports are 100 and its GVC participation rate is 30 percent, the interpretation is that 30 of the 100 export value is the country's own value contribution; a 5 percent rate would imply that the country added only 5 percent value to its exported products.

Table 3: GVC participation [129]

Region	GVC participation rate "Agriculture"	GVC participation rate "Food & beverages"
South Asia	27%	28%
Sub-Saharan Africa	34%	33%
Europe & Central Asia	40%	37%
Middle East & North Africa	28%	28%
Latin America & Caribbean	32%	29%
East Asia & Pacific	29%	32%
North America	29%	31%

[129] Source: Calculations based on UN Comtrade data from https://comtradeplus.un.org/.

Appendix 4: Transfer Pricing Questions

This appendix includes potential questions that a transfer pricing professional might ask in a FAR (functions, assets and risks) analysis for agricultural products. It focusses on the main steps of the value chain: research & development, processing, supply chain management, and sales & marketing.

The appendix includes several questions – some of them are quite detailed - that can be tailored to and selected for a specific analysis, for example during a tax audit, or MNE. When assessing the questions, it should be analyzed which legal entities in the analyzed group are involved in the functions / risks, and in what capacity. Additional, more general questions and information can be found in the "UN End-to-End toolkit for transfer pricing compliance assurance".[130]

Research & development

1. Please outline how relevant seed / crop patent protection is within your industry.
2. Please describe the R&D process with regards to seed varieties within your group.
3. Please describe the budget process for R&D activities incl. budget approvals.
4. Please provide a list of protected varieties developed and / or used by the group.
5. Which legal entity is responsible for the registration of seed varieties?
6. Which legal entity decides on protection of varieties and claim management?
7. How are the results of research and development disseminated among members of the MNE?
8. How far do you work together with customers to develop formulas / products? Please explain.

Processing / production including sourcing

Processing

1. Please explain the processing steps. Give an overview of the different processing steps end-to-end.
2. Do you differentiate between primary and secondary processing? Primary processing could be for instance crushing of oilseeds and the secondary phase involves the production of the final products.
3. Please explain the growing and harvesting process including the involved legal entities.
4. Please explain the dry processing process including the involved legal entities.
5. Please explain the milling process including cleaning, sorting and grading, and including the involved legal entities.
6. Please explain further process steps such as grinding and roasting including the involved legal entities.
7. Please describe the production of basic seed, i.e. production of seeds for further multiplication. This may include propagation and testing.
8. Please describe the production process of certified seeds, i.e. multiplication of basic seeds to eventually arrive at marketable certified seeds.
9. Please explain the quality control and safety process including the involved legal entities.

[130] Cf. Transfer Pricing Compliance Assurance – An End-to-End Toolkit, ANNEX B to E/C.18/2023/CRP.26, CRP 26 ANNEX B (Toolkit).pdf (un.org)

10. Which entity takes decisions on investment in process equipment / machinery / plants?

Intangibles

11. Do you need processing certificates / licenses / plant variety rights or similar for the processing phase? How are they obtained, and which legal entities are involved in what capacity?
12. What further patents and/or know-how are involved in the processing process? Who develops them?
13. At which stage of the production are intangibles / know-how involved? Who develops them? Or who acquires them?
14. Do you use proprietary technologies / software within the production process? Who develops them? Or who acquires them?
15. Is specific plant software used? Is it tailor-made or off-the-shelf software?

Steering (overlap with "supply chain – general" below)

16. Which legal entity decides on production volumes / production planning?
17. Which entity is responsible for production forecasting?
18. Which entity steers the overall production process including selection of processing sites?
19. Is a global production supervision in place and if so, at which entity?

