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Original Article

An attempt to classify plural forms of governance

Uma tentativa de classificar formas plurais de governança

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Abstract

Plural governance structures arise when a firm conduct the same transaction simultaneously under more than one governance structure. The article presents a classification of cases of plural governance structures, based on the rationale behind the choice of a combination of simple governance structures. The method was the comparison of cases reported in the literature. Four main sets of cases occurring plural forms were found, in which the governance structures are complementary; determined by resources available to firms; explained the diversity of contract makers; and related to the history of the firm. Various theoretical lenses are useful to analyze the phenomenon of plural, particularly Transaction Costs Economics, Resource Based View, and Industrial Organization, setting then the issue of the adequacy of theories to the concrete cases.

Keywords: Structures of governance; Plural forms; Transaction costs

Resumo

Estruturas de governança plurais surgem quando uma mesma transação é conduzida por uma firma simultaneamente sob mais de uma estrutura de governança simples. O artigo apresenta uma classificação de casos de estruturas de governança plurais, baseada na racionalidade subjacente à escolha da combinação de estruturas de governança. O método foi a revisão e comparação de casos relatados na literatura. Foram identificados quatro grandes conjuntos de casos em que ocorrem formas plurais: em que as estruturas de governança são complementares; as determinadas pela disponibilidade de recursos para a firma; as explicadas pela diversidade dos tomadores de contrato; e as relacionadas à história da firma. O fenômeno das formas plurais pode ser analisado sob diversas lentes teóricas, especialmente a Economia dos Custos de transação, a Visão Baseada em Recursos, e a Organização Industrial, colocando-se então o problema da adequação das teorias aos casos concretos.

Palavras-chave: Estruturas de governança; Formas plurais; Custos de transação

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Introduction

In a well known work on philosophy of science, Adam Smith depicted theories as "imaginary machines" that link in human mind several phenomena whose connections are not directly observable. In many aspects, intellectual systems look like devices composed by connected parts. Even without seeing it, the opera spectator knows that there is a hidden mechanism that moves the sceneries and the curtains (Smith, 1986). The hands of an analog clock can be moved either by mechanical energy accumulated in a spring, or by electromagnetic energy accumulated in a battery. What one see on the display, however, is always the same dance of the hours. This article argues that in the case of plural governance structures, different mechanisms can produce the same apparent effect. As a consequence, there would not be a general theory capable of accounting for all reported cases of plural forms. In such circumstances, a classification of plural forms would be a useful tool for identifying the theories most suited to each class of plural arrangements.

According to Bradach and Eccles (1989), a plural form emerges when the same firm adopts different governance structures to conduct identical or very similar transactions. This type of arrangement can occur either in obtaining inputs, when a firm simultaneously produces part of the intermediate input that consumes and acquires from third parties the remaining quantity, or in the distribution of products, when a firm sells its products through wholesalers while retaining their own stores.

The phenomenon of plural forms is relevant to the Transaction Cost Economics because, together with the phenomena of multiple governance structures in the same industry, and organizational arrangements among firms that allocate property rights in a way that the units act coordinately without an unified hierarchy (hybrid governance), requires that the famous dilemma between making or buying, between markets and hierarchies, to be complemented and extended (Ménard, 2013). Sauvée (2013) defined hybrid governance as an institutional arrangement that combines a structure of authority and a coordination architecture, in the presence of assets explored jointly by different firms. Plural forms consist of adopting different authority structures and coordination architectures to conduct identical or very similar transactions within a single firm.

The contribution of the Transaction Cost Economics to the Theory of Organizations lies in the possibility of explaining the *raison d'être* of organizations based on the attributes of the transactions they carry out. The inaugural landmark of this research program was Coase's (1937) essay on the nature of the firm. The distinctive feature of firms in opposition to markets is the replacement of price mechanism by hierarchy to coordinate production. Transaction costs include, among others, pecuniary and non-pecuniary costs incurred in obtaining information relevant to decision-making, communicating with the agents involved in the transaction, monitoring the behavior of those agents, measuring the relevant attributes of the goods and services. They also encompass the costs of negotiating, processing, monitoring, and enforcing contracts. Everything else constant, the firm would choose the least costly means of conducting transactions.

However, transaction costs are not fully measurable and sometimes even observable. This fact would preclude the test of theory, if it were not possible to establish a predictable and theoretically determinable relationship between observable attributes of transactions and their hidden costs. An important step in overcoming this limitation was made by Williamson (1975), assuming that transaction costs vary with certain characteristics of the agents involved (notably opportunism combined with limited rationality), with attributes of transacted goods, as well as with the institutional environment that supports transactions. The choice between making and buying would be based on the comparative efficiency of the market and the hierarchy to perform the same operations.

