Paper for first consideration from the Transfer Pricing Subcommittee

Transfer Pricing and Agricultural Products

Table Of Contents

1. Executive summary

This paper was prepared by the UN Subcommittee on Transfer Pricing in response to the need, often expressed by developing countries, for practical guidance 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 technical guidance on this topic as a practical and concrete supplement to the United Nations Practical Manual on Transfer Pricing for Developing Countries ("the UN TP Manual") (2021).

The guidance in 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 report provides an overview of the two industries, discussing their 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 practical case studies designed to illustrate these issues. As much as possible, cases are developed to meet the needs and fit the particularities of developing countries.

The analysis contained in this document may not reflect particularities specific to all countries, but instead takes a systematic approach by describing 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 report is based on, and should be read in conjunction with, the UN TP Manual and refers to it throughout.

Appendix 1 includes a list of abbreviations used in this report

2. Introduction

2.1. Preliminary remarks

The aim of this report is to provide specialized guidance focused on transfer pricing in the agricultural industry.

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] Agricultural production covers a broad range of activities, such as seed development, breeding, cultivation, planting, harvesting, and composting.

This report focuses on two agricultural industries: coffee and soybeans. Stylized overviews of the two industries and their global value chains (GVC) are provided. 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.

2.2. Transfer pricing issues in the agricultural products industry

By examining the global value chain in two different but important agricultural industries, the report aims to highlight many of the global and local challenges faced by tax administrations when pricing cross-border transactions involving associated enterprises in the agriculture industry.

The involvement of multinationals in an industry's global value chain varies from product to product and from country to country, and value creation is affected by the technology used in different production processes. This guidance will discuss business value drivers in the agriculture industry in the MNEs context, particularly as they may affect developing countries. This will include, amongst others, technology development, marketing intangibles, group synergies, cost savings, and hub structures. This guidance will also discuss why it is important to delineate the way companies within an MNE group add value, and whether and how actual DAEMPE functions performed should be assessed by tax administrations.

The production of agricultural products entails activity segments (e.g., harvesting, freezing, distillation, blending, bioplastic production, animal feeding, and distribution) that can involve intensive R&D and marketing activities. Environmental requirements also have an increasing impact on both production costs and reputational risks for agricultural producers, and may necessitate local R&D functions. Financial operations can also be of material importance since foreign trade in commodities and some specialty products (e.g., malt) relies mostly on financial marketplaces (e.g., hedging activities). Technology development is one of the most important value drivers in primary production activities, covering many issues from seed adaptation to various climates, variety breeding, herbicides, fish shoal surveillance, and precise fertilization, among others.

[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

The report also seeks to provide guidance on practical issues relating to transaction delineation, comparability analysis, quoted pricing, and the application of transfer pricing methods to the agricultural industry through the use of industry-related transfer pricing examples. Each example examines a variety of common transfer pricing issues for a specific agricultural product from a developing country perspective.

2.3. Motivation for selection of agricultural products and the focus on coffee and soybean

The global production value of agricultural products increased from around 1.5 USD quintillion in 2000 to 4.2 USD quintillion in 2021, according to the database of the Food and Agricultural Organization (FAO) of the United Nations. As Tables 1 and 2 in Appendix 2 show, 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% of global production value over two decades.[2] For some economies such as Brazil and Argentina, soybean production ranks second after meat with a share of 20% to 25% 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%. For several countries, coffee ranks among their top 10 agricultural products since coffee is grown in and exported from many developing countries.

Data on production values do not capture the importance of international trade to a country since local production may be consumed within the country. Nor does production capture the role of GVCs within international trade. Trading data by UN Comtrade[3] 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. As shown in Table 3 in Appendix 2, an analysis of GVC participation data by region shows that, depending on the region, the GVC participation rate for agricultural products and for food and beverages ranges from 30% to 35% in 2022.[4] The data show that agricultural products are affected by trade and a high portion of country-specific value added. Assuming that part of that takes place within MNEs either cross-country or within the same country, the transfer pricing question of how to properly price transactions between associated enterprises is of high relevance.

Based on this analysis, it was concluded that transfer pricing guidance for those two products as examples within the agricultural sector would be useful. Additional analysis for other industries may be valuable for future work.

[2] See Appendix 2.
[3] United Nations. UN Comtrade Database. Available from https://comtradeplus.un.org/
[4] 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.

3. Transfer pricing analysis for agricultural products

This chapter outlines the key steps in transfer pricing analysis, which should be applied to the agricultural industry in general, as based on the UN TP Manual. It provides general guidance applicable to the agricultural industry.

3.1. Overview of transfer pricing analysis

The UN TP Manual recommends that transfer pricing professionals follow a multi-step transfer pricing analysis that is based on establishing comparability, based on the facts and circumstances, between: (i) the controlled party and its transactions; and (ii) comparable uncontrolled parties and their transactions. This comparability analysis should be used in the selection of the most appropriate transfer pricing method and in applying that method to arrive at an arm's length price or financial indicator (i.e., the arm's length result).[5]

The analysis includes two "distinct but related analytical processes" (see also Box 1 below):

1. Developing an understanding of the accurately delineated controlled 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.
2. 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").

Box 1: Steps in a transfer pricing analysis

The steps in a transfer pricing analysis (see UN TP Manual, section 3.2) are the following:

- Understanding the economically significant characteristics of the industry, taxpayer's business and controlled transactions, which involves:
    - Gathering basic information about the taxpayer;
    - Identifying and accurately delineating the controlled transaction; and

[5] Section 3.1. of UN (2021). Practical Manual on Transfer Pricing for Developing Countries [hereinafter the UN TP Manual]. Available from https://desapublications.un.org/publications/united-nations-practical-manual-transfer-pricing-developing-countries

- Deciding whether transactions should be evaluated separately or on aggregated.

- Examination of comparability factors of the controlled transaction, which includes:
  - Characteristics of the property or service transferred;
  - Contractual terms of the transaction;
  - Functional analysis (FAR analysis) of the controlled transaction;
  - Economic circumstances; and
  - Business strategies of the parties or other circumstances that could affect comparability.

- The remaining steps in a comparability analysis are:
  - Selecting the tested party/parties (if applicable under the most appropriate method selected);
  - Identifying potentially comparable transactions, both internal and external;
  - Comparability adjustments where appropriate;
  - Selection of the most appropriate transfer pricing method;
  - Determination of an arm's length result (or an arm's length range of results); and
  - Documentation of the comparability analysis and monitoring.

A controlled and uncontrolled transaction are regarded as comparable if the economically relevant characteristics of the two transactions and the circumstances surrounding them are sufficiently similar that they provide a reliable measure of an arm's length result. If the controlled and uncontrolled transactions are identical in all respects, they are referred to as exact comparables. In reality, the controlled and uncontrolled transactions are almost never identical so that the transfer pricing professional must establish the degree of comparability between them.

An uncontrolled transaction is considered to be an exact comparable if the differences between the controlled and uncontrolled transactions are minor and do not have a material impact on the arm's length result. If the differences are material (i.e., they do have an impact on the arm's length result) but reasonably reliable adjustments (referred to as "comparability adjustments" can be made to take account of or eliminate the material differences, the uncontrolled transaction is considered to be an exact comparable. However, if material adjustments exist and cannot be reasonably taken into account, the particular uncontrolled transaction is not considered to be a reliable comparable.

In developing countries, comparables may be difficult to find for several reasons. 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. Third, especially in small countries, 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 (e.g., geographic differences), requiring transfer pricing practitioners to use imperfect data or data from foreign markets. The Platform for Collaboration on Tax has a useful toolkit for addressing these difficulties.[6]

Below, we explore the steps in transfer pricing analysis, which should be applied in general to transactions among controlled taxpayers in the agricultural industry.

3.2. Accurate delineation of the transaction

A transfer pricing analysis is fact intensive and relies on collecting information on the economically significant characteristics of the industry, the taxpayer's business, and the controlled transaction or transactions. Basic information on the taxpayer must be gathered and the controlled transaction must be identified and accurately delineated. 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. This should start with an analysis of the contractual terms of the transaction, as described in section 3.3.2. of the UN TP Manual, and should be supplemented with the actual conduct of the parties.

Accurate delineation of a transaction between or among related entities within the agricultural industry differs depending on the business model of the MNE. The broad differentiation is if the MNE is involved in upstream or downstream. Some multinationals are involved in planting and growing and potentially further processing of agricultural products (upstream). This includes transactions such as granting rights to use protected seeds, sales of non-processed and processed products such as green coffee and roasted coffee, but also related activities such as intercompany sourcing of intermediate products such as fertilizers and machinery. Other MNEs start with sourcing of processed or non-processed products and further process them. The products are then packed, potentially labeled / marked and sold to wholesalers, retailers or other industrial customers for further processing (downstream). For more market-oriented MNEs typical transactions are central sourcing, sale of products from production to distribution entities and granting of trademark licenses. Stylized delineated transactions for both upstream and downstream segments are outlined.

