VALUE CREATION, DISTRIBUTION, AND REMUNERATION IN THE SPECIALTY COFFEE GLOBAL VALUE CHAIN[1]

Abstract

Improving the positioning of producers in GVC is the result of the transaction governance and governance of the global chain. We aimed to understand how the value creation, distribution, and remuneration occurs among agents in the global value chain of specialty coffees in Brazil and European countries. 26 semi-structured interviews were performed with members of the GVC in Brazil and European countries. Depending on the transaction's characteristics two governances were identified: modular and co-governance between two leading companies. In cases with high complexity of information, a low coding capacity allied to the low capacity of the supplier to meet demand, we advance the scientific framework showing a new co-governance model due to a new element of analysis: the low possibility of vertical integration of transactions.

Keywords: Value attributes. Governance structures. Chain governance.

1. INTRODUCTION

Insertion in global value chains (GVC) is an alternative for higher-value production and the positioning of agents in the chain (Gereffi *et al*, 2005; Giuliani *et al*, 2005; Trienekens, 2011; Samper *et al*, 2017). Transactions involving different institutional contexts include greater complexity when compared to local chains due to the differences in the institutional environment, which encompasses norms, values, and standards, impacting the information distribution (Gereffi *et al*, 2005; Giuliani, 2005; Trienekens, 2011).

Given this complexity, sustainability and agents' improved positioning depend on efficiency in the chain organization (Fao, 2014). Efficiency in GVCs encompasses the creation of value by agents, the distribution of value in all chain links, and the remuneration of value, which is understood here as the reward for efforts concerning quality improvements in the different stages of production and distribution. In theoretical terms, chain efficiency depends on information transparency, which is associated with how chain transactions are organized concerning the governance (Williamson, 1985; Barzel, 2005; Gereffi *et al*, 2005; Fao, 2014).

From the perspective of global value chains, Gereffi *et al* (2005) argue that activities are organized by a leading company, considering the transaction with its main suppliers. Five types of governance in this scenario are proposed: markets, modular value chains, relational value chains, captive value chains, and hierarchy. They differ depending on the complexity of transactions, the ability to encode information, and the ability of suppliers to meet demand requirements (Gereffi *et al*, 2005).

However, in a chain, the characteristics not only of the transaction between the leading company and its main supplier are different, but the transactions between all stages and agents in the chain, especially when considering the differences in the institutional environments of North and South countries (Giuliani *et al*, 2005). Differences in transactions, when considering their characteristics, the dimensions of the traded asset, and the potential problems of information asymmetry, demand different transaction governance mechanisms (Eisenhardt, 1989; Williamson, 1985; Barzel, 2005). Coordination failures in one transaction in the chain is enough to impact the chain's efficiency. In this sense, the chain's efficiency depends not only on the governance of the transaction between the leading company and the main supplier but also on the set of transactions making up such a chain.

The specialty coffee chain stands out, considering the different GVCs of agri-food products. The value creation, distribution, and remuneration depend on global coordination between the chain's agents in different countries and regions (Samper *et al*, 2017; Lerner *et al*, 2021). Brazil is the world's largest producer and exporter of coffee, and at the other end, the European Union is the largest importer and consumer (Usda, 2021). When considering the production of specialty coffees in Brazil, the State of Paraná stands out, where initiatives to create value are found based on efforts in rural production aimed at the insertion of small producers in global markets aimed at differentiation (Emater, 2019; Santos et al. 2021).

The value in specialty coffees can be translated into intrinsic and extrinsic aspects generated by the different agents in the chain, from rural production to the final consumer (Costa, 2020). The intrinsic aspects encompass the sensory attributes (flavor, aroma, acidity, sweetness, balance) to standardize the classification. These attributes are measured in cup tastings: those with more than 80 points on a 100 scale are classified as specialty (Sca, 2020). The extrinsic aspects of production systems can also add value to coffee, such as origin (involving region and geographical indications, for example), organic production, and gender enhancement (production by women).

The value creation in coffee depends, therefore, on the harmonious action between the agents in the chain (Costa, 2020), starting in rural production and being improved and transformed in other links, such as processors, roasters, and coffee shops (Samper *et al*, 2017; Sca, 2020). Depending on the efforts upstream (producers), the coffee will obtain a different value/quality in the links downstream of the chain (coffee shops/consumers). The value created by upstream agents is transformed as the asset is traded along the chain and, therefore, the attributes valued in upstream transactions may not be the same as downstream (Samper *et al*, 2017).

Guimarães *et al*. (2020), when investigating the production of knowledge on governance in agri-food GVCs, showed the presence of efficiency failures in the specialty coffee chain concerning the value distribution and remuneration, evidencing problems in the value remuneration created by producers (Samper *et al*, 2017; Clay *et al*, 2018; Vicol *et al*, 2018). For Samper *et al* (2017), there is a problem in distributing information about what quality is in the coffee GVC, especially when considering the difficulty of producers in accessing information about the quality required by other agents. Other agents, such as roasters, have no access to the transmission of prices paid for coffee quality throughout the chain. These information transmission issues generate incentive problems concerning remuneration to producers and inefficiencies (Samper *et al*, 2017).

In the long term, these problems can generate disincentives to quality and obstacles to improving the positioning of producers and insertion of coffee producers in global markets with more excellent added value, impacting the sustainability of these global value chains. Therefore, this work aims to understand how the creation, distribution, and remuneration of value between agents in the global value chain of specialty coffees in Brazil and European countries occurs.

Therefore, in addition to the introduction, the second part presents a Neo-Institutional contribution to understanding the efficiency of GVCs, based on Transaction Cost Economics (TCE) and Measurement Cost Economics (MCE). The third part details the methodological procedures, the results' presentation, discussion, and finally, the conclusions.

2. EFFICIENCY IN GVC: A THEORETICAL DISCUSSION

The insertion of rural producers in global value chains is an alternative for them to survive the challenges imposed on the chains (Gereffi *et al*, 2005; Giuliani *et al*, 2005; Trienekens, 2011). In these chains, producers sell products with more excellent added value.

Transactions of agri-food products with higher added value often involve marketing between different countries, i.e., different geographic and institutional contexts (Trienekens, 2011).