Williamson established relationships among the performance of the organization, the governance structures mobilized to drive transactions, the costs, and the attributes of the transactions. Three attributes of the transactions deserved attention: uncertainty, the frequency with which a particular transaction is repeated, and the "degree to which investments are idiosyncratic", that is, the degree to which the investments required for a given transaction cannot be fully recovered, if resources were assigned to the second best alternative (Williamson, 1979).

Asset specificity can have several origins: location, perishability, technical and/or quality standards, dedicated assets, brand, and, among other possible sources, human capital. An increase in uncertainty, frequency, or degree of idiosyncrasy of investment produces, ceteris paribus, an increase in transaction costs.

With these three elements, the relevant observable attributes of the transactions, the transaction costs (not directly observable) and the choice of the instrument to conduct the transactions (observable), it is possible to make predictions that, at least in principle, can be tested. The higher the transaction costs in the market, the greater the difficulty in using the pricing system to combine productive resources. Thus, such transactions would be most likely conducted within organizations, governed by hierarchical command.

Hybrid forms, including contracts, combine, in different proportions, incentives and controls (Williamson, 1996). The activities needed to provide incentives and exercise control are costly. Since the required proportions of these two coordination instruments vary between governance structures, transaction costs can be expected to vary when the structure of governance employed to conduct the same transaction changes.

Studies such as that of Saes and Silveira (2014) deepen the understanding of the alignment of governance structures with the characteristics of transactions. The type of interdependence between agents (which may be joint/simultaneous, sequential, or reciprocal) explains which governance structure will be most frequent. When the gains from cooperation are limited to one stage of the production process and the contribution of each agent is well defined (as in the joint acquisition of inputs by a pool of independent producers), short-term contracts would prevail. When the gains of cooperation are long lasting and agents benefit from common resources (such as in the designation of origin or products of specific quality), formal long-term relational contracts, complemented by reputation and trust, would be the most appropriate and frequent arrangements.

Innumerable cases in which plural governance structures are observed challenge the proposition that in each case there would be a single structure of governance able to minimize transaction costs (as seems to follow from the choice model presented by Williamson). According to Bradach and Eccles (1989), governance mechanisms (which they call price, authority, and trust) could be combined in different ways to conduct the same transactions. The authors have called plural forms the simultaneous use of more than one governance structure to conduct equivalent transactions.

Ménard (2013) argued that the explanation of the existence of plural forms has its roots in governance problems. Based on cases in Brazilian and European agribusiness chains, he identified three important determinants for the adoption of plural forms: ambiguity regarding the best way to organize transactions, the complexity of the transaction or interrelated sets of transactions, and strategic behavior of agents. The motivation for a theory of plural forms came from the realization of the existence of an intriguing diversity of hybrid arrangements. Without a theory, the accumulated mass of empirical evidence threatens to make the field of study disorganized and confusing.

In line with Puranam, Gulaty, and Bhattacharya (2013) and Madhok (1996), for whom the theories about the "make or buy" dilemma do not explain all cases of plural forms, this article argues that the explanatory elements of the plural forms identified by Ménard (2013) are relevant and cover a wide range of cases, but there are other cases where ambiguity, complexity and strategic behavior are not the main determinants. The phenomenon of plural forms can be analyzed under various theoretical lenses, among them Resource-Based View and Industrial Organization. Some of these lenses do not emphasize transaction costs. As a consequence of the plurality of explanations, the problem of the appropriateness of theories to concrete cases arises.

The purpose of this paper is to propose an attempt to classify plural forms, based on the rationality underlying the choice of a portfolio of governance structures. Although the result is similar – the use of different structures to govern the same transaction – the motives that lead to the choice may be diverse, and they are relevant to the understanding of the phenomenon. The present paper intends to contribute to the understanding of plural forms drawing attention to the diversity of phenomena that, taken in abstract, look the same: using more than one governance structure to conduct the same transactions. Without pretending to exhaust all possibilities, the article suggests a classification of the plural forms, hoping that it will be improved and used as an instrument to organize the empirical evidence, which is rapidly increasing.

Types of plural forms

The mapping of plural structures of governance was based on the literature reviews undertaken by Tadelis and Williamson (2013), and Cano (2016), and in the case studies reported in Ménard (2013) and Ménard, Saes, Silva, and Raynauld (2014). In general, case studies describe the reasons, benefits, and costs of adopting or maintaining plural forms. Thus, the criterion for classifying cases was the rationality underlying the choice of plural forms of governance. The most appropriate theoretical matrix for reading each case would be the one that accounts for the variables that in fact influenced the choice of the governance structure.

The first watershed consists in the fact that the presence of more than one governance structure affects or does not affect the net value of transactions conducted through other governance structures. In other words, it is about whether or not there is transactions cost subadditivity. Is the expected net value of transactions governed by means of plural forms less than the net value of the same transactions conducted under the most efficient singular form?