[6] 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

3.3. Comparability factors for the controlled transaction

In order to assess the arm´s length price of the delineated transactions the comparability factors should be analyzed as they affect both the method selection and application. The following provides language on typical comparability factors within the agricultural industry:

- Product comparability: Level of processing (raw, intermediate, final); labeled / unlabeled; single / bulk; volume; packed / unpacked; quality level; patented / unprotected crop; region; origin

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

- Economic circumstances: weather; regional insect or fungal infestations; agricultural or environmental policies and standards; subsidies; global market conditions; price controls

- Functions, assets and risks

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

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

    - Risks: development risk; risk of expiring; processing risk; pricing risk; storage risk; market risk; environmental risk / pollution

3.4. Remaining steps with a focus on method selection

The remaining steps in the transfer pricing analysis involve (1) selecting the tested party/parties (if applicable under the most appropriate method selected); (2) identifying potentially comparable transactions, both internal and external; (3) making comparability adjustments where appropriate; (4) selection of the most appropriate transfer pricing method; (5) determination of an arm's length result (or an arm's length range of results); and (6) documentation of the comparability analysis and monitoring. For more advice on these steps see the UN TP Manual.

In the following, further language on the CUP and the TNMM method is provided for the

agricultural industry as those two methods are often applied in practice.

CUP (comparable uncontrolled price) Method

It is considered that the CUP method (CUP) is the most reliable method for commodity transactions when information is available.[7] The supporting information and documentation for the controlled transaction is key to select the most appropriate method and hence to reliably value transactions according to the CUP method.[8]

While the UN TP Manual agrees that the CUP method is the most reliable method for pricing commodity transactions, the lack of information and/or trustworthy comparables may limit the reliability of the CUP method. Assessing prices for the CUP method usually requires less information about the parties than other methods, so the comparability analysis focuses more on the conditions of the transaction rather than the parties. The CUP method for agricultural commodities needs as a comparable a price or set of prices for the same product in the same circumstances.

For many MNEs in the agricultural industry, comparable uncontrolled transactions could 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, it will create an internal comparable that could be used in the comparability analysis. However, not all the conditions of transactions with unrelated parties are similar to those with related parties. Where differences arise regarding contracting volumes, contractual terms, geographical markets, or business strategies - when these differences in facts and circumstances would be relevant to the price of the transaction between unrelated parties and potentially material to the determination of the arm's length price - the internal comparable suffers a loss in reliability.[9] That results either in rejection of that method or the need for adjustments to increase comparability.

As many agricultural commodities have publicly quoted prices, an external CUP is often a reliable measure, especially in the upstream segment. However, differences in contractual terms, location and date should be taken into account when considering using a publicly quoted price as an external CUP. A lack of a reliable documentation evidencing the date of a contract could lead the taxpayer to undertake their transfer pricing analysis using the date of the contract with the most beneficial quoted price. In some countries, local legislation requires that the date of the shipment is used as for determining the date of pricing for transfer pricing purposes, as the date of shipment is certain and can be evidenced by official boarding and customs documentation. An alternative approach would be to require that export contracts (including date of completion) are included in an official register.

[7]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

[8] UN TP Manual, section 4.7.1.2.

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

Sometimes, local rules need to be included in the comparability factor adjustments. For example, if independent party arrangements operate in a particular way (e.g. quoted price at the shipment day), then related party transactions that arrange their contracts differently (e.g. contract day quoted price) may not be appropriate for the comparability analysis.

TNMM (Transactional Net Margin Method)

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).[10] As it compares net margins, it is less sensitive towards differences within the comparability analysis on a transactional level and less sensitive towards different accounting standards than gross margin approaches. It might also be appropriate when one entity employs intangible assets. Within the agricultural industry it is typically applied in case where no internal or external comparable can be identified. This is often the case for further processed products and products which are already packed and labeled such as roasted coffee labeled with a brand or grounded wheat. If both entities employ valuable intangibles within the transaction, TNMM is not appropriate.

The application of the TNMM would entail an analysis of the least complex party, i.e. the entity which is less complex in terms of assumed functions and taken risks. This is called the tested party. A typical example are manufacturing entities e.g. harvesting or further processing agricultural products under the guidance of a central entity. Another example are distribution entities with no or limited influence on pricing, market and product strategy and not bearing market and bad debt risk. Examples are wholesalers of produced agricultural products.

Within the application of the TNMM analysis the functional and risk profile of the tested party needs to be analyzed. Comparable entities in terms of functions and risks need to be identified within a benchmarking study. In order to assess the arm´s length nature of the margin of the tested party, the profitability between the comparables and the tested party is to be assessed (see more details on benchmarking studies in section 3.5 of the UN TP Manual).

The following two chapters provide more characteristics to be considered in a transfer pricing analysis of the coffee and soybean industries, respectively, 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 in each industry.

[10] UN TP Manual, section 4.5.2.

4. Transfer Pricing in the coffee industry

4.1. Introduction

Global production and consumption

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."[11] Coffee is also the world's "most widely traded tropical agricultural commodity".[12] 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.[13] 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).[14]

In 2022, 58% of world coffee production was Coffea Arabica (Arabica coffee); the other 42% 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.

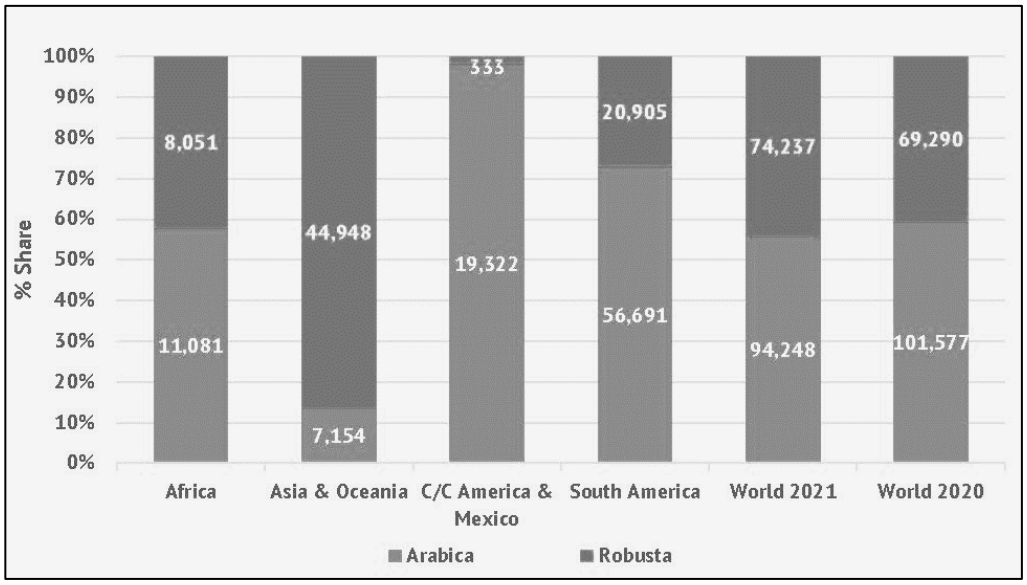
[11] Sachs, J, Cordes, K. Rising, J. Toledano, P. and Maenning, N. (2019). Ensuring Economic Viability and Sustainability of Coffee Production. Available from https://scholarship.law.columbia.edu/sustainable_investment_staffpubs/53

[12] 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.

[13] 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.

[14] 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 [15]
(thousands of 60-kg bags and percent share)



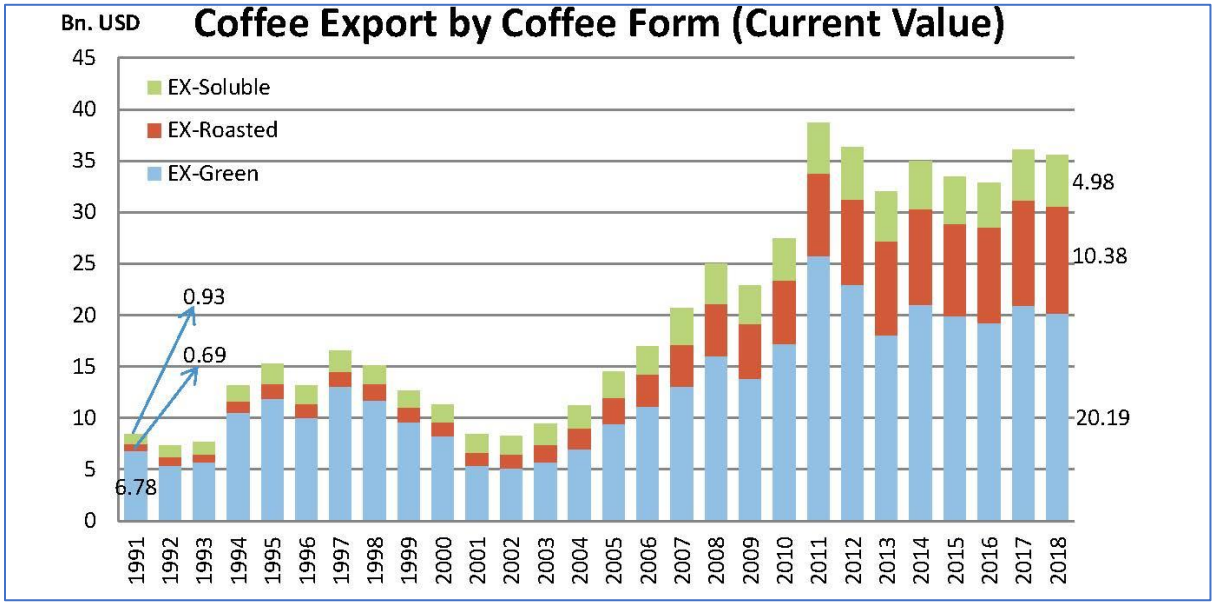
Arabica coffee is grown primarily in Brazil, Colombia, Ethiopia, Honduras, Rwanda, Mexico, Guatemala, El Salvador, Costa Rica, Panama and Peru; Robusta coffee in Vietnam, Brazil, Indonesia, Uganda and India.[16] Arabica coffee is more vulnerable to environmental shocks; i.e., it grows at higher altitudes 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.[17]

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% of world coffee production; another three countries (Colombia, Indonesia and Honduras) accounted for another 25%.[18] Exports from coffee producing countries go primarily to Europe (46%) followed by North America (22%) and Asia and Oceania (22%) in 2020/2021.[19]

[15] 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.
[16] 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
[17] International Coffee Organization. Daily Coffee Prices. ICO Indicator Prices. Available from https://www.ico.org/coffee_prices.asp?section=Statistics
[18] Panhuysen, S. and Pierrot, J. (2020). The Coffee Barometer. Available from https://hivos.org/assets/2021/01/Coffee-Barometer-2020.pdf.
[19] 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.