Since it involves these different contexts, agri-food GVCs are more complex than local chains. Local chains can be composed of a smaller amount of links when compared to global ones. Thus, involving different countries means that a global chain deals with at least two institutional contexts: different social, historical, and geographic contexts, laws, formal rules, tariffs, and production standards (quality, food safety, and environment) (Humphrey and Schmitz, 2001; Trienekens, 2011) (Figure 1).

Based on Williamson (2000), the institutional environment influences how the chain works. In a local chain, the leading company's definition of the game rules considers the same institutional environment for the leading company and its main suppliers. In the global chain, which the final links of a chain can direct, the leading company and the main suppliers are located in different contexts. While the leading company (buyers) that sets the rules of the game is primarily located in importing countries, the leading suppliers are in other countries, the exporters (Gereffi *et al*, 2005; Samper *et al*, 2017).

In global chains, rules are based on different institutional contexts, associated with different government legislation, trade and policy barriers, tariffs, and in addition to a formal rule that guides a chain, restrictions for producing countries to export (Trienekens, 2011). In addition to these rules, production standards, mainly associated with quality, health, and environmental aspects, stand out (Gereffi *et al*, 2005).

Leading companies define production parameters to reduce "[...] potential losses arising from a failure to meet commitments (for example, deliver the product on time) or failure to ensure that the product conforms to the necessary standards" (Humphrey and Schmitz, 2001, p. 23). Once they define the parameters, these companies have a fundamental role in transferring information about what is desired by the final buyers (Giuliani *et al*, 2005; Gereffi and Lee, 2012). In addition to defining these parameters, the leading company can also control, through standards and certifications, the fulfillment of these requirements (Humphrey and Schmitz, 2001; Gereffi *et al*, 2005).

Figure 01 - Institutional levels of the global value chain
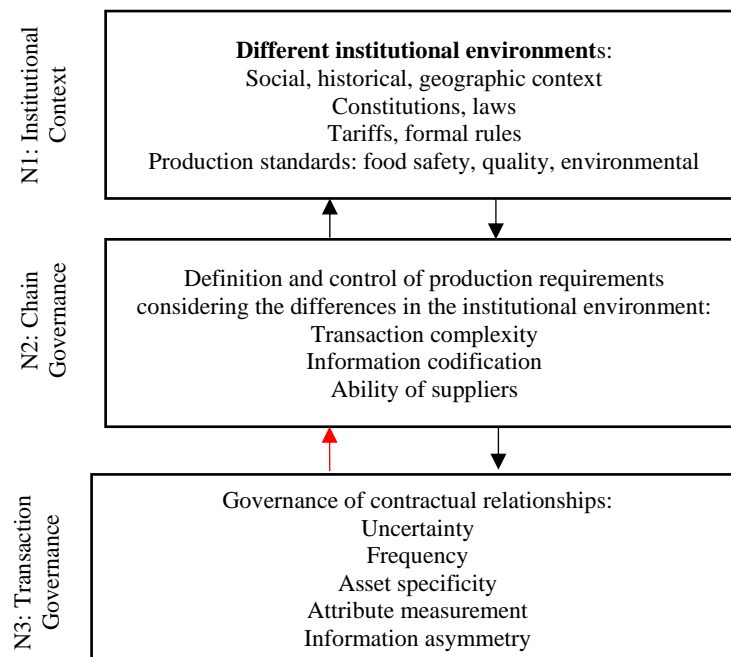
Source: the authors

Specifically in global chains, leading companies have, on the one hand, a fundamental role in the upgrading of rural producers in agri-food GVC. Based on this information, these producers can accumulate new knowledge and resources and thus innovate by producing products and services, with higher added value, serving the foreign market (Lee *et al*, 2010; Gereffi and Lee, 2012). On the other hand, these buyers may not have an active role in codifying information, accentuating the difficulties and restrictions that producers face concerning the infrastructure and incompatibilities in the institutional environment (Trienekens, 2011).

Therefore, the standards are mechanisms to deal with risks related to the fulfillment of productive requirements by rural producers (Humphrey and Schmitz, 2001) and, concomitantly, barriers to the insertion and upgrading of producers (Gereffi *et al*, 2005). This happens because the standards are defined according to the current context's institutional characteristics, which become incompatible when transplanted to another context with distinct institutional characteristics (Gereffi *et al*, 2005; Giuliani *et al*, 2005; Trienekens, 2011).

In this sense, the need for governance of the chain as a whole is highlighted. Thus, there is the coordination of activities for defining and transmitting information (Fao, 2014). In agri-food GVCs, access to this knowledge is transformed into opportunities for learning, upgrading, and insertion into quality global markets. Looking at chain governance is essential in this context, as it allows identifying the leading company in the chain, which is responsible for guiding quality production parameters (Gereffi *et al*, 2005). However, this viewpoint considers the chain from that leading company, not considering the complexity of individual transactions along the chain.

In agreement with Williamson (2000), on the one hand, institutional environments can be noted to indicate the context in which global value chains should organize themselves. This organization, in turn, takes place concerning identifying the leading company in a chain, which defines and controls the production parameters of a chain as a whole.

However, agri-food products aimed at quality markets are transformed along the chain and often involve dimensions of value that are difficult to verify (Guimarães *et al*, 2020). Also, the production of agri-food products, especially those of high value, is inherently uncertain. They depend on conditions that are difficult to control by an agent, such as climatic and soil conditions (Saes, 2010). This poses challenges associated with the difficulty in making suppliers produce according to the desired requirements, monitoring agents, and measuring and codifying the value dimensions of the traded asset.

Theoretically, based on Williamson (1985) and Barzel (2005), that the production of high-value agri-food products in GVC can be stated as comprising greater asset specificity and value dimensions that may be difficult to measure. Transactions can therefore involve problems of information asymmetry, measurement, and property rights assurance.

In this context, it is challenging to define production parameters for agri-food products by a leading company. Therefore, the difficulty in accessing information about a product makes standards and certifications unfeasible in agri-food GVCs. The difficulty in accessing information about the asset traded in these chains makes this chain intrinsically complex.

Even though Gerreffi *et al* (2005) point out that there are chains with low transaction complexity governed by the market, Coase (1937) shows that even in the market, there are costs in information about "what" and "how" to transact. For Coase (1937), information is expensive and complex to access. Therefore, transactions in GVC of high-value agri-food products involve, *per se*, the complexity of information and knowledge required for a product transaction.