We found four distinct classes of plural forms. The first group encompasses cases where governance structures are interdependent, and more specifically, complementary. Complementarities may refer to (i) reduction of information asymmetry in cases where vertical integration provides useful information for monitoring contracts, (ii) bargaining power and the solution of agency problems, when the possibility of one part refusing the transaction disciplines the other parties, and finally (iii) complementarities may be related to difficulties in measuring the attributes and/or transaction costs. In these cases, the agent who chooses the governance structure cannot identify the best alternative under any condition, and may opt for a combination of them.

The nature of the plural forms of the second group touches upon the resources of the firms, including, but not limited to, the technological resources and the optimal scale of the plants. However, technological restraint is not sufficient for the emergence of plural forms. It would also require a combination of funding constraints (e.g. to prevent the construction of new plants on the efficient scale) and/or market size (sales opportunities would not justify increasing installed capacity).

The third class includes cases in which the diversity of governance structures is explained by the diversity of preferences of governance-takers, which differ in relation to risk aversion and intertemporal preferences.

There is finally a class where the adoption of plural forms is not supported by a strong economic rationality, but is rather explained by the history of the firm. These structures are no longer optimal, after organizational innovations or changes in the environment, but they continue in use.

In some cases, maintaining plural forms inherited from the firm's past do not raise business costs (weak path dependence). In other cases, a single governance structure would be more efficient (strong path dependence), but the costs of reorganization are high, making persist a suboptimal governance structure.

The classification presented here does not pretend to be exhaustive, admitting the possibility of new studies revealing categories not yet identified in the literature.

Interdependence between different governance structures reduces transaction costs

In this class of cases, the predominant theoretical matrix is Transaction Cost Economics, since the rationality underlying the

Table 1
Examples of studies in plural forms with interdependent governance structures.

Year	Author	Country	Industry	Main findings
1992	Gallini and Lutz	Theoretical model	Franchises	The plural form allows the capture and signaling of private information regarding the demand for new products. The share of own stores decline as the private information became common.
1995	Dutta, Bergen, Heide, & John	United States	Electric and mechanic	Risk of dependence and difficulty of assessing the performance of sales representatives induce industries to vertically integrate part of the sales force.
1996	Wolak	United States	Thermoelectric power	Transactions in the spot coal market mitigate the risks of opportunistic behavior for both parties involved in the supply of coal to the thermoelectric plants.
1997	Azevedo	Brazil	Frozen and concentrated orange juice	The vertical integration of part of the orange demanded by the processing industry reduces the bargaining power of citrus growers. The locational and temporal specificity of orchards influences the distribution of the quasi-rent.
1997	Bradach	United States	Fast-food (franchises)	Plural forms provide a benchmark between proprietary and franchised stores, and facilitate the adaptation of the entire system – mutual learning improves the innovation process.
1999	Lewin-Solomons	United States	Fast-food (franchises)	The adoption of plural forms facilitates the acceptance of innovations proposed by the franchisor and avoids the imposition of inefficient innovations. Own stores reduce the information asymmetry between franchisor and franchisee.
2011	Meiseberg	Germany	Retail and services (franchises)	Synergies provided by franchised stores are important determinants in the choice of governance mix, facilitating the uniformity of products and services, and the adaptability of the franchise system.
2013	Puranam, Gulaty, and Bhattacharya	Theoretical model		The supply through plural forms is optimal when the complementarity effects and/or firm constraints are strong face the risks involved in the transactions.
2013	Feltre and Paulillo	State of São Paulo, Brazil	Sugarcane	Different compositions of governance structures have been found in the same industry and region. Benefits of plural forms: reduction of the vulnerability of the plant and opening of information channel.

plural form is the reduction of transaction costs obtained through the simultaneous use of two (or more) governance structures. A paradigmatic example is the franchise network's own stores, which provide the franchisor with information on franchised stores' operating costs, providing parameters for negotiating the distribution of the quasi-rent generated by the business (Silva & Azevedo, 2011). Table 1 summarizes some examples drawn from the literature.

The interdependence of governance structures may also be related to the solution of agency problems, insofar as the existence of an alternative to the transaction with a given agent disciplines the behavior of the parties, inhibiting manifestations of opportunism.

In an analysis of relationships between citrus growers and orange processors, Azevedo (1997) argued that vertical integration of orchards by industry increases bargaining power in the purchase of fruit. Oranges in the orchard are highly specific assets, since there is an optimal period for harvesting and, consequently, for the sale of the fruit. Once harvested, the orange does not mature anymore. If, on the other hand, the harvest is postponed, the fruit dehydrates and begins to rot. The own supply of fruit allows the processor to wait, whereas at the time of harvest the producer would be pressed to sell.

Measuring uncertainty, the degree of asset specificity and even the moral hazard involved in a transaction may be impossible, difficult, or very costly. The firm may choose to use two or more governance structures because it is unable to assess the consequences of choice and does not fully accept the risk of a choice that in the future proves to be inadequate. In this case, the interdependence between distinct governance structures is related to its ability to mitigate the risk of failures when integrated into a portfolio of governance structures.