More than 90% 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[20]



The number of coffee farms worldwide is estimated to be 12.5 million[21] with 84% of the farms smaller than 2 hectares (4.9 acres) and 95% smaller than 5 hectares (12.4 acres); coffee farms larger than 50 hectares (123.6 acres) are rare outside of Central and South America.[22] Smallholder farms, those with less than 5 hectares, produce 70-70% of all coffee, typically either Robusta or Arabica beans.[23]

4.2. 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. At each stage through which coffee moves and is sold, a price is created and a share of income along the coffee chain is generated. In addition to the stages in direct production, there are other stages that add value such as technology

[20] 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/

[21] 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.

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

[23] 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

development, marketing, and distribution. The global value 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.

The production process for green and roasted coffee

Value chain analysis, as developed by Michael Porter,[24] describes the value-adding activities needed to bring a product from inception to final consumption.[25] 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 coffee global value chain has been called "one of the most important commercial value chains worldwide" because it is one of the world's most produced and traded commodities, with more than 60 countries producing coffee.[26] The coffee GVC looks at the revenues and profit generated along the chain that are associated with all the primary and support activities involved in coffee production, distribution and sale.[27] The major sources of value currently lie not in the upstream production and processing of coffee but rather in the downstream activities dominated by MNEs. To explain why this is 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; that is, the steps describe the production process for coffee.[28]

---

[24] Porter, M. (1985). Competitive Advantage: Creating and Sustaining Superior Performance. NY: Free Press.

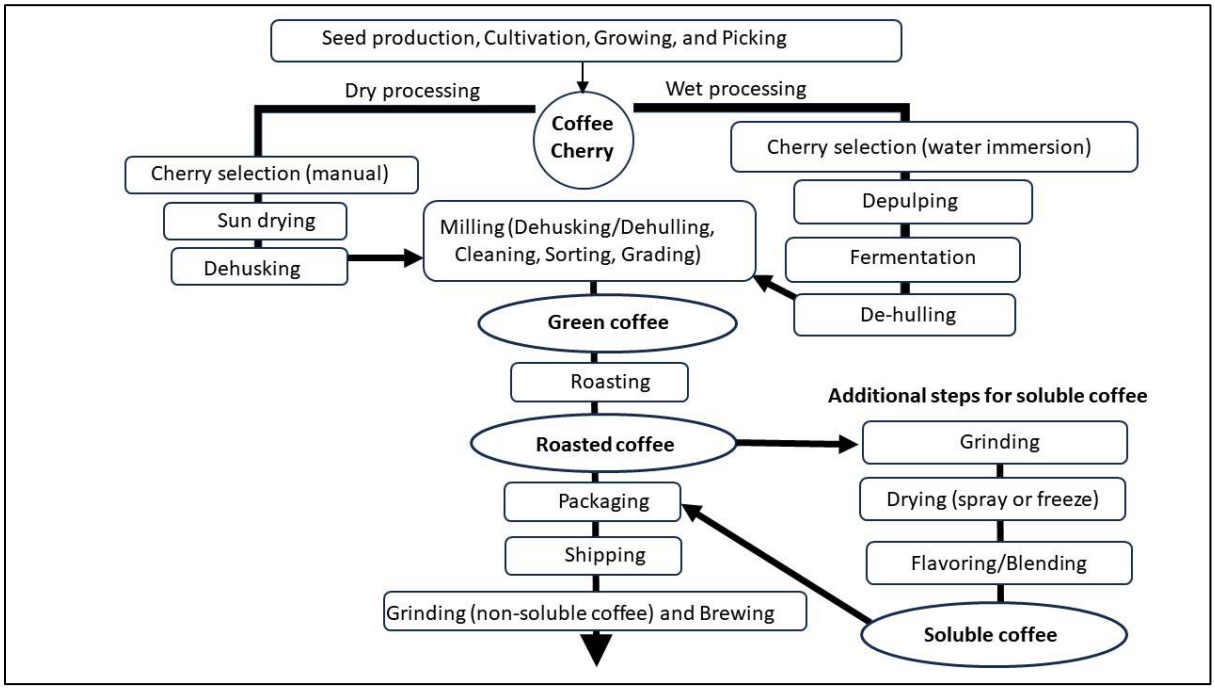
[25] On the value chain, see also UN TP Manual. Chapter 1. pp. 1-27.

[26] 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

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

[28] 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 [29]



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-

[29] 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/

called "emerging processing methods".[30] Dry processing is the older, slower and more labor-intensive 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., odor, flavor) of the green coffee beans.[31]

- **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.

The production process for soluble coffee

About 10 percent of world coffee exports are soluble (a.k.a. instant) coffee.[32] 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).[33] Freeze drying is more expensive but better at conserving quality. The soluble coffee is then packaged for final sale.[34] Soluble coffee can also be flavored or blended with milk powders to create different types of coffee such as cappuccino, mocha coffee and café latte.

Trading Activities

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

---

[30] 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

[31] 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.

[32] 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).

[33] 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

[34] 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.

A coffee futures contract is "a legally binding agreement to buy or sell a specified quantity of a particular commodity for delivery in a specified time in the future."[35] 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.

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.[36] The ICA 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.[37]
After the collapse of the ICA, 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".[38] 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.[39] Both physical trades and trading of coffee futures take place on the C Market.[40] 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.[41] 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

[35] Folmer, B. (Ed.)(2017). The Craft and Science of Coffee. Elsevier.
[36] 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.
[37] Ghoshray, A. and Mohan, S. (2021). Coffee price dynamics: an analysis of the retail-international price margin. European Review of Agricultural Economics.
[38] 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.
[39] 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.
[40] ICE Futures U.S. Coffee "C". Available from https://www.ice.com/publicdocs/ICE_Coffee_Brochure.pdf.
[41] For more information on the ICE exchange see https://www.ice.com/products/15/Coffee-C-Futures.

involve commonly controlled parties, making external comparables more difficult to find. The reasons why the C-price for coffee would need adjustment are explored below in the sections on "Technology development" and "Marketing."

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 harvesting stages has been slow and assistance from governments and international agencies has been necessary to encourage upstream value creation. 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.[42] Coffee farming, like other forms of agricultural production, faces climate and environmental challenges from weather extremes (too much or too little water, sunshine, 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 longer shelf life leads to deterioration in product quality. The size of the average coffee farm is often too low 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.[43]

Creating intellectual property rights (IPR) in the coffee industry has been an important way to create value and incentivize technology development.[44] 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.[45] Coffee producers can receive intellectual property (IP) protection based on geographic

[42] 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

[43] 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.

[44] 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.

[45] 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

indications (GIs) for a specific location, region or country under the TRIPS (Trade-Related Aspects of Intellectual Property Rights) Agreement. TRIPS Article 22.1 states that GIs 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 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). [46] See, for example, the GIs obtained for coffees from Colombia, Indonesia, and Kenya.[47]

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.[48] 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.

Non-profit organizations are also involved 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 sustainability (social, environmental and economic) 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

[46] 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.

[47] 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.

[48] 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.

[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

higher for coffee farmers who belong to cooperatives.[51] Once certified, coffee producers can use certification trademarks (e.g., "fair trade", "rainforest alliance") as marketing and promotion, to differentiate their coffee beans in the eyes of the consumer. See also the earlier discussion on fair trade coffee in section 4.1.2. on sustainability certifications.[52]

Technological change from digitalization and industry 4.0 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]

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.[58] 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

[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.

[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] 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

different categories, strategies, and prices.[59]
Quality-based certifications are an important method of differentiation in addition to the GIs discussed in section 4.2.4. Determining the quality of coffee beans is "labor-intensive and time-consuming"[60], requiring physical analysis by trained panelists using 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.[61] 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.[62]

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.[63] 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).[64] 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.[65]

---

[59] 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/

[60] 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

[61] 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.

[62] 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 at https://sca.coffee/value-assessment

[63] 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.

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

[65] 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.