Sourcing

20. Please explain how complex and difficult the sourcing process is (mere admin or really strategic / critical)?
21. What are important raw products / intermediate products / supplies / inputs that are needed for this processing?
22. How is the sourcing process structured and which legal entities are involved incl. price negotiations, supplier selection and contracting?
23. Please explain available hedging procedures and outline which legal entity is involved in hedging in which nature
24. What factors affect the sourcing prices such as time, volume, quality, port, etc.?
25. Is a trading strategy for sourcing available and what is covered by that strategy?

Risks

26. Which entity bears the cost of not successful production / over-production?
27. Are agreements in place that require / guarantee a certain production volume?
28. Which social / environmental standards need to be fulfilled and who manages them?
29. Are insurances against those risks concluded? Which entity covers the insurance cost? Which other measures are taken to protect risk and how is this done incl. who decides on the measures?

<u>Supply Chain Management</u>

General

1. Please explain the supply chain management within your group.
2. What are the critical factors within the supply chain management?
3. Who brings together demand planning, production scheduling and inventory management / replenishment? Is software used?

4. Please explain the forecasting process.

Packaging & Labeling

5. Please explain the packaging process. Who decides on quantity / bulk packaging?
6. Is labeling needed and who ensures alignment with legal standards?

Warehousing

7. Are in-house or third-party warehouses used and at which point in the supply-chain? If third party, who selects and contracts the warehouse providers?
8. Please explain the inventory management and involved legal entities.
9. Is a separate warehouse for sourced products available? If so, who manages the warehouse?

Logistics

10. Who decides on transport, selects and contracts with logistic providers (shipping companies, transport company)?
11. Who ensures timely delivery and is liable for that?
12. Please explain the method of physical transport both within the group but also on the sourcing and customer end.
13. How far are freight rates hedged and who decides on that strategy?

Risks

14. Please explain the relevant supply chain / logistics / transport risk?
15. Who bears the risk of obsolescence / faulty products?
16. Are insurances against those risks concluded? Which entity covers the insurance cost? Which other measures are taken to protect risk and how is this done incl. who decides on the measures?

<u>Sales & Marketing</u>

Sales

1. Please explain the end-to-end sales and marketing process.
2. Which legal entity decides on sales strategy including regional presence?
3. Who decides on market segments and typical customers?
4. Which entity decides on distribution channels?
5. Which market factors (such as region and product quality) affect the price for third party customers?
6. Please explain the demand planning / sales forecast process and the link to production and supply chain (see similar question under supply chain and production).
7. Please explain the customer structure considering local and global customers.
8. Please explain the relevance of global key account management.
9. Please explain the sales process including alignment with the customers to ensure tailor-made products.
10. Please explain the pricing process including Incoterms and payment terms and other financing conditions towards third party customers. Which legal entity has the final say on pricing / price lists?
11. Which legal entity negotiates and concludes the contracts with customers?
12. Please explain the order processing incl. acceptance.

13. Please explain the invoicing process towards third party customers including cash collection.
14. Please explain the overall trading strategy including forecasts and data analytics.
15. What are critical sales success factors such as speed / responsiveness of product delivery, responsiveness to customer needs/ specifications, availability of trade / financing terms, salesperson / relationship.

Marketing

16. Please explain the relevance of branding within your group?
17. Please provide a list of protected trademarks / brands including the legal entities.
18. Who takes decisions on branding, brand protection and respective funding?
19. What is the perception of final customers of your brand? Please quantify an expected brand-premium.
20. Which relevance does your brand have for B2B business?

Risk

21. Which entity has the cost of a customer not paying, i.e. who bears the credit default risk?
22. Which entity is affected by price volatility on both buy and sell sides?
23. How is the overall market risk managed?

Furthermore, the following non-exhaustive list of documents might be requested to further assess the functional and risk profile.

<u>General Documents</u>
Registered patents / trademarks
Intercompany contracts
Financial data+
Organizational chart
Internal guidelines (e.g. production, quality, sales)
Annual marketing and R&D spending
Group risk policy / internal risk reporting
Job descriptions
Personal KPIs
(External) brand valuations
Press releases