To determine the value of a transaction, it would be necessary to measure the relevant attributes of the goods or services, as well as evaluate ex-ante the transaction costs in each alternative organizational form. The problem is that, with agents characterized by limited rationality and opportunism, only exceptionally this information would be available by the time of decision-making.

a) Ambiguity in the measurement of relevant attributes of the transactions

Ménard (2013) named "ambiguity" one of the difficulties of comparing alternative governance structures, associated with the measurement of the relevant attributes of the transactions. If the value of the transactions depends on their attributes, and the attributes are evaluated very imprecisely, then the value of the transactions conducted under different governance structures becomes vague, which gives rise to the difficulty, or even the impossibility, of choosing the less costly option to governing transactions.

Relevant attributes of transactions, such as asset specificity, may vary unpredictably over time. For example, a food processor can vertically integrate part of the production of raw materials,

because eventually adverse shocks impact production. During the shortages, the specificity of the asset rises, making vertical integration the most efficient governance structure. In normal periods, the asset (industrial facilities to process the agricultural product) becomes less specific, in which case the market or contracts would minimize the transaction costs.

This possibility suggests that asset specificity, understood as an opportunity cost, varies with the market environment (e.g. balance of supply and demand) and may not be symmetric, that is, it may not be the same for the two poles of the transaction. Consider an orchard next to a fruit processing industry. There is spatial specificity of the asset (orchard), since, if the fruit is diverted to another processor, the higher freight will reduce the net value received by the fruit grower. However, in times of fruit scarcity, more distant processors can make offers that compensate for the spatial disadvantage.

The example of fruit processing presents a relevant peculiarity, which is the fact that the two poles of the transaction, fruit growers and processors, control specific assets. The orchards have spatial and temporal specificity. Industrial plants and logistics equipment are dedicated assets and also have spatial specificity. The specificities of grower's and processor's assets vary over time and this variation is negatively correlated. The scarcity of the fruit reduces the specificity of the orchard, and increases that of the industrial plant; abundance produces the inverse effect. In this context, the question of the optimal governance structure may not have a single answer: in the harvest, the industries would prefer the spot market while the producers would prefer the contracts. In the off season, preferences would be reversed.

b) Complexity of transactions and difficulty in evaluating their costs

The difficulty of determining the transaction costs associated with each governance structure and hence of establishing a preference order between them increases as transactions become more and more complex. Complexity refers to the degree to which the outcome of a transaction depends on many variables, as well as on different states of nature, which are related in a way that is not fully understood by the decision maker. As a consequence, the agent has little confidence in his own judgments about the value of the many alternatives to governing such transactions.

It is worth to note that the problem of making or buying can be replaced as the choice of two alternative sets of transactions, the purchase of the intermediate input, or the purchase of more elementary raw materials, capital goods, and labor power. In complex economies, either option inserts the firm into a specific link of production chain. Firms do not exist outside the production networks. Put in this way, the problem of making or buying translates into the choice of how the firm will fit into the producer/consumer network, that is, of defining the firm's boundaries.

The result of transactions that depend on the decisions of many agents inserted in complex networks can be evaluated only in an imprecise way, since the monitoring of all the agents

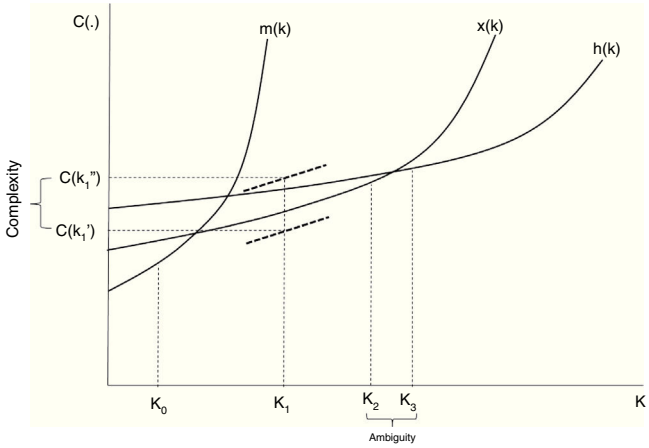


Fig. 1. Transaction costs according to the specificity of the assets and the governance structure.
Source: Adapted from Williamson (1996).

involved is difficult or even impossible. The game becomes very complicated. Assuming only two states of the agent output – conform and not conform to a given standard, for example – a linear chain with n agents would have n^2 states, which makes it difficult to evaluate as n grows. Asymmetries in the network, as in the poultry and pig industry, where an agent controls sufficient resources to exercise the coordination of the production process, can reduce the degree of complexity.