The costs of "what" and "how" to produce arise from the limited rationality of agents, opportunism (Williamson,1985), the complexity of measuring the attributes that make up an asset (Barzel, 2005), and the possibility of private and difficulty in measuring the actual performance of an agent (Jensen and Meckling, 1976). Incomplete information generates

contractual incompleteness, demanding adequate governance mechanisms for the chain's efficiency.

The conduct of activities in agri-food GVC, in turn, depends on the ability of producers to meet production requirements. This production capacity requires access to information on what is demanded downstream in a chain, in addition to changes concerning the production practices (Gereffi *et al*, 2005). The GVC perspective considers the transaction between the leading company and the main supplier, which may not involve agents downstream in a chain. Also, it requires observing how the upstream agents beyond the leading supplier are organized to meet the desired requirements.

Therefore, it requires looking not only at the chain governance but at the set of microanalytical transactions within that chain (Fao, 2014). Despite this, the scientometric study that sought to map research on governance in global agri-food products showed that studies linking chain governance and transaction governance are discrete, connected by studies concerned with upgrading the chain (Lee and Gereffi, 2015; Vicol *et al*, 2018).

The transmission of information along the chain depends on how transactions are organized. Although chain governance influences the operation of transactions as a whole, failures in the transaction governance modes, concerning the loss of value and information asymmetry, compromise the chain's operation on the other hand. Therefore, the chain's efficiency depends on the governance of microanalytical transactions at GVC and not just the transaction between the leading company and the main supplier.

Transaction governance mechanisms relate to governance structures (Williamson, 2000), in which they are defined to reduce transaction costs in the face of asset specificity (Williamson, 1985), value maximization by measuring the attributes that compose an asset (Barzel, 2005), or by reducing agency costs through incentive mechanisms aiming to mitigate agency problems (Jensen and Meckling, 1976).

From the perspective of chain governance, the complexity of the transaction, the possibility of codifying information, and the supplier's ability to meet the requirements depend on information about the asset to be transacted. Likewise, from a transaction governance perspective, the analysis depends on the characteristics of the asset to be traded, which impact asset specificity, measurement, and information asymmetry problems. Asset characteristics are understood in this work as value attributes. Therefore, broken down into its value attributes, the traded asset is central to analyzing chain governance and transaction governance.

Information complexity is associated with the specifications of a product, i.e., it is linked to the measurability of the attributes that make up an asset. The different transactions along a chain involve different attributes, which, if measured, enable the codification and transmission of information and knowledge about its specifications. Based on Barzel (2005), it can be stated that the measurement of the attributes that make up a transaction enables the reduction of the complexity of a transaction of the different transactions in the chain. For Gereffi *et al* (2005) and Barzel (2005), the discussion on information codification and measurement of attributes considers the associated costs.

The transaction complexity added to the codification of information and measurability is directly associated with information asymmetry. The measurement of attributes and codification of information allows the transmission of information and the consequent reduction of information asymmetry. Information codification, measurability of attributes, and information asymmetry are related to the uncertainties inherent in the transaction. There are costs to deal with the opportunistic behavior of agents and difficulties in predicting possible contingencies that impact the transaction.

Thus, the efficiency of transactions both from chain governance and transaction governance is understood as the result of governance mechanisms that measure the attributes that make up the asset. Considering the informational incompleteness, problems in

measurement and, therefore, in the transmission of information along the chain generate coordination failures in the GVC. Therefore, the possibility of measuring the value attributes result in different degrees of complexity of the transaction, degree of codification of information, and skill of the suppliers.

Based on the above, we seek to understand the GVC governance of specialty coffees between agents in Brazil and Europe for the creation, distribution, and remuneration of the value generated, considering the governance of transactions, resulting from its attributes, the measurability of dimensions involved in the transaction, and the asymmetry of information between agents. Chain governance is understood as depending on the set of transactions that differ concerning the transaction attributes, measurability, and information asymmetry.

Chain governance for value creation in this sense depends on access to information about "what" should be produced, "how," "when," and "under what conditions" should they be produced. Access to this information depends on the need for value to be created and value created along the chain. Finally, the value remuneration depends on this value distribution, which will result in sustained value creation. The governance of the value distribution chain, and, therefore, value creation and remuneration, depends on how each transaction set is organized and coordinated along the chain.

3. METHODOLOGICAL PROCEDURES

This qualitative, descriptive research involved analyzing the GVC of specialty coffees among agents in Brazil and Europe and was performed in two stages. The first is at the European level with agents downstream of the chain (importers, roasters, and coffee shops), and the second is with upstream agents (producers and exporter) in Brazil. In addition to documentary data, the main instrument for data collection was the semi-structured interview, which comprised a set of qualitative questions.

The data collection step began as an exploratory phase through research and extension activities. It involved non-participant observation activities with a specialty coffee exporter and the properties of rural producers of specialty coffees in Paraná and the development of field activities with these rural producers. Also, it involved participation in extension, scientific, and specific events for the coffee sector. In addition to these exploratory activities, the chain characterization was performed through the collection of statistical data at the United States Department of Agriculture (USDA), the Statista, data from the Brazilian Institute of Geography and Statistics (IBGE), and the Ministry of Agriculture, Livestock and Supply (MAPA).

Primary data were collected from semi-structured interviews with key agents in the chain studied. An interview was carried out with a roaster of specialty coffees in Toulouse/FR; an interview with the president of the French Specialty Coffee Association (SCA France); an interview conducted in Sweden with the Vietnam roast champion. From these interviews, agents could be identified.

After characterizing the GVC of specialty coffees, we sought to identify how transactions in the chain are organized. The research was carried out in France, Netherlands, Belgium, and Sweden, as they are among the primary coffee consumers in the world (Torga and Spers, 2020) and among the leading importing countries of Brazilian specialty coffees (Cecafe, 2020). Then, the snowball method (Atkinson and Flint, 2004) was used to map each importer's downstream actors in the chain (roasters and coffee shops).

The survey in Europe interviewed 18 agents involving importers, roasters, and coffee shops. The interviews were conducted *in loco* with the interviewees in France, Belgium, Netherlands, and Sweden, recorded and later transcribed. In Brazil, interviewees were identified using the snowball method from chains whose downstream agents had already been interviewed in the European context. Seven agents were interviewed in Brazil: five producers of specialty

coffees, a broker, and an exporter. The interviews were conducted online, recorded, and later transcribed.