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:[66]

- 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, soluble coffees, and single-serve coffee capsules. Coffee buyers purchase green coffee beans based on price and coffee 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.[67] 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.

The ownership of production and marketing intangible assets (e.g., patents, industrial designs, trademarks and trade names) is primarily held by actors at the downstream stages of the coffee GVC (coffee exporters and importers, and roasters and soluble coffee manufacturers), located in coffee-importing countries.[68] Over 90 percent of all coffee-

[66] 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

[67] 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*.

[68] 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

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.[69] 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.

4.3. Implications for transfer pricing analysis

Related party transactions in the coffee GVC

Section 3.4 above outlines the transfer pricing methods that are most likely to be applied to related party transactions in the agricultural industry in developing countries. As such, that section is also applicable to coffee. 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 exported and shipped to coffee-consuming countries where the remaining steps (roasting, packaging, shipping, grinding, and brewing) take place.[70]

The small share of roasted coffee bean exports from coffee producing countries can be explained by the lower brand equity of producing country brands, more difficult access to grocery store distribution chains in coffee consuming countries, shorter shelf life of roasted coffee beans, and more expensive packaging techniques. As a result, most coffee roasting takes place closer to consumers.[71]

The trend over the last several decades has been the concentration of market power in

[69] 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

[70] 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).

[71] 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).

MNEs at the trading (export/import) and roasting stages.[72] In 2019, five trading companies[73] handled more than 50% 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% of global coffee exports. At the roasting stage, in 2014, by market share the five largest companies with a combined share of 48% of the world coffee market. Two of them together represented 38% of the market.[74]

Some of the factors that favor shifting the downstream stages of the coffee GVC to consumers are less important for soluble coffee, e.g., the shelf life of soluble coffee is longer than for green beans or roasted coffee. As a result, coffee producing countries with large domestic markets may also have a soluble coffee facility. Slightly more than 30 percent of the world's coffee production is consumed in coffee producing countries[75], 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. Functional upgrading may also be more promising for Robusta than Arabica coffees.[76]

Applicability of the CUP method

Given the differentiated nature of the coffee market, it is may useful to provide more input on the application of the CUP method as it applies in the coffee industry.

The CUP method may be the most appropriate method to value the trading activities of related companies in the coffee industry when comparable uncontrolled prices are available. 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 and the comparables must be reliable.

The C-price on the ICO virtual market is readily available as spot, futures and options

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

[73] 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/

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

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

[76] 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

prices on a daily basis but may or may not provide good external comparables. As discussed in section 4.2, 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 not be useful comparables since the domestic transactions may involve different market conditions and types of coffee.

Prices vary along the coffee GVC so that the related parties, depending on their location along the GVC, and their functions, assets and risks (FAR), are likely to affect the pricing of the controlled transaction. In the coffee industry, prices at the various stages are typically referred to as:[77]

- 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 beans.
- Export FOB (free on board) price: Price paid to exporters/intermediaries selling green beans on international markets.
- Import 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 for green coffee, when the importer and roaster are not the same entity (which is often the case, with hundreds of small roasters in the US alone).
- Wholesale price: Price of roasted beans sold to wholesalers and distributors.
- Retail price: Price of coffee sold by 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 FAR (functions, assets and risks) of the parties. In many, if not most, circumstances other transfer pricing methods may either be more appropriate or the only feasible methods. We explore this issue in the case studies below.

4.4. 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. As such, the guidance is intended to provide ideas for further assessment and consideration. Ultimately, the UN TP Manual is the authoritative source for transfer pricing guidance in the agricultural sector.

Example 1: Transfer pricing of coffee beans: Whether CUP is applicable

[77] 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.

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.". The CUP method would suggest the transfer price should be $2.00 per pound.

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. 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.[78]

Example 2: Transfer pricing of coffee beans: Application of an adjusted CUP

i Facts

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

ROAST CO, located in Country C and another member of the NEST 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 indicator price for mild Robusta, which is an average of the ex-dock

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

New York and Bremen/Hamburg markets in US dollars.[79] The transfer price, set for 2021/2022, was $4.00 USD/kg.

The open market price for Robusta coffee (the C-price on the ICE exchange) is currently around $3.00 USD/kg. The Country C tax authority is concerned that the price that ROAST CO is paying for green coffee beans from TRADE CO is too high and is launching an investigation of the transfer pricing arrangements between TRADE CO and ROAST CO.

ii Analysis

ROAST CO submits a transfer pricing study to Country C's tax authorities that includes delineation of the controlled transaction and a comparability analysis including the global value chain (GVC) and a FAR (functions, assets and risks) analysis. The transfer pricing economist who prepared the study argues that the CUP (comparable uncontrolled price) method is the best method for determining an arm's length price because two arm's length prices can be used as comparables.

The economist argues, however, that the appropriate comparable uncontrolled price is not the open market price of $3.00 USD/kg but rather the price negotiated by independent roasters who have negotiated long-term contracts with coffee exporters. The economist states 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 with a secure source of roasted high-quality Robusta coffee.

The economist proposes that the prices negotiated by two uncontrolled distributors ALPHA and BETA, which are also located in Country C, be used for the CUP method. These distributors import Robusta green beans from Colombia. These 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).

Country C's tax authority investigates the case and remains convinced 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 C'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

[79] 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

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 considers the following possible material factors:

- differences in the country of origin that could affect the quality of the coffee beans, transportation costs and trade taxes;
- differences in the volumes imported by ROAST CO compared with ALPHA and BETA;
- differences in brand names attached to the controlled versus uncontrolled purchases, and whether existence of a branded product could affect the arm's length price;
- differences between the pricing terms (e.g., based on delivered price or FOB factory gate, same or different currencies, hedging) of the controlled and uncontrolled transactions.

The court concludes that the differences in country of origin and volume were not material, and that neither the controlled nor uncontrolled transactions have brand names attached.

However, the tax court judge notes that 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 $USD 4.00/kg and to BETA to $USD 4.10/kg. As a result, the tax court concludes that the transfer price between TRADE CO and ROAST CO was arm's length and finds in favor of the taxpayer.[80]

Example 3: Cost Plus and TNMM applied to the coffee industry

i Facts

MNE Group is a coffee multinational with its parent firm, PAR, located in home country A. MNE group has several foreign affiliates and has set up an international head office (IHO) as a principal structure located in country B, to manage MNE Group's activities outside of its home country. IHO holds the international licensing rights to PAR's IP for which IHO pays royalties to PAR. IHO licenses these trademarks, shop format and corporate identity to related and unrelated coffee shops outside of country A.[81] IHO also negotiates contracts with the shop operators for the delivery of ground coffee. The shop

[80] See UN TP Manual, section 4.2.2 for the application of the CUP method and its requirements and adjustments.
[81] Please note that several producers, especially smaller producers, do not pay a royalty, rather the relevant IP is granted free of charge. Third parties may also negotiate a price bundle with IP granted free of charge which is reflected in a lower price for purchased coffee.

operators, both related and unrelated entities, pay a royalty to IHO for the use of MNE Group's IP, which is 6 percent of their turnover.

TRADECO, a wholly owned affiliate of MNE Group, is also located in country B. TRADECO buys coffee beans for the worldwide MNE 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 the whole MNE 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 the MNE Group and 25 percent on sales to unrelated buyers.

MFG is a coffee roasting house located in country C, which offers a significantly lower corporate income tax (CIT) rate for manufacturing enterprises. MFG is responsible for roasting all of MNE Group's coffee outside of country A. 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 a warehouse. MFG also operates an intermediary distribution network for a variety of non-coffee items such as paper cups, napkins, syrups and equipment, which it sells to related and unrelated coffee shops.

ii Analysis

The related party transactions identified above include:

- Transfer price for coffee beans sold by TRADECO to MFG.
- Transfer price for roasted coffee sold by MFG to related-party coffee shop operators.
- Royalty paid by IHO to PAR for licensed technology and marketing/branding rights.
- Royalty paid by TRADECO to IHO for the licensed IP rights.
- Royalty paid by related-party coffee shop operators to IHO for their licensed IP rights.
- Royalty paid by MFG to IHO for its licensed IP rights.

A comparability analysis based on the global value chain and functional analysis of the MNE Group concluded that:

Example 3.1: Sale of coffee beans by TRADECO

TRADECO purchased the green coffee beans at arm's length at open market prices. TRADECO sold the coffee beans to independent licensees at a higher price than to related parties (cost plus 25% versus cost plus 20%), suggesting that the firm may have mispriced its sales to members of the MNE group. The firm, however, benefitted from the additional bargaining power generated by its large volume of purchases. The question arises therefore as to whether the bulk-buying discount was shared with the related parties but not with

unrelated parties.