The network topology can also be more or less complex, affecting the evaluation of the transactions. However, there is no direct relationship between the complexity of network design and the complexity of calculating transaction value. A linear, simple-structure network can make computation complex if the weight of the action of each agent on the final result is very high, whereas in a more complex network, the failures of one agent could be compensated by others. In complex networks some agents could become superfluous because it would be possible to complete the transaction in different alternative circuits.

In Williamson's model of governance choice (1996), asset specificity varies continuously. The costs of transactions conducted in the market, through contracts, and within the firm are continuously growing with the level of specificity of the assets, but at different rates. Governance structures also have different fixed costs. As a result, the structure of governance that economizes transaction costs is conditioned to the level of asset specificity.

In Fig. 1, k represents the specificity level of the assets involved in the transaction. C is the transaction cost. The functions $m(k)$, $x(k)$, and $h(k)$ provide the transaction cost associated with each level of asset specificity for transactions conducted respectively in the market (m), by hybrid forms (contracts) (x), and under hierarchical control (vertical integration) (h).

The greater the intensity of the controls required to conduct the transaction, the higher the fixed cost associated with the governance structure. However, variable transaction costs grow more rapidly in less-fit governance structures to monitor the behavior of the agent placed at the opposite pole of the transaction. There are, among different governance structures, the

partial substitutability of fixed costs by variable costs, reflecting the different compositions of incentives and controls.

In general, a single governance structure minimizes transaction costs, given the level of specificity of the assets involved in the transaction. Thus, with the specificity of asset k_0, the market is the mode that saves transaction costs. This is the logic of Williamson's choice model.

At level k_1 the specificity of the asset is well determined, but the transaction costs associated with the use of contracts are assessed in an imprecise manner. The decision-maker believes that the transaction cost falls in the range between the dashed lines parallel to $x(k)$, but in this range it is not possible to unambiguously determine the structure of governance that minimizes transaction costs, whether hierarchy or hybrid form. The decision-maker conjectures that costs of contracting are in the range of $C(k_1')$ to $C(k_1'')$, but she cannot decide whether they are higher, lower or equivalent to the costs incurred in vertical integration.

If the specificity of the assets were unambiguously assessed, the firm would choose vertical integration if the degree of specificity of the assets were k_3, or choose to contract with third parties, if the level of specificity were k_2. However, in practice, it is not possible to know ex-ante the "true" level of asset specificity, nor, consequently, to determine the transaction costs associated with each governance structure. The firm would not be able, under such conditions, to sort out its preferences regarding feasible governance structures. If the difference between transactions costs associated with alternative governance structures is sufficiently large, the firm could choose to maintain at the same time two structures, vertical integration and contract, as a mechanism to protect against the risk of a poor choice.

In cases where plural forms derive from interdependent governance structures, empirical research could be guided by testable hypotheses such as:

- The relevant information (costs, profitability) is not shared spontaneously between the parties; asymmetry of information is present. In such cases, one party vertically integrates a given activity to obtain strategic information about the other contracting party.
- Negotiation is conflictive and, at least temporarily and in certain circumstances, each of the parties involved is able to impose losses on others. Vertical integration would strengthen the bargaining power of one party, increasing the value captured in transactions governed by contracts.
- A governance structure (usually vertical integration) provides information used to monitor other structures. When the transaction involves highly specific assets, the markets do not provide relevant information about the parties' costs and margins. Vertical integration has the function of generating information necessary to evaluate the performance of the other party.
- The measurement of the relevant characteristics of the goods or services (quality) is impossible, difficult or very costly. Uncertainty about the quality of transacted goods or services may induce the adoption of more than one governance structure. This arrangement may be transient (if an efficient structure is discovered) or permanent (if there is no clearly a more advantageous structure).
- The determination of transaction costs (uncertainty about the parties' behavior and/or the success of the transaction) is impossible, difficult, or very costly. In such cases, the value of the transaction, as well as the ex-post costs of monitoring and enforcing property rights, is high and uncertain.

Plural forms rooted in firm's resources

In this class the *raison d'être* of plural forms is related to limited availability of firm's resources. By employing plural forms, organizations can mobilize third-party resources and grow faster than if they mobilize only their own or indebted resources. Constraints on installed capacity at some stage of the production process can also give rise to plural forms. In other situations, the firm seeks in clients and suppliers useful knowledge to improve the performance of its own operations. This class of cases is mainly explained by financial, technological or knowledge management aspects, leaving transaction costs in a second plan. The main paradigm that supports the analysis of these cases, of which some examples are given in Table 2, is the Resource Based View.