The question scripts were elaborated from the analysis categories, derived from the theoretical framework, namely: value attributes; transaction governance, comprising the subcategories: uncertainty, frequency, asset specificity, measurability; information asymmetry and governance structure; and chain governance involving the subcategories of transaction complexity, information codification, supplier skills, and chain governance mechanisms. Chart 01 presents the analysis categories and the analyzed variables.

Chart 01 – Analytical Framework

Analysis category	Subcategory	Aspects observed	Source
Value attributes	Intrinsic attributes	- Physical, sensory attributes	Samper *et al* (2017) SCA (2020)
	Extrinsic attributes	- Ethical, social attributes	
Transaction governance	Uncertainty	- Environmental uncertainty - Behavioral Uncertainty	Williamson (1985)
	Frequency	- Recurrence	
	Asset specificity	- Physical assets - Locational - Temporal - Brand - Dedicated - Human	
	Measurability	- Measurement of the dimensions that make up the asset	Barzel (2005)
	Information asymmetry	- Private information - Difficulty in codifying and measuring	Jensen and Meckling (1976) Eisenhardt (1989)
	Governance structure	- Market - Verbal agreements - Contracts - Long term relationship - Vertical integration	Williamson (1985) Ménard (2004) Barzel (2005)
Chain governance	Complexity	- Information complexity	Gerreffi *et al* (2005)
	Codification	- Possibility of codifying information	
	Supplier skill	- Ability to meet production requirements	
	Chain governance mechanism	- Market - Modular - Relational - Captive	

Source: the authors

The interviews were categorized using the Atlas.TI® software (Atlas.ti, 2019). From the generated reports, by analysis category, the analyses were inferred, discussed, and later arranged in textual form.

4. RESULTS
4.1. Complexity, heterogeneity, and non-linearity of the GVC of specialty coffees

Specifically, in the case of the GVC of specialty coffee between agents in Brazil and Europe, the results showed that it is composed of rural producers, exporters, importers, roasters, and coffee shops, and may involve agents for coffee brokerage (negotiation agent between producers and coffee shoppers). In Brazil, the chain comprises a coffee exporter (E19), a coffee brokerage agent (E20), and rural producers (E21, E22, E23, E24, E25, E26). In Europe, this chain comprises different configurations of agents: importers (E4, E5, E12, E13, E15, E16), importers who are also roasters and coffee shops (E7), roasters (E8, E9), roasters and coffee shops (E6, E10, E11, E14, E17, E18), and coffee shops (E1, E2, E3).

A first result shows that, unlike the traditional configuration (linear flow of products, services, and information) (Samper *et al*, 2017; Costa, 2020), this is a complex, heterogeneous, and non-linear chain. This complexity is due to how agents are organized, relationships between them, different origins of coffee purchases, and suppliers' number and size making them heterogeneous. Companies range from small local producers and coffee shops to large continental importers. Some buy less than ten sacks of coffee a year, between 10 and 100 sacks a year, and more than 100 sacks of coffee. Regarding the average number of suppliers, some keep buying coffee from less than ten suppliers, between 10 and 100 suppliers, and those who manage more than 100 coffee suppliers.

Regarding the types of coffee traded, they have different characteristics. There are coffees transacted with the same sensory profile (set and organoleptic characteristics that characterize the drink) in different harvests and coffees with different sensory profiles. For terminology purposes, specialty coffees with the same sensory profile are here called "standardized". These coffees are not conventional but specialty coffees with the same sensory characteristics and drink score throughout every harvest. Coffees traded with different sensory characteristics in different harvests are called "seasonal." This study observed that standardized coffees score between 80 and 85 points and are intended mainly for blending. Seasonal coffees score above 86 points and involve trading micro-lot coffees (tiny and exclusive coffee portions).

Also, there are differences regarding the origin of the purchased coffee. Different purchase configurations were observed: 1) buyers of coffees from different origins and with different sensory profiles (E1, E2, E6, E8, E10, E11, E14, E17), with different coffees in each purchase; 2) coffee buyers from the same origin always and with the same sensory profile in all purchases (E3, E7, E9); 3) buyers looking for coffees from different origins, but with the same sensory profile (E12, E13, E18), valuing the sensory profile, to the detriment of the region; 4) buyers looking for coffees from the same origin, which can be either seasonal or standardized (E15, E16), valuing the origin of the coffee for the most part; and 5) buyers who buy from different origins, but seek both coffees with a standardized profile and different sensory profiles (E4, E5, E19, E20).

In this chain, good performance concerning quality starts in rural production (Costa, 2020), which is inherently uncertain (Saes, 2010; Samper *et al*, 2017). The agents of the environment (exporter and importer) were identified as responsible for articulating this chain, through different efforts with producers, to ensure the coffees reached upstream to meet the requirements demanded downstream. This finding differs from other works in the area, which generally point to the roaster as the articulator (Samper *et al*, 2017).

Some agents were noted to play a predominant role in achieving differentiation depending on the type of coffee traded. Standardized coffees are primarily the result of blending, which is the responsibility of intermediary agents, such as exporters, importers, and roasters. The importance of knowledge of these agents' activity is highlighted, indicating the specificity of a human asset. Therefore, the efforts in differentiation can be stated as starting in rural production, going through intermediaries to coffee shops. However, intermediary agents are responsible for manipulating the different coffees to create value. For standardized coffees, such value is associated with physical and sensory attributes and product standardization, as previously highlighted by Samper *et al*, (2017).

In addition to exceptional quality, seasonal coffees involve production appeals such as production by women, producer's history, region, and fair trade. In this case, the search is for coffee with some rarity, to the detriment of regularity. These producers, therefore, have a predominant role in creating value. It is up to intermediaries to create value through the subsequent processing, preparation, and roasting steps to encourage producers to achieve the exceptional quality demanded by these coffees with different appeals. These different types of coffees, in turn, result in transactions with different characteristics concerning transaction

attributes, measurability, and transaction governance mechanisms. Different transactions, in turn, impact the chain as a whole. The following sections present the governance mechanisms for the transaction of standardized coffees and seasonal coffees.