The cost plus method was viewed as an appropriate transfer pricing method for compensating TRADECO for its activities. The functions, assets and risks incurred by TRADECO were the same for both its related party and arm's length sales. The transfer pricing professional concluded that the sales to unrelated licensees were sufficiently comparable that they could serve as an internal comparable. Therefore, the Cost Plus Method was accepted as an appropriate method. The question then became the size of the gross markup over costs, given that the markups were different for arm's length and related party sales. The relevant issues were (1) the value of the pooling gain, (2) whether the addition of non-related parties over and above the MNE group added to that gain or not, and (3) the extent to which any of the gain belonged to the purchaser (TRADECO) or must all be shared with all members of the pool or only the related party members. These were fact-intensive issues that warranted further investigation.[82]

Example 3.2: Sale of coffee beans and ancillary activities by MFG to coffee shop operators

MFG licenses its IP from IHO and pays a royalty to IHO for the IP. MFG charges the same prices for roasted coffee and for other MNE Group products (e.g., bottled and canned coffee and other non-coffee items) 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 were to associated entities in MNE Group), its COGS was 60 million euros and operating expenses 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 and for other MNE Group 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., intermediary distributor of non-coffee items used in the coffee shops). The economist decided to unbundle the firm's activities into three different activities: coffee roasting, supply chain, and non-coffee distribution functions. After performing a functional analysis, the economist concluded that none of the activities performed by MFG were entrepreneurial and all were potentially benchmarkable functions.

The economist therefore proposed that the TNMM be used to determine the appropriate arm's length return to MFG for its activities. Using local databases for comparable entities (unrelated parties in the same 4-digit industry code; making adjustments for inventory, etc.)

[82] See UN TP Manual, section 5.14.2.3 for more details on appropriate remuneration for purchasing vs. sourcing companies. The UN TP Manual outlines that a cost-based TNMM is commonly used for purchasing functions.

the economist's estimate for the coffee roasting activity broke down the average costs and profits per pound of coffee as the following[83]: average cost $8.73; average sales price $9.40; net profit after tax $.044 for a net return on sales of 7.1%. 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[84], suggesting that the firm might be shifting profits into the lower taxed country via transfer pricing – not of the end sale products but rather by paying too little royalties to IHO. Another possible explanation could be that MFG was taking on entrepreneurial roles and responsibilities within the MNE group that warranted a higher rate of return.

Example 3.3. Transfer pricing of intangible assets

Royalties are being paid to IHO by TRADECO, MFG and the related-party shop operators. IHO also pays royalties to PAR. The rights being licensed by IHO include IPR (production intangibles) used by each related party and marketing intangibles (brand name, trademarks).

The unusually large profits accumulating in MFG suggest that the MNE Group may have been shifting profits into the lower tax location and also avoiding withholding taxes that would have been due on the larger royalty payments to IHO. A further investigation is warranted.

Example 4: Application of the Profit Split Method to coffee bean 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.

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 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, and available more quickly than from other coffee processors.

[83] 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/

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

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 and blending 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. However, the branding does feature the origin and high-quality of the coffee beans, which are due to 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.

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 reliable method. Adjustments must be made for material differences in, for example, the quality of the beans, time to market, and transportation costs. 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. The residual profit split method (RPSM) 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 a full-fledged distributor, the allocation key could be based on their capitalized amortized spending on R&D and marketing, for example. In very high-quality coffee, however, determining an appropriate

allocation key may be difficult to carry out in practice.[85]

Example 5: Transfer pricing of soluble coffee exports

i Facts

The facts in Example 5 are similar to those in Example 4, with the exception that Firm A manufactures soluble coffee in Country A. The coffee is sold locally under its own brand name and has a large share of the local market due to its premium branding and high quality. The 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 geographic region A. Firm B is responsible for setting up and managing the distribution network, and developing the trade name and trademark recognition in country A 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 reliable 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.[86]

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 residual profit split method (RPSM) 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 the assets of the two parties (e.g., the technological and marketing intangibles).

Example 6: Distribution, licensing and financing issues involving coffee transactions

i Facts

[85] 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.
[86] See UN TP Manual, section 4.2.2 for the application of the CUP method and its requirements and adjustments.

C Co, a company resident in country X, purchases green coffee beans from producers and intermediaries in Country X and sells the coffee beans to its related party S Co, a company resident in country S, a low tax jurisdiction. S Co sells the beans to third parties.

There is only one season in Country X. However, demand for coffee beans occurs throughout the year. For this reason, C Co purchases the coffee beans at the appropriate time and after processing the coffee, it stores the coffee so as to be able to meet the monthly sales orders from S Co.

S Co provides financing to C Co to enable it to fund the purchase of the beans and then the sales are credited against the outstanding finance. S Co provides interest-free financing to C Co.

ii Analysis

Following fact-finding and analysis of further information, transfer pricing auditors in country X established that:

- C Co sells nearly 95% of their coffee beans to S Co. with the balance being sold to unrelated parties.
- C Co is taking significant inventory risk associated with the coffee beans.
- C Co assumes and controls market risk by amongst other things purchasing high quality coffee and ensuring high quality processing and prompt availability of the product as per the customer specifications.
- C Co manages and controls economically significant risk relating to product liability but this risk is contractually assumed by S Co.
- C Co assumes significant price risk as it purchases the coffee beans once a year but then sells on a monthly basis.
- C Co is licensed as a coffee buyer in Country X. Further information indicates that there are stringent licensing requirements including a requirement for a certain level of investment in plant and machinery and that the licensees must be companies resident in country X. Only a licensee can export coffee beans from Country X.

Following the transfer pricing analysis of the available information, the audit team concluded that it was critical to obtain the actual third-party sales by S Co. through exchange of information under the relevant article of the tax treaty between Country X and Country S.

The audit team took this approach as they could not establish a reliable Comparable Uncontrolled Price (CUP) for the controlled transaction and because the taxpayer and S Co did not provide information in respect of end customer sales.

Following the receipt of the requested information from the Competent Authority of Country Y, the audit team selected the Resale Price Method as the most appropriate transfer

pricing method and remunerated S Co for its functional contributions leading to a significant transfer pricing adjustment on the sales price of the green coffee beans. New tax assessments were issued on this basis but the taxpayer objected to the assessment.

The taxpayer (C Co) had two main objections, that: 1) the coffee buying license was not a valuable intangible; 2) the prices set by Country X Coffee Regulator are a quoted price under section 3.5.2.15 of the UN Practical Manual on Transfer Pricing for Developing Countries and therefore are a CUP.

The audit team sustained their argument that the coffee license was a valuable intangible based on the information obtained about the licensing requirements in Country X.

With regards to the quoted prices established by the Country X Coffee Regulator, the audit team established that such prices were a minimum export price as opposed to being the actual prices of independent party transactions as envisaged in section 3.5.2.15 of the UN Practical Manual on Transfer Pricing. Additionally, the sales records of C Co showed higher prices of coffee as compared to the regulator quoted price.

As indicated above, the following are the potential areas of tax disputes:

1) Application of CUP based on quoted prices. The transfer pricing professional should consider whether the quoted price needs to reflect actual transactions between independent parties in order for such prices to be reliable for a CUP analysis. Another possible question is whether the industry regulator's minimum price can be relied upon as a quoted price.
2) Availability of intangible assets in transactions involving agricultural products. Intangible assets are key value drivers and whenever they exist in a controlled transaction need to be taken into account in determination of the arm's length price for the transfer pricing outcomes to be aligned with value creation.
3) The treatment of the pre-financing arrangement between a buyer and seller of an agricultural product may also be a transfer pricing topic. In this case, S Co. provided pre-financing for the purchase of green coffee beans. The transfer pricing professional should consider whether the pre-financing was also made available to unrelated parties under the same terms and conditions. In addition, the transaction could be considered as a separate intra-group financial transaction or as compensation for exclusive access to high quality coffee by S Co.

Example 7: Hedging of coffee

i Facts

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 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 prices 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 constellations 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 constellation, the spot price is higher than the future price. Depending on the structure, arbitrage opportunities arise but also different strategies. If hedging is 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, taking into account the forward price curve. If the same quality is to be maintained in mixed processes, planning taking into account the seasons and the market situation.

With a successful hedging strategy, cost advantages on the purchasing side can be achieved. A successful hedging strategy leads to higher sales on the selling side. Typical tasks of traders in the hedging area or the treasury department are e.g.:

- Development of the hedging strategy with the use of forward 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

ii Analysis

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?

5. Transfer pricing in the soybean industry

5.1. 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, the soybean case also presents 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[87]) 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 from the basis of several products, mainly animal feed and human food, but can also be used for energy production. Below, we detail the type of products obtained from soy and their markets as a starting point for analyzing the soybean GVC.

Main outputs

Unprocessed whole soya beans are referred to as soyabean grains. Soyabean by-products are products derived from soyabeans following industrial processes. The two primary by-products of soybean grain are pellet (used for animal feed) and oil. From every soybean grain it is possible to obtain both 77 to 78% pellet (meal) and 18.5 to 19% % oil at the same time. The countries which are the largest producers of soybean grain, usually also process the soyabean grain to obtain its by–products.[88]

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

[88] 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,

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 pellets, 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 data in figure 2 below.

i Feed

It is estimated that animal feed (derived from soybeans) provides one-third of the protein consumed by the human population.[89] Animal feed derived from soyabean is typically in pellet form (after oilseed industrialization), with a small amount comprising soyabeans which are fed directly to livestock. The annual sales of the feed market are over US$ 400 billion globally.[90] 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% 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% used to feed dairy producing animals, beef, household pets and other animals.[91] In the United States (2013), for example, 70% of domestic soybean production was used for animal feed, with poultry having the largest share, followed by hogs, dairy producing animals, beef and aquaculture.[92]

ii Food

Only 20% of soybean production is used in the production of human food for example to produce . cooking oil, tofu or soy milk.[93]

iii Energy

Soybeans are used to produce fuel. The importance of fuel as a use for soyabeans varies

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.