The choice of vertically integrating part of the production of needed inputs, while at the same time acquiring the rest of third parties, either in the spot market or through contracts, can be efficient in the presence of indivisible assets. Nunes and Makishi (2014) report the case of a company that produces beverages, having enough capacity to distill approximately 70% of the bottled beverage. If investments were made to double installed capacity, the two plants would have on average 30% idle capacity. On the other hand, a distillation column with smaller capacity would not be as efficient as the equipment on the optimal scale. The solution was to buy in bulk from third parties the amount of distilled beverage corresponding to the difference between the quantity demanded and the quantity distilled internally. In this case, it is not about buying or making, but about making and buying – the two governance structures are used simultaneously to conduct the same transaction. This example suggests that because of economies of scale, it would not be feasible to construct a "small" distillation column with approximately half of the previously existing capacity, and that the idle capacity of another column of similar scale would be excessively onerous. It is noteworthy that this arrangement has lasted for forty years and the firm considers it satisfactory. During this period, demand growth did not induce full vertical integration.

The following empirical hypotheses, among others, fit in cases in which the plural forms are related to the endowment of resources of the firm:

- One of the poles of the transaction presents strong economies of scale and/or scope in a given segment of the production chain. In the absence of high minimum efficient scales, there would be no great difficulty in adjusting installed capacity to demand without recourse to partners.

Table 2
Examples of works in which plural forms are related to resources controlled by the firm.

Year	Author	Country	Industry	Main findings
1968	Oxenfeldt and Kelly	Theoretical model	Franchises	Firms opt for the contractual modalities of franchising due to the restriction of resources (including financial, human and physical) experienced at the beginning of their activities.
1997	Bradach	United States	Franchises (fast-food)	The franchise network can be expanded quickly without being deeply affected by resource constraints.
2006	Rothaermel, Hitt, and Jobe	World	Microcomputers	Plural forms enable the firm to have access to several sources of knowledge, to integrate tacit knowledge and complementary assets controlled by other firms.
2013	Feltre and Paulillo	State of São Paulo – Brazil	Sugarcane	In a sugar mill, vertically integrated production of raw materials, while able to reduce uncertainty in supply, was not adopted because it would require the immobilization of substantial financial resources.
2013	Puranam, Gulaty, and Bhattacharya	Theoretical model	Nonspecific	Supply through plural forms is optimal when the complementarity effects and/or effects of resources constraints are strong and offset the risks involved in the transactions.
2014	Miranda and Chaddad	Missouri – United States	Wine	The alignment between transaction characteristics and governance structures is underpinned by appropriate sets of resources and capabilities. Differences in skills help to explain organizational diversity.
2014	Nunes and Makishi	State of São Paulo – Brazil	Cachaça	The authors identified a case of a producer and bottler of cachaça that acquires third-party raw beverages, since the demand exceeds the capacity of its own distillation columns.

- The firm faces difficulties in acquiring large amounts of raw material in the market. There would be an incentive for full vertical integration, but it would be advantageous to continue acquiring from skilled suppliers, probably through formal or relational contracts.
- Changes in demand do not affect the quantity transacted through one of the governance structures (usually vertical integration), being absorbed by the others (market and/or contracts). Costs of vertically integrated supply will be probably lower than costs of outsourcing. The most costly source of supply will absorb variations in demand.
- The growth of vertically integrated production would be limited by the firm's ability to raise funds in the financial market and/or increase indebtedness. Although in this case vertical integration is profitable, the firm fails to take this opportunity due to lack of resources.
- The balance between incentives and controls in the arrangements between firms varies according to the capabilities and resources of the parties involved in the transaction. Firms most gifted would require less strict controls, while less qualified firms would need more resources for monitoring their activities.

Suppliers or customers with different degrees of risk aversion and intertemporal preferences

The mechanisms employed to govern similar transactions (same product, same position in the production chain) may vary due governance-taker's preferences toward time and risk. Frequently in these cases a governance-maker firm transacts with several clients and/or suppliers using different contracts, with different durations, risk allocations, and compensation schemes. The governance-taker chooses the contract that best suits her preferences. The theoretical basis of the analysis of these cases is the microeconomic theory of choice, with emphasis on the expected utility. Table 3 gives examples of this class of plural forms.

The differences in what we could generically denote as the utility functions of transacting agents may give rise to the emergence of plural forms. The choice model presented by Williamson (1996) assumes that if the firm opts for contractual forms, there will be someone willing to accept the contract in the proposed form. But it is quite plausible that different suppliers have different preferences over the different feasible contracts. Firms that purchase fruits for processing use a broad portfolio of contracts in which suppliers have different levels of commitment of quantities, responsibility for harvesting and transportation activities, exposure to price risk, and participation in the results of the business. As suppliers differ among themselves in terms of farm size, crop specialization, non-farming income, among other factors, the same transaction may be conducted under different governance structures according to the governance-taker preferences. The industry is indifferent between the alternatives offered, and it is up to the supplier to choose the one that suits her best.

Buyer risk aversion may encourage vertical integration, even if the market offers low-cost options. The transaction is characterized not only by the conditions in which the commodity is offered, but also by characteristics of demanders and suppliers. The choice of contract should be analyzed using both the differences in transaction costs and in risk aversion. Cheung (1969) gives as an example a hospital that can obtain electricity through a contract with the local supplier and at the same time have its own electric generators that are activated in the event of a supply interruption. Although it could be argued that in this example there is no choice, given the very high costs of

Table 3
Examples of papers in which plural forms are related to differences in preferences of governance takers.