4.2. Governance of transactions in the GVC of specialty coffees between agents in Brazil and Europe

Regarding uncertainty, the GVC of specialty coffees, both standardized and seasonal coffees, suffers, upstream, by uncertainties related to the coffee production activity, mainly affected by climatic uncertainties. These uncertainties also permeate transactions involving importers since the distribution of coffee downstream depends directly on obtaining upstream coffees.

When considering the different types of coffee traded in the two chains, obtaining both coffees is notably challenging, although involving different uncertainties. While standardized coffee has more of the "standardization" attribute, seasonal coffee involves the typical rarity of micro-lots. Since coffee is a typically uncertain activity (Saes, 2010), the uncertainty in obtaining seasonal coffees was identified as more associated with the low ability of producers to meet the demanded requirements and the greater complexity of the product. In the production of standardized coffees, the complexity of the product is lower, and therefore the uncertainty is related to the standardization attribute. Regarding downstream transactions in the chain, uncertainties for both standardized and seasonal coffees are related to quality compliance, which may be associated with the agents' behavioral uncertainty in revealing information. Therefore, the types of uncertainties can be considered different since what is traded changes along the chain.

Regarding the frequency, the transactions is recurrent throughout the GVC of specialty coffees. Recurrence in transactions leads to learning about "what" and "how" will be transacted, minimizing uncertainties regarding obtaining coffee. This learning is primarily associated with the complexity of the product and the ability of producers to meet requirements. Standardized coffees have less product complexity than seasonal coffees and thus are more susceptible to information codification and subsequent measurement. Therefore, the ability of standardized coffee producers can be the result of production structures and learning through the codification of information about this coffee, which is less complex when compared to seasonal coffees. Learning by repeating transactions can minimize uncertainty about obtaining coffee.

Furthermore, different levels of bilateral dependence could be observed depending on where efforts to create value in each type of coffee are concentrated. For standardized coffees, value creation is predominantly concentrated in the intermediate stages in the chain, involving exporters, importers, and roasters, as they are the agents responsible for blending. Therefore, these agents depend on obtaining coffees with the same sensory profile, implying bilateral dependence. For seasonal coffees, value creation takes place predominantly from production efforts. Therefore, there is a high bilateral dependence upstream in the chain, mainly involving producers and exporters.

Regarding the specificity of assets, the transaction of specialty coffees in both chains in the GVC of specialty coffees between agents in Brazil and Europe was observed to involve a specificity of the physical asset since its valuation depends on the commercialization with specialty coffees buyers. Furthermore, the transactions in the chain were identified as encompassing the specificity of human assets, whether for production, processing, blending, roasting, or preparation. In addition to the specificity of physical and human assets, the asset specificity differed throughout the transactions. It is primarily concentrated in the transactions upstream of the chain. It also involves locational and temporal asset specificity in the case of seasonal coffee.

Regarding the measurement, different value attributes are considered and measured throughout the transactions in the chain. Both chains consider physical and sensory attributes but differ concerning the standardization and rarity associated with exceptional quality and extrinsic attributes. While part of these attributes can be measured, their measurement involves costs. Physical and sensory attributes can be measured using the SCA protocol. The appeals of social production, gender, region, and sustainable production, although theoretically codified, they are not. Therefore, they are difficult or costly to be carried out. Also, the consumer preference considered downstream in the chain, primarily by coffee shops, is measured from the highly subjective pleasantness. The difficulty of measurement generates information asymmetry problems, given the difficulty in transmitting information about these attributes along the chain.

Different sets of value attributes lead to different information asymmetry problems. Standardized coffees involve the intrinsic attributes of the coffee, which the SCA assessment protocol can measure. On the other hand, seasonal coffees involve, in addition to these intrinsic attributes, extrinsic attributes related to production, causing information that is difficult to be guaranteed along the chain. Therefore, the information asymmetry problems can be stated as being more present in the seasonal coffee chain when compared to the standardized coffee chain.

In the standardized coffee chain, the producers' ability, lower complexity of the product (as it involves intrinsic and more objective attributes), and greater codification ability reduce the risks of opportunistic behavior by the Agents. Therefore, it demands fewer monitoring mechanisms by the Principal when compared to the seasonal coffee chain.

The incentive and monitoring mechanisms concern the quest to guarantee coffees with the same sensory profile for standardized coffees. For seasonal coffees, the incentive and monitoring mechanisms are related, in addition to ensuring information related to extrinsic attributes, to the development of the ability of these producers to produce following exceptional quality, given the low ability of these producers.

Based on the above, the different transactions in the GVC of specialty coffees, both standardized and seasonal, were identified as organized through hybrid governance structures. Even though they are hybrid, the governance structures of transactions along the chain are different. In the standardized coffee chain, no contracts were found between agents upstream, and the aim is to build a relationship between producer and exporter to guarantee the coffee supply. The low uncertainty regarding the capacity of the supply base was identified as enabling the adoption of future contracts between the parties.

In the seasonal coffee chain, although there are efforts from the exporter and importer to develop the supply base, there are no contracts or mechanisms that make producers captive to the transaction. Upstream transactions in this chain are organized through less complex governance structures than vertical integration, strongly supported by the relational aspect between agents (transaction repetition and reputation).

Further downstream transactions involving exporters, importers, roasters, and coffee shops do not use contracts. Transactions are organized through physical purchase and sale contracts at the time of the transaction. However, the relational aspect between agents supports the GVC of specialty coffees, with parties committed to the transactions.

4.3. GVC governance of specialty coffees between agents in Brazil and Europe

From the different transacted coffees, two governance modalities were identified: modular governance and co-governance. The complexity of information associated with the product presents itself in different ways in the chains. In the modular chain, complexity is associated with product standardization and the knowledge necessary for blending by the

intermediary agents. In the co-governed chain, this complexity is associated with information on extrinsic attributes that are difficult to be transmitted along the chain. It is also associated with the greater complexity of the information required by the production process. Therefore, this complexity was identified as involving, unlike what Gereffi *et al* (2005) point out, a gradation and not a binary analysis of "complex" or "not complex."