[89] KPM. (nd). Feed and Feed Ingredients. Available from Feed & Feed Ingredients | KPM Analytics

[90] IFIF. Global Feed Statistics. Available from https://ifif.org/global-feed/statistics/

[91] 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

[92] 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

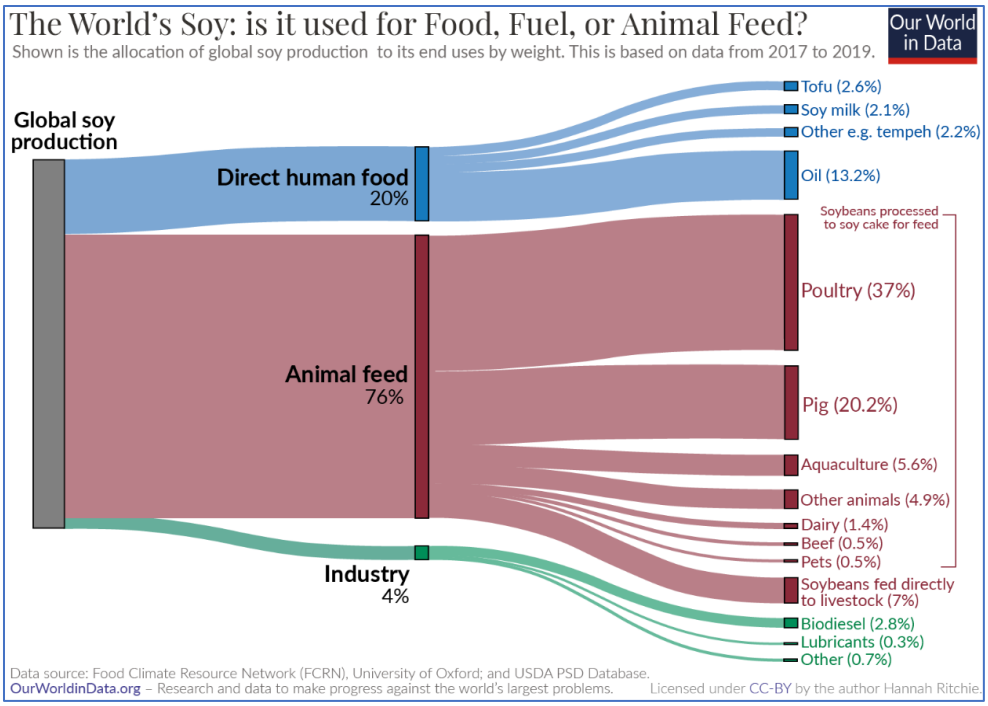
[93] Ritchie, H. and Roser, M. (2021). Forests and Deforestation. Available from https://ourworldindata.org/forests-and-deforestation. Ritchie, H. and Roser, M. (2021). Soy. Available from https://ourworldindata.org/soy

between countries. In the United States, fuel accounts for 5% of the U.S. soybean crop.[94] At the world level, 2.8% of soybean production is used as fuel (in the form of biodiesel).[95] 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 soyabeans of 10.2 million tons in 2022/2023, approximately 4 million tons (approx. 39%) were destined to be biodiesel.

iv Other products

Other products such a as lubricants, industrial cleansers, and non-toxic soy crayons (for children) account for 1% of the soybean production. Figure 4 below depicts the allocation of global soyabean 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.

Figure 4: Soybean grain destination[96]



Major markets for soybean grain and primary by-products

[94] 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

[95] 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

[96] 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

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 feed (as pellets), oil, and other by-products such as chemical products.

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 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 affect the final price of the soybean grain.

i Grain

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 USD, including 78,5 billion in grain (), 17,1 billion in soybean oil and 29,4 billion in soybean meal.[97] This is in comparison to the world's trading value of cereals of 159 billion USD in 2021.

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

[97] 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. OECD. Soybeans. Available from https://oec.world/en/profile/hs/soybeans

Table 4: Soybean grain – Production and domestic supply (million tons), 2022[98]

COUNTRY	PRODUCTION	DOMESTIC SUPPLY	DS/ PRODUCTION
Brazil	155	53	0,342
United States	116	60	0,517
Argentina	27[99]	31,5	1,167
China	20	91	4,550
India	12	9,9	0,825
Paraguay	8,8	3	0,341
Canada	6,4	N/D	

ii Pellet (animal feed)

As mentioned above, pellet (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 supply for top feed producers in 2022.

Table 5: Soybean feed– Production and domestic supply (million tons), 2022[100]

COUNTRY	PRODUCTION	DOMESTIC SUPPLY	DS/ PRODUCTION
China	72	71,9	0,998611111
United States	47,5	35,6	0,749
Brazil	41,2	20	0,485
Argentina	24,5	3,5	0,143
India	7,9	6,7	0,848
EU	11,5	27	2,348
Mexico	5,1	6,9	1,353

iii 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 supply for the top oil producers in 2022.

[98] Domestic Supply equals production plus imports minus exports. US Department of Agriculture.
[99] Outlier due to a severe drought. Normally it is between 45 and 50 million tons per year.
[100] Domestic Supply equals production plus imports minus exports. US Department of Agriculture.

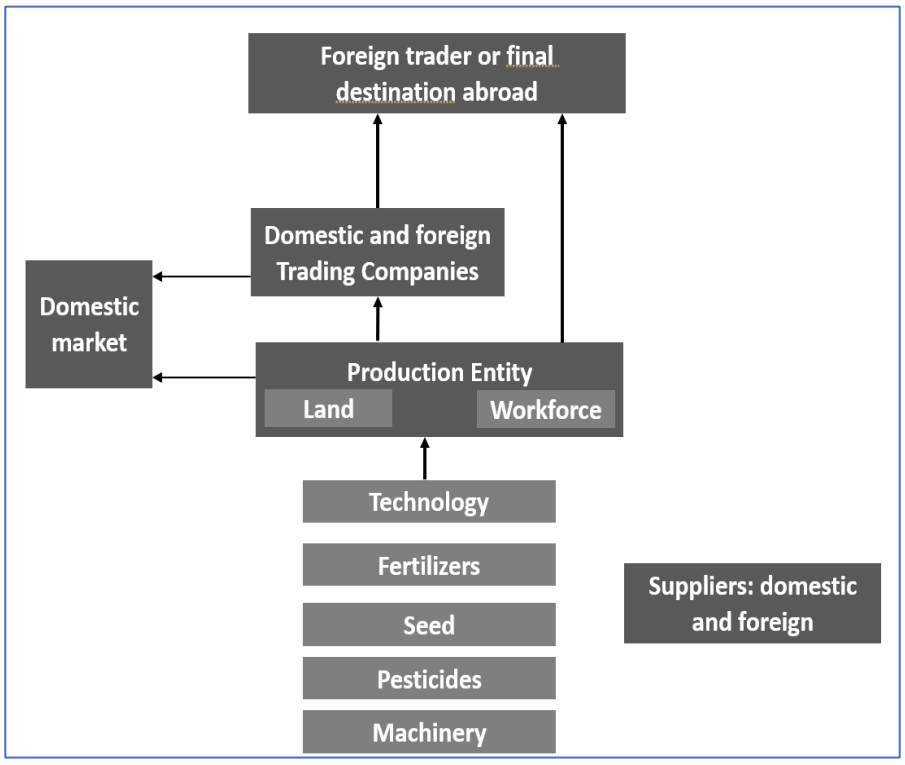
Table 6: Soybean oil– Production and domestic supply (million tons), 2022[101]

COUNTRY	PRODUCTION	DOMESTIC SUPPLY	DS/ PRODUCTION
Brazil	10,2	7,9	0,774509804
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

5.2. The global value chain of the soybean industry

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 affect the final price of the soybean grain.

Figure 5: Overview of soybean grain production



[101] Domestic Supply equals production plus imports minus exports**.** US Department of Agriculture.

The history of soybean is one of vertical integration in the major markets. 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 over the years turning vertical integration into high levels of profitability. So even with market power on sourcing, it does not translate into power and pricing downstream. Overall, based on the industry characteristics, transfer pricing within the soybean industry could leverage its commodity and hyper competitive nature and generally rely on reference pricing, secondary models, survey data, etc., 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) seed production, which involves research and development of variety rights; (ii) soybean cultivation; (iii) storage and trading; (iv) commoditization; and (iv) processing.

Seed production - Research and development of variety rights

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.[102] Some regions such as Sub-Sarah Africa have their own research institutes and private initiatives to develop new varieties which underpin the relevance of new varieties and related research.[103] Regional efforts are needed to cope with different climates such as in Sub Sarah Africa with tropical and subtropical climate. An article published by the USDA states that genetically engineered seed was planted on almost all soybean farms from at least 2006 onward. As a consequence, per-acre production cost increased. Likewise, the yield increased with a total expanded productivity.[104] As a consequence of the need for new varieties, MNEs invest massively in new varieties via R&D activities. They are a critical success factor for MNEs.

Research includes, above all, research into new, improved seed varieties. The development

[102] 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.

[103] 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.

[104] 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/

of robust varieties can, for example, reduce weather risks in production and thus 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).