Year	Author	Country	Industry	Main findings
1999	Marino	State of São Paulo – Brazil	Citrus growers	The size of the citrus grower influences the duration of orange supply contracts. Following the ban on the standard contract, a wide range of contracts emerged.
2005	Menezes	State of Minas Gerais – Brazil	Coffee growers	The attitude of the rural producer to risk is one of the determinants of the choice between contracts and the spot market.
2005	Souza Filho and Paulillo	State of São Paulo – Brazil	Citrus growers	The size of the citrus grower influences the choice of marketing channels and governance instruments in the sale of the orange.
2014	Hansen, Owan, Pan, and Sugawara	United States	Experiment with students	Student's personal characteristics influence the choice of mechanisms of governance to prevent opportunistic behavior in academic teams.

interrupting the supply of energy, for example, during a surgical procedure, it should be recognized that the hospital performs two distinct transactions for energy, one governed by vertical integration and other by a standard contract. The hospital could choose even to fully integrate the power generation. A domestic consumer, who would have small losses from the power outage, takes the risk and uses only the standard contract with the energy distributor.

Characteristics of players, such as the propensity for opportunism or commitment to the word engaged, influence the way the game is played. According to Gulati and Nickerson (2008), the choice of governance structure is affected by the prior existence of trust between organizations. High levels of trust would be associated with less formal and less costly governance structures as well as superior performance. Trust would be a low-cost substitute for monitoring instruments, but its use obviously cannot be generalized.

Hölstrom and Roberts (1998) develop a model of repeated games in which vertical integration reduces the temptation to renegotiate a relational contract and thus affects the design of the best contract that parties could sustain over time. The effect of partial vertical integration is not due to the elimination or reduction of the risk of volatile prices, but to the reduction of incentives to break supply contracts. Plural forms would tend to appear in environments of lesser confidence and greater impersonality in transactions.

Implications for empirical research are exemplified in the following hypotheses:

- Power is not symmetrical. The costs of discontinuing the relationship are uneven. There are some governance makers and many governance takers. In heavily competitive markets transactions tend to be standardized in relation to few dimensions of the product and terms of negotiation.
- Governance structures with higher levels of control and safeguards would be adopted in transactions with low levels of trust, and less costly structures when agents trust each other.
- The firm transacts with many agents who perform equivalent functions (suppliers of agricultural raw materials, for example) but who have different levels of risk aversion and/or intertemporal preferences. In this case, the acquisition through contracts with different pricing and risk allocation mechanisms would be explained by the preferences of the governance-takers, rather than by the attributes of the transaction.

Simple juxtaposition of pure forms

The reasons given so far for the existence of plural forms are linked to efficiency, and often to the affordable efficiency, given the transaction costs. However, there are cases where firms maintain plural forms because it is costly to undo the least efficient arrangement, or because there is no significant gain in rearrangement. Different governance structures have been inherited from earlier periods in the firm's history (and the environment in which it operates), and there is no obvious gain in maintaining some of them. We call strong path dependence cases where there would be gain in converging to a singular governance structure, but the cost of braking relationships is very high. Weak path dependence refers to cases where reorganization costs are not significant, but expected gains are negligible. In that case, the relevant question would not be "why do you adopt plural forms?" but "why not?". Once governance structures are already in place, it would take some reason (incentive) to get rid of one of them. Table 4 presents cases belonging to this class.

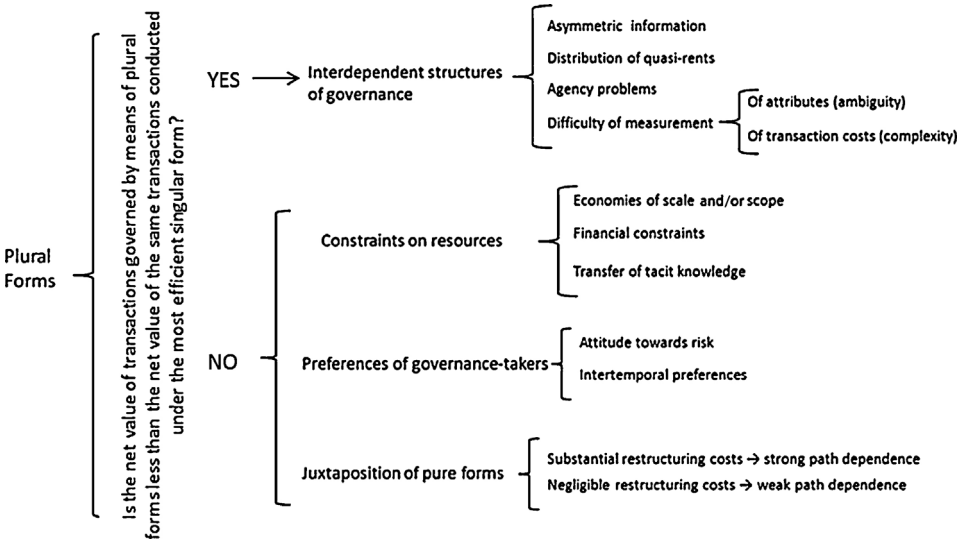
Transaction Costs Economics may contribute to elucidate some of such cases, since inefficient structures could persist if reorganizing transactions were too costly. In other cases, when the firm seeks to preserve ties with stakeholders or suppliers that supported the firm in its early history, the key to understanding could be supplied by Economic Sociology. In other cases, the purchase of inputs in the spot market, at the same time when vertical integration and contracts are employed, represents only an eventual holding of a business opportunity, without any impact on the organization of the supply chain.