Standardized coffees, with scores between 80 and 85 points, involve a high complexity of the product due to information about the physical and sensory attributes of the coffee. Although this information is codifiable by the SCA assessment protocol, it does involve costs. Finally, this chain has a capable supply base. Therefore, modular chain governance was identified. In the modular chain, this governance is intended to make producers generate the sensory profile of coffee with a certain regularity.

Seasonal coffees have scores above 86 points, are considered micro-lots, and may involve production-related extrinsic attributes. This chain involves complexity and difficulties in codifying since extrinsic attributes are difficult to measure and, therefore, guaranteed. The information asymmetry problems in this chain are further intensified by imbalances in the measurement process between agents, evidenced by the non-measurement on the part of producers in the case of the co-governed chain and coffee shops in both chains.

Added to high complexity and low codification, producers have a low ability to meet the requirements. Furthermore, the rarity that may be associated with extrinsic attributes makes vertical integration unfeasible. In this sense, the co-governance of this chain was identified by the two leading companies, exporter and importer. In the co-governed chain, the action between exporter and importer happens on the one hand, to ensure that exceptional coffees are produced, and on the other, to make information difficult to codify, such as an appeal for sustainable and social production, distributed in the chain. Finally, the co-governance for information transmission in the chain is highlighted as being related to the search for distributing information throughout the chain and identifying and creating value on production-related attributes, such as the rarity associated with the coffees produced in the North of Paraná region.

At one end, this measurement problem demands, according to Barzel (2005), more complex governance mechanisms, such as vertical integration. However, it is a chain involving rarity associated with value attributes, making vertical integration unfeasible. At the other end, this chain could move towards codification if not for the high costs of measuring all transactions on a case-by-case basis. Finally, solving the bottleneck related to low supply capacity is highlighted as minimizing the co-governance efforts to develop the supplier base. However, it would still require the co-governance of agents to guarantee the information since it is subjective and involves high measurement costs. Based on Gereffi *et al* (2005), Table 02 locates the co-governance chain concerning the characteristics of chain governance and integration feasibility.

Table 01 – Main determinants of global value chain governance involving co-governance

Type of governance	Transaction complexity	Ability to encode transactions	Ability of suppliers	Degree of explicit coordination and power asymmetry	Feasibility of vertical integration
Market	Low	High	High	Low	-
Modular	High	High	High		-
Relational	High	Low	High		-
Captive	High	High	Low		-
Co-governed	*High*	*Low*	*Low*		*Low*
Hierarchy	High	Low	Low	High	High

Source: the authors based on Gereffi *et al* (2005)

Similarly, Figure 02 positions the co-governance chain in the global value chain dynamics model by Gereffi *et al* (2005). This figure shows that both companies, leader and co-

leader, importer, and exporter respectively, work together in the chain to develop the ability of suppliers, other than just material suppliers, through price-based transactions. The relationship between downstream customers and upstream suppliers with these leading companies is supported by the relational aspect, given the recurrence of transactions and the reputation generated.

Figure 02 - Six types of GVC governance
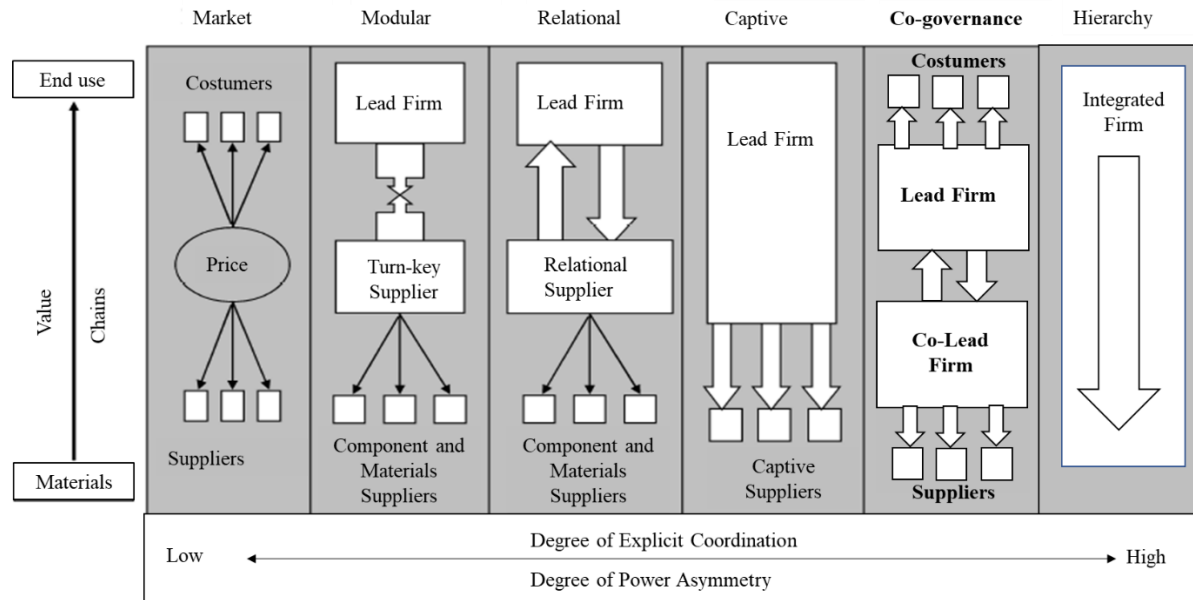
Source: the authors based on Gereffi *et al* (2005)

5. DISCUSSION

The research, aiming to understand how the value creation, distribution, and remuneration between agents in the global value chain of specialty coffees in Brazil and European countries occurs, can state that two types of governance occur. Depending on the type and coffee transacted, they can be modular or co-governance, which implies differences in the characteristics of transactions.

The modular governance chain transacts coffees involving a standardized profile. Value creation is associated with quality production, and mainly in the blending by the chain agents. In this chain, uncertainty is more intensely related to obtaining coffees with standardized profiles in the intermediate stages of the chain. Further downstream, the uncertainty becomes low, as agents buy the coffees after the blending, causing low uncertainty regarding supply.

The asset specificity in this chain is also more intense in the intermediate stages of the chain, represented by the specificity of the human asset as a function of the knowledge needed for blending. Both uncertainty and asset specificity imply different levels of bilateral dependence in this chain. Since the creation of value in the modular chain is more intensely concentrated in the intermediate stages of the chain, it became clear that bilateral dependence is also greater in these transactions, to the detriment of transactions further upstream and downstream the chain.