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, fertilizer and favorable weather. 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 technology that have an environmental impact due to the toxicity of some pesticides. Pesticides can also affect the quality of the soybean produced. Soybeans grow better in certain soil that is 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 transaction between both related and unrelated parties, and sometimes involve cross-border transactions. For example, seeds and other input may be purchased from related parties situated in another country.

Land tenure and configuration varies between large soybean producing countries, with some jurisdictions dominated by a small number of large-scale producers owning large land areas, and other jurisdictions comprised of a larger number of producers owning smaller land units.[105]

Storage and trading

i **Storage**

Storage at the first stage is usually provided by the producer himself or by small

[105] 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.

cooperatives. This 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. 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.

Some of the 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.

ii **Trading**

Once the soybeans are produced and processed, they are stored and traded either domestically or exported.

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.

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

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

In the case of soybean, the selling of the soyabean grain is very closely related to the by-products industry. This means that most of the crop has to be acquired by oil and pellet producers no matter whether the purchase is in the local or international market and from related or unrelated parties. .–Countries may have distinct activities, exporting the soybean grain itself or the byproducts. It depends on how developed the industry of each country is, adding more value 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 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.

Commoditization and Pricing

In soyabean production, soyabean grain and by products are usually sold as commodities. Commoditization is standardization of goods in which a good does not have substantial differences in quality. "[E]ach 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"[106].

Commoditization does recognize differences between products. For instance, quality issues may arise e.g., when comparing the soybean from one region to another. Further it is possible to have many differences on the trading conditions from one country to another (i.e., export banning, regulatory restrictions, etc.). All these circumstances affect the price for the commodity. However, the range of differentiation is much lower than for other products, including coffee.

There are several defining characteristics for commodities. First, mass production is a key element. Second, standardization means that buyers are able to obtain exactly the same product from exchange markets. These exchange markets may operate alongside financial markets including futures markets.

The spot price reflects the cost of purchasing the commodity on an exchange market to be traded immediately or in a very short time. The price for a future contract involves the spot price plus the cost of storage through the time, and it also reflects expectations on future supply and demand of the commodity, and the rate of return for the commodity holder (i.e., the financial cost of "not having" the money).

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

The shipping and insurance activity is directly related to the export conditions. As a consequence, Incoterms[107] 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.[108] It is also important to note that cereals and oilseeds are available in both hemispheres, so that the market players buy and sell the goods throughout the year.

---

[106] 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.

[107] 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/

[108] This is completely different from some other commodity export activities, such as oil and gas exports. Whilst the product is commoditized, transportation and insurance activities can lead to price variations.

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.

5.3. Implications for transfer pricing analysis

Section 3.4 above outlines the transfer pricing methods that are most likely to be applied to related party transactions in the agricultural industry in developing countries. As such, that section is also applicable to soybeans. It may be useful, however, to provide additional guidance on the application of the CUP method as it applies in the soybean industry.

The CUP method is often the most appropriate method to value the trading activities of related companies in the soybean industry when comparable uncontrolled prices are available. As outlined in section 4.2.2. of the UN TP Manual, the use of 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 is needed. For further explanation, see section **Error! Reference source not found.** in this paper.

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

Domestic market prices are not useful comparable as these transactions involve different conditions and utilization of the traded goods. Further, in many cases producers, inland traders and exporters usually takes 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 Chicago Board of Trade (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, as it is a reference and, sometimes, it is not always what causes the greatest fluctuations in this price in the market internal. The other two components in the formation of the local price are: exchange rate and premium at national ports of shipment.

In some cases, in the absence of a price or index for valuing operations 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 public 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) publishes 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 companies engaged in commodity trade. Formerly, the Argentine Tax Administration have cooperated with the Buenos Aires Grain Exchange to refine and improve price accuracy.

Issued on a daily basis, whenever relevant quotations are available, the values corresponding to the main agricultural products destined for export, both for the current month and for the following months. The price comes from information submitted by Grain Exchange associated companies and does not necessarily mean that selling transactions take place but informs the pulse of the local export market as perceived by the reporting trader. Associated companies may be Trading companies or 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.

Some countries also adjust the pricing of commodities based on a functional analysis of traders (i.e., whether the trader performs merely intermediation functions or other activities) in order to address the "correct" remuneration for these functions. This usually leads to a fact finding by the tax authority in terms of a "substance" and "financial capacity" evaluation.

When the so called "sixth method" was applied in Argentina, exporters were able to opt out by complying with a strict rule of information about the controlled intermediary. In that sense, it was necessary to prove that their activities were neither mostly passive (i.e., passive revenue from assets), nor from purchasing from or selling to Argentina, nor to related party companies around the world, plus some strict substance and non-offshore activities requirements. Even when the "normal" CUP method has been reinstalled for commodity export transactions, the local taxpayer is entitled to keep a special functional analysis of the intermediary entity and an explanation of how its functions, assets and risks

fund its remuneration at arm's length.

5.4. 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 arise in practice. As such, it must not be seen as final guidance but should provide ideas for further assessment and consideration. Reference must also be made to the UN TP Manual.

Example 1: TNMM for manufacturing of soybean

i Facts

A local entity is harvesting soybean and is classified as a routine entity. The entity sells products to related parties globally. The taxpayer performs a detailed transfer pricing analysis that results in TNMM being selected as the most appropriate method with the local entity selected as the tested party. 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.[109] "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[110], 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.

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

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

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).[111]

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.

In order to assess the appropriate industry code, it should be determined whether the business model for soybeans matches other mentioned seeds / crop. 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 comparable an approach often seen is to work with more industry codes and refining the comparables through a manual screening of their functional profiles.

Example 2: TNMM for distribution of soybean

i Facts

Company A is resident in country A where it is selling soybean to third party customers. The entity sources the products from the central entrepreneur, company E, of the group situated in country E. The customers of company A use the soybean for industrial use, for further processing as animal feed, and for food production and have different requirements in terms of volumes. Even though the customers differ, they all use the soybean as input for further processing / production; they are not willing to pay a price premium for soybeans.

Company A conducts a detailed transfer pricing analysis that results in TNMM being selected as the most appropriate method for company A. 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 total costs and is wondering which industry code to consider.

[111] "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: **soya beans**, groundnuts, castor bean, linseed, mustard seed, niger seed, rapeseed, safflower seed, sesame seed, sunflower seed, other oil seeds." (emphasis added).

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 of grains and seeds, wholesale of oleaginous fruits, wholesale of unmanufactured tobacco, wholesale of 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, market structure and final customer (closer to supermarkets). As other example, selling livestock and selling beans incl. soybean seems to differ in terms of storing and customers 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 comparables selling soybeans or other suitable agricultural products is that the unrelated wholesalers often also sell land machine, fertilizers, promotion material, lubricants and other items needed by its customers in the agricultural industry. Segregated financials are hardly available. This is especially the case if the search focusses on seeds / oilseeds and does not consider fruits and vegetables such as pineapple. In order to assess the acceptance of such comparables other ratios such as ROI or level of inventory might be considered as cross-check.

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

i Facts

Company A is tax resident in country A and is engaged in the production of soybeans. Based on a detailed transfer pricing analysis, company A is classified as a routine entity. 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 profit level indicator. The targeted mark-up based on actual cost for 2022 is 5%. The mark-up was determined based on a benchmarking study, which showed an interquartile range of 3% to 6% as a mark-tup over total actual cost, considering

financial data for 2019 to 2021.

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. As a consequence, the entity's actual markup over actual costs was 2%. The parties agreed within the contract on a so-called year-end adjustment ensuring a margin within the target range of 3% to 6% mark-up on actual cost, i.e. in case the margin 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. Third parties acting as routine entities 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 a remuneration within the interquartile range and at least the lower margin. In order to ensure that their remuneration doesn't exceed the upper margin of the interquartile range a third party production entity would likely request an adjustment mechanism also for profits above the upper quartile.

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

As all this was considered in the case at hand within the intercompany agreement, the year-end-adjustment complies with the arm´s length principle.

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

i Facts

SBCo company, resident in country A, purchases soybean in the domestic market through a future contract correlated with the CBOT (Chicago Board of Trade) in order to resell it to its subsidiary SB2Co resident in country B, a low tax jurisdiction. SB2Co sells the grains bought from SBCo to unrelated third parties in country B. The contract price between SBCo and SB2Co was based on the future for 15th March of next year. However, at the

time of sale, it was determined that the ideal price would be based on the 10th day of March. SBCo also engages in currency hedging related to this transaction, incurring costs related to that. 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.[112] After shipment of the soybean cargo, SBCo and SB2Co decide via email to change the purchase date, i.e. the day of shipment in the contract. Then, the traders determined that the export price would be based on the CBOT price for the 10th day of March, and the invoice was adjusted to this price set. In this context, how should the tax authorities from country A deal with this situation regarding transfer pricing?

ii Analysis

By law, SBCo company is required to demonstrate that the transaction prices between related parties reflect the price that would have been agreed upon by independent companies in a comparable situation, thereby adhering to the arm's length principle. The informal change of the purchase date for soybeans 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 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 term 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 company 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) showing that the prevailing factors for adopting currency hedging are necessary in the dollar-denominated operation of the comparable transaction.