In this chain, the considered value attributes are the intrinsic ones, related to the physical and sensory characteristics of the coffee. Although involving a complexity of information and costs for measurement, these attributes are codifiable and can be measured by the SCA assessment protocol. Due to the characteristics of the different transactions in this chain, especially considering the uncertainty related to obtaining standardized coffees and the

asset specificity associated with the construction of the blend, added to the possibility of codifying and measuring the value attributes, there is modular governance by a single leading company, the importer.

Value creation in the co-governed chain is concentrated in the upstream stages of the chain, especially involving producers and exporters. In agreement with the literature (Costa, 2020; Sca, 2020), obtaining exceptional quality in coffee was observed to depend on the efforts made by producers initially. This study identified that these coffees involve production-related extrinsic attributes, such as gender, producer history, fair trade, and region, in addition to exceptional quality. In this sense, the exporter has an essential role in guaranteeing this information along the downstream chain, identifying these attributes and creating value, seeking, through the transmission of information, the valorization of these characteristics by agents further downstream.

Since producers in this chain have a low ability to meet the requirements, the uncertainty was observed to be more intense in the stages of value creation upstream of the chain. In this sense, the exporter, linked to upstream producers and importers, and the importer, who has access to what is desired by buyers further downstream, act together to develop these producers. Thus, there is an asset specificity also identified in greater intensity in the upstream stages. Also, the asymmetry problems arising from the difficulty of guaranteeing information on extrinsic attributes along the chain added to the need to value these attributes by agents further downstream demand co-governance between agents.

Differences in transaction characteristics also impact the distribution and remuneration of value through chain governance. Compared to the modular chain, which involves codification of information, the seasonal coffee chain depended on co-governance between the two leading companies. The information on the value created upstream associated with the extrinsic attributes is distributed further downstream. Therefore, the difficulty of measuring these attributes requires co-governance between exporter and importer to distribute the value created.

Considering the high costs of measuring these attributes, on the one hand, the measurement and guarantee of these extrinsic attributes by the intermediary agents in the chain could minimize the need for measuring the value attributes by agents further downstream (roasters and coffee shops). On the other hand, these downstream agents are the ones who have access to the characteristics of the coffees demanded by their consumers. Thus, if these agents do not evaluate the set of intrinsic and extrinsic attributes that make up the coffee, only evaluating the pleasantness, which is highly subjective, there may be a problem of information feedback from downstream to upstream, which is necessary to sustain the creation of value.

Finally, the remuneration of value in this chain was observed to depend on the distribution of information. Therefore, the imbalances in the measurement of coffee identified in this study can compromise the distribution, remuneration, and, in the long term, the support of the value created in the GVC of specialty coffees among agents in Brazil and Europe.

6. CONCLUSIONS

Different types of traded coffees, in their set of attributes, were identified as implying different characteristics of the transactions. In the chains analyzed, value creation took place at different stages, implying differences in levels of uncertainty, asset specificity, and the complexity of information, codification, and measurement between the transactions in a chain.

Depending on these characteristics, different modalities of chain governance were adopted. The transaction of standardized coffees required modular governance, while seasonal coffees required co-governance between the leading agents in the chain, the exporter and importer. This research showed that the governance of the chain depends on the analysis of the set of transactions along the chain, considering the differences between them in transaction

attributes, measurement of the dimensions that make up the asset, and information asymmetry problems.

Despite this, this chain was identified as involving governance failures, especially when considering the imbalances in codification and measurement. Although the SCA protocol acts as a measurement mechanism making the intrinsic attributes objective, not all agents in the chain make this measurement. On the one hand, this can be justified by the role of the exporter and importer in chain coordination. On the other hand, as agents further downstream do not measure all attributes and value, there is room for value appropriation and power asymmetry problems in the chain. Also, there is a problem with information feedback from downstream to upstream, which may impact not only the remuneration of the value but the sustainability of the value created by the difficulty in accessing information about the quality characteristics required in coffee.

One of the consequences of considering the characteristics of the transactions that make up the chain was the manifestation of a new type of chain governance, the co-governance chain. The characteristics of the transactions demonstrate that this is a chain that cannot be vertically integrated, mainly due to the problems of codifying and measuring value attributes. This result shows two improvements in the value chain perspective of Gereffi *et al* (2005). A first improvement is related to the governance carried out by a single leading company, and the co-governance of the chain carried out by two companies that can be considered leaders. It is this co-governance that makes it possible for this chain to function without necessarily vertically integrating.

This leads to the second step, as this work showed an alignment between transaction and chain governance. A new governance modality emerged from this alignment, co-governance, through joint action between two leading companies. This chain is between the chain of the captive type and vertical integration and differs from captive governance by its low codification ability and vertical integration by the impossibility of vertically integrating. This goes further in the theoretical field of global value chains, showing that in highly complex chains with low codification and low supply base capacity, co-governance between the two leading companies makes it possible to conduct activities without vertically integrating.

Also, it contributed to the scientific field by highlighting the importance of considering the asset broken down into its value attributes, as proposed by Barzel (2005). For chain governance, it is the asset broken down into its attributes that made it possible to identify the differences in the types of governance and the problems of information asymmetry. This study also showed that the complexity of information in a chain must be analyzed gradually, rather than a binary analysis between "complex" and "non-complex," as proposed by Gereffi *et al* (2005).

Empirically, this study contributed by illustrating that the design of the chain contributes not only to highlight the inherent complexity of global agri-food value chains, especially the specialty coffee chain but also provides elements in the transactions that can explain why the chains are different. This work showed that within the category "specialty coffees," there are different types of coffees, which demand different governance mechanisms. Therefore, improvements in the category concerning governance and reduction of information asymmetry problems are suggested to depend on considering coffee as a set of value attributes that imply differences in transactions. Also, this chain was noted to be oriented not only by the buyer but also by the producer. For agents in the chain, integrating both guidelines can contribute to better strategic actions in the chain.

Measurement imbalances along the chain were identified as able to compromise the long-term survival of this chain. The leading agents, i.e., exporter and importer, have an essential role in measuring and, therefore, in guaranteeing information. However, the non-measurement by agents further down the line, such as roasters and coffee shops, compromises

the transmission of information since they are the first agents to identify the value demanded in the chain. Therefore, this study contributes with subsidies for the destination of quality assessment policies as it reveals that the value considered in coffee changes with each transaction. Thus, public and private institutions can develop more objective quality assessment mechanisms by exposing which attributes value each transaction.

Also, the measurement concentrated only in some chain links can generate information distribution failures, potentially causing problems such as value appropriation and market distortions. Finally, considering that the GVC of specialty coffees may involve more than one leading company shows that both companies must carry out efforts to guarantee perpetuity in the chain. Including certification cases to understand this problem can contribute since third-party certifications are important measurement and codification mechanisms for distributing value in the chain. Furthermore, cooperatives or other collective groups should be included in the research, essential agents for chain coordination.

While this study intended to understand the chain as a whole, the problem was not fully solved. On the one hand, studies on upgrading agents further up the chain can provide signs about the efficiency of the chain organization to create value. On the other hand, further downstream, studies related to consumer behavior are suggested, seeking to identify how the value in coffee is considered, and how this information is returned in the chain. In addition to the cases of certification and cooperatives, other future studies may seek to investigate in greater depth the distinctions between the differences in levels of integration further down the chain and also the impacts of different chain orientations (buyer and producer-driven).

REFERENCES

Atkinson, R. and Flint, J. (2004). Snowball sampling. In Lewis-Beck, M.S., Bryman, A. and Liao, T.F. (Ed.), The Encyclopaedia of Social Science Research Methods. Sage. https://dx.doi.org/10.4135/9781412950589

Barzel, Y. (2005). Organizational forms and measurement costs. Journal of Institutional and Theoretical Economics, Vol. 161, pp.357-373. https://dx.doi.org/10.1628/093245605774259291

Clay, D.C., Bro, A.S., Church, R.A., Ortega, D.L., and Bizoza, A.R. (2018). Farmer incentives and value chain governance: critical elements to sustainable growth in Rwanda's coffee sector. Journal of Rural Studies, Vol. 63, pp.200-213. https://doi.org/10.1016/j.jrurstud.2018.06.007

Coase, R. H. (1937). The nature of the firm. Economica, Vol. 4, No. 16, pp. 386-405. https://doi.org/10.1111/j.1468-0335.1937.tb00002.x

Conselho Dos Exportadores De Café Do Brasil. (2021). Relatório mensal dezembro 2020., available at: http://www.sapc.embrapa.br/arquivos/consorcio/informe_estatistico/CECAFE_Relatorio_Mensal_DEZEMBRO_2020.pdf. (accessed: 14 June, 2021).

Costa, B. R. (2020). Brazilian specialty coffee scenario. In Almeida, L.F and Spers, E.E. Coffee consumption industry strategies in Brazil. Elsevier. https://doi.org/10.1016/B978-0-12-814721-4.00001-9

Eisenhardt, K. M. (1989). Agency theory: an assessment and review. The Academy of Management Review, Vol. 14, No. 1, pp. 57-74. https://www.jstor.org/stable/258191

FAO. (2014). Developing sustainable food value chains: guiding principles. Rome.

Gereffi, G., Humphrey, J., and Sturgeon, T. (2005). The governance of global value chains. Review of Political Economy, Vol. 12, No.1, pp.78-104. https://dx.doi.org/10.1080/09692290500049805

Giuliani, E., Pietrobelli, C. and Rabellotti, R. (2005). Upgrading in global value chains: lessons from Latin American clusters. World Development, Vol. 33, No. 4, pp. 549-573. https://doi.org/10.1016/j.worlddev.2005.01.002

Guimarães, A. F., Malanski, P. D., Bouroullec, M. D. M. and Schiavi, S. M. A (2020). Governance analysis in global specialty coffee value chain: a study with downstream agents IFAMA'S 30th World Conference. Rotterdam.

Jensen, M., Meckling, W. (1976). Theory of the firm: managerial behavior, agency cost, and ownership structure. Journal of Financial Economics, Vol. 3, No. 4. https://doi.org/10.1016/0304-405X(76)90026-X

Lerner, D.G., Pereira, H.M.F., Saes, M.S.M. and Oliveira, G.M. (2021). When unfair trade is also at home: the economic sustainability of coffee farms. Sustainability, Vol. 13. https://doi.org/10.3390/su13031072

Saes, M. S. M. A. (2010). Rent appropriation among rural entrepreneurs: three experiences in coffee production in Brazil. Revista de Administração, Vol. 45, No.4, pp.313-327. https://doi.org/10.1016/S0080-2107(16)30464-2

Samper, L.F., Giovanucci, D., and Vieira, L.M. (2017). The powerful role of intangibles in the coffee value chain. Economic Research Working Paper No. 39. World Intelectual Property Organization.

Santos, J. K., Guimarães, A. F., Schiavi, S. S. and Chaves, P. T. T. (2021). Atributos de qualidade e complexidade de mensuração nas transações: um estudo em exportadora de cafés especiais. Revista Gest@o.org, Vol. 19, pp. 88-104. https://doi.org/10.51359/1679-1827.2021.240123

Specialty Coffee Association. (2020). What is specialty coffee, available at: https://sca.coffee/research/what-is-specialty-coffee (accessed 02 March 2020).

Torga, G. N. and Spers, E. E. (2020). Perspectives of global demand. . In Almeida, L.F and Spers, E.E. Coffee consumption industry strategies in Brazil. Elsevier. https://doi.org/10.1016/B978-0-12-814721-4.00001-9

Trienekens, J.H. (2011). Agricultural value chains in developing countries: a framework for analysis. International Food and Agribusiness Management Review, Vol. 14 No. 2, pp.51-82. https://dx.doi.org/10.22004/ag.econ.103987

United States Department of Agriculture. (2019). Foreign agricultural services., available at: http://apps.fas.usda.gov/psdonline/psdQuery.aspx (accessed: 17 April 2019).

Vicol, M., Neilson, J., Hartatri, D.F.S., and Cooper, P. (2018). Upgrading for whom? relationship coffee, value chain interventions and rural development in Indonesia. World Development, Vol. 110, pp.26-37. https://dx.doi.org/10.1016/j.worlddev.2018.05.020

Williamson, O.E. (1985). The Economic Institutions of Capitalism, Free Press, New York, NY.