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

When applying the Sixth Method[113], 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. SBCo company 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.[114]

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 they are consistent with what unrelated parties would agree upon, such as the currency hedging costs incurred by exporter (SBCo company, resident in country A).

Example 5: Applying the CUP method to soybean exports using market adjustments

i Facts

Company X in country A is engaged in the export of agricultural commodities, through the purchase of products in the domestic market from a network of traders and large local producers. It sells both to its related company Y in country B and to other independent companies.

Its related company, Y, in country B, purchases agricultural products internationally and sells them to independent companies and, in some cases, related parties. Y in turn buys the products from exporters in multiple countries. Y buys in A not only from related company X, but also from other independent exporters.

There is no regulated export market that publishes quoted prices in A. In general, exporters fix prices with buyers in other countries by direct referral to the relevant markets for each product. Soybeans are hence priced by reference to quoted price at the Chicago Board of Trade (CBOT). The export price of soybean oil is fixed by reference to the Rotterdam market or -in other cases- to the Dalian market.

The difference between the sales price between company X and Y vis-à-vis the reference market is dependent on a series of characteristics: the quality of the product with respect to that obtained in the reference market, the availability of the product in the world market (i.e., seasonal influence, the effect of droughts or floods in the places of production, specific demand), etc.

[113] For more information on the Sixth Method see the UN TP Manual, Subchapter 4.7.
[114] 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

There is a mutual agreement between X and Y to buy or sell on demand the products, in the sense that both have mutual priority over the rest of the potential customers or suppliers if necessary. In the case of X, physical availability implies that it may sell to Y in the spot market or in a short period of time, to meet Y's worldwide distribution needs. Due the global MNE strategy, these situations are occasional and in general both companies are concerned with favoring the fulfillment of the contracts entered into with each other, understanding that both are part of the group's value chain, one of the most important elements of which is reliability.

In the year in question (Y1), the quality of country A's soybean production was drastically reduced due to the country's climate. As a consequence, the lower incidence of protein in the soybeans produced in that country caused buyers to prefer production from other countries and consequently the sales price for soybeans from country A declined vis -a- vis the reference market.

The absence of a quotation price in country A leads the exporters and international purchasers to set up a variety of solutions to agree on soybean exports prices: many buyers reduced a percentage of the export price of soybeans in Z, a country in the same hemisphere and with comparable production volumes, while others opted for a 8% reduction of the Chicago price.

Normally, company X sets prices for sales to company Y using the CUP method. The terms of the transactions are FOB, whereby X assumes the role of procuring the ships and placing the goods on board, while Y takes care of the transportation and insurance from the port located in country A to the country of destination.

To establish its transfer prices in Y1, company X failed to obtain a market price for the exports made with its related party. The operations carried out with independent companies were not comparable in terms of volume or time of the year, so therefore couldn´t be used for transfer pricing purposes. For these reasons, X choose the TNMM as the most appropriate method for Y1. The transaction accurately delineated takes into account the functions, risks and assets involved for both parties, as described above. Comparable companies were chosen among similar exporter companies in the region, mostly operating with independent parties and also from several international brokers both at local and regional markets.

The tax administration of country A analyzed the transfer pricing analysis prepared by country X and started an audit procedure. The legislation of country A explicitly allows for the use of secret comparables by the tax authorities. Accordingly, the administration collected data from an independent party export transactions so to have available comparable prices for the dates company X sold soybean to company Y. According to this information, prices for controlled transactions and the income tax is adjusted.

ii Analysis

The UN TP Manual clarifies when and how it is possible to contest the taxpayer's transfer pricing analysis. In this case, the taxpayer prepared its transfer pricing documentation according to the regulation, so by principle no "presumptive taxation approach" seems to be necessary.[115] Indeed, the tax administration starts the analysis by looking at the transfer pricing documentation prepared by the taxpayer.

Additionally, most domestic regulations attribute the burden of proof to the tax administration. Some court cases around the globe emphasize that the tax administration has to demonstrate the inaccuracy of a taxpayer's transfer pricing analysis rather than show the presumptive "better" analysis of the administration. It is important to keep in mind that a thorough transfer pricing analysis is key to a transfer pricing adjustment in view of a review through a tax court or during a. MAP process.

In this particular case, the analysis of the tax administration may not have been sufficiently detailed and robust compared with the analysis of the taxpayer. Equally, the use of secret comparables, even where supported by domestic legislation, may be contingent upon certain requirements that have to be fulfilled such as the disclosure of the methodology to the taxpayer prior to any assessment and the option for taxpayer to rebut the presumption that this should be the correct methodology.

Example 6: Transfer pricing of soybean involving environmental risk

i Facts

Assume company A tax resident in country A engaged in farming activities and belonging to a multinational group sells 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 USD was levied. The fine was paid by the local company A, which 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 assumed to be the stated functions and assumed risks. These should be analyzed in more detail during the factfinding process which should identify the functions performed, assets used or contributed including intangibles and risks assumed.[116]

[115] See UN TP Manual, section 10.1.9.
[116] See UN TP Manual, section 3.3.1.1.

In the example, the allocation of risks is of special importance. The risk shall be allocated to the entity which 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." [117] 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 functions should be taken into consideration.[118]

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?
- 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?

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 USD.

Example 7: Variety rights in the soybean industry

i Facts

Variety rights are a key success factor within the crop industry such as soybean. As a consequence of the need for new varieties, multinationals companies invest massively in new varieties. They are a critical success factor for multinationals.

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.

It needs to be differentiated between multinationals developing and protecting new

[117] See UN TP Manual, section 3.4.4.31.
[118] See UN TP Manual, section 3.4.4.33.

varieties and subsequent seeds which are licensed or sold to other multinationals and transactions within the same group such as development of new varieties under contract development agreements steered by a central entity and licensing them to related production entities or selling seeds. The stages can be described in more detail as follows:

1. R&D (breeding): Development of new seed varieties with specific characteristics to suite customer needs and remain competitive in the market.
2. Production of basic seeds: Production of seeds for further multiplication. This may include propagation and testing. Those activities are often of a simple nature
3. Production of certified seeds: Multiplication of basic seeds to eventually arrive at marketable certified seeds. This is done often with third party farmers[119]
4. 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 sole right to cultivate these varieties.
5. Distribution of certified seeds: Distribution of marketable seeds to final customers.
6. Customer service: Advice related to the seeds and promote client relationships.

With that background, the following simplified situation shall be analyzed: A multinational group develops and registers new soya varieties. The budget approvals and core decisions are taken by the 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 a mark-up of 8%. 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 into the day-to-day decision making, to the development entity and bears the financial risk, a

[119] "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.

service remuneration is in line with the arm´s length principle for contract development even though it cannot be classified as a low value adding service.[120] A typical remuneration for services is based on actual cost plus a profit element which needs to be benchmarked.[121] The headquarters would be seen as owner of the developed varieties and would be entitled to any profit in relation to it. The headquarters would also assume the registration.

Licensing to farmers

Licensing the variety rights to related farmer depends on the classification of the local farmer. In case the local farmer is classified as routine entity, the license payment should be structured in a way to grant them a profit in line with a conducted benchmarking study (cf. soybean case #1 above). This might result in a license payment above 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 classified as risk taker and local entrepreneur. In that case, a license payment based on a CUP search, i.e. the application of the comparable price method, would be appropriate.

[120] See UN TP Manual, section 5.5.2.5.
[121] See UN TP Manual, section 5.4.5.3.

6. 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, acquisition, enhancement, maintenance, protection and exploitation
DS	Domestic supply
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

7. Appendix 2: Global Production Values in the Agricultural Industry

The following tables show the top 10 products plus coffee for 2000, and 2021.[122]

Table 1: Production value – year 2000[123]

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[124]

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%

[122] For illustration purposes meat of cattle, pig and chicken had been combined.
[123] Source: Own illustration based on FAO data, https://www.fao.org/faostat/en/#data/QV
[124] Source: Own illustration based on FAO data, https://www.fao.org/faostat/en/#data/QV

10	Sugar Cane	83.457.848	2.0%
…			
35	Coffee, green	20.723.831	0.5%
…			
Total		4.125.746.541	100.0%

8. 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%, the interpretation is that 30 of the 100 export value is the country's own value contribution; a 5% rate would imply that the country added only 5% value to its exported products.

Table 3: GVC participation [125]

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%

[125] Source: Own calculations based on UN Comtrade data from **https://comtradeplus.un.org/**

9. 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 in the coffee and soybeans industries.

1. Coffee Industry (Questions for all functions pending)

Stage of the Global Value Chain	**Questions**
Growing and harvesting	
• Growing	
• Harvesting	
Dry processing	
• Cherry selection (manual)	
• Sun drying	
Wet processing	
• Cherry selection (water immersion)	
• Depulping	
• Fermentation	
Milling	
• Dehusking/Depulping	
• Cleaning	
• Sorting	
• Grading	
Roasting	
Soluble Coffee (only)	
• Grinding	
• Drying (spray/freeze)	
Packaging	
Shipping	
Grinding	
Brewing	
Technology development	
Trading	
Marketing	

2. Soybean Industry (Questions for all functions pending)

Stage of Production	**Questions**
Seed production incl. research	
Distribution of seeds	

Warehousing
Trading
Further processing