Pongeluppe, Moron, and Lazzarinni (2014) report the case of a pulp and paper company buying wood from small suppliers, which in the past were important for the growth of the company. Currently the company vertically integrates reforestation and produces wood at competitive costs, but continues to maintain the relationship with its traditional suppliers.

Table 4
Examples of works in which plural forms are related to business history.

Year	Author	Country	Industry	Main findings
2005	Mizumoto and Zylbersztajn	State of São Paulo – Brazil	Eggs	The authors have identified cases where distribution through wholesalers perpetuates over time, with no apparent advantages over relational contracts.
2014	Feltre, Paulillo, and Souza Filho	State of São Paulo – Brazil	Sugarcane	The paper reports the case of a sugarcane production plant, which was acquired at the beginning of the group's business history, without any evident connection with the company's sugar and alcohol plant in a different region.
2014	Pongeluppe et al.	Brazil	Pulp and paper	The firm has contracts with small producers, although there are no cost advantages or synergies with vertically integrated production.
2014	Smith et al.	State of São Paulo – Brazil	Rubber for footwear	The authors have identified the practice of footwear firms that eventually buy rubber on advantageous terms, from tanneries or footwear factories facing liquidity problems.

Table 5
Classification of plural forms of governance.



Source: Author.

Smith, Martnelli, and Machado Neto (2014) found a rubber footwear company that eventually buys raw material from the spot market of other companies in the industry that for some reason accumulated surplus stocks. The prices in these occasional transactions are lower than the prices usually charged by suppliers. The buyer does, in fact, arbitrage operations in input markets. This way of governing transactions does not affect the governance structure used regularly, which are relational contracts.

In this set of cases, plural forms occur almost by accident. They are linked to the history of the company and/or the founding family, or to exceptional arbitrage opportunities in the markets in which the company operates.

Hypothesis suitable to this class of plural forms seem like those:

- Vertical integration does not affect the conduct of transactions through other governance structures.
- Reorganization costs are low, but incentives are also negligible.
- There are costly governance structures compared to the most efficient, but the cost of reorganization (at least in the short term) outweighs the benefit.
- There is no cost advantage in the vertical integration of input supply.
- Some spot market purchases are sporadic and in exceptionally advantageous conditions.

Table 5 summarizes the four large plural form classes, according to their nature or main explanatory factors.

Final considerations

This paper presented an attempt to classify plural governance structures based on the rationality underlying the choice. The benefit to research in plural forms of governance is primarily the

caveat that the decision to adopt more than one governance structure to conduct the same transactions may have several motives and respond to different contexts. There is no single model that fits the entire set of cases identified in the literature.

The starting point of the theoretical investigation was the Williamson's governance structure choice model, rooted in Coase's theory of firm. The accumulated empirical research has revealed in real economic life not only a high frequency of plural governance structures, but also the complexity of the phenomenon.

It would be useful, in guiding future empirical research, to classify cases of plural forms, helping the researcher to choose the most promising theoretical background for each case.

Four major classes of plural forms were identified. These are: (i) a class in which different governance structures are interdependent, and the transaction cost in the plural form is less than the sum of the transaction costs of the singular forms; (ii) a class that encompasses cases of plural forms explained by constraints on the resources of the firm; (iii) a class in which the choice of governance instrument is made by governance-takers, who differs in regard to risk aversion and preference for liquidity; (iv) a class of plural forms constituted by a simple juxtaposition of singular ones, without any evident benefit of using the plural form. The latter class includes cases where assets have been acquired throughout the company's history and currently operate as distinct decision centers even though ownership is in the hands of the same people, as well as cases where longstanding relationships are preserved for reasons not related to economies of transaction costs.

The main limitation of this attempt to classify plural forms is that it is not exhaustive. At any time new cases can be identified that do not fit into only one of the identified sets. With respect to cases where governance structures are interdependent, differences between industries and even between firms within the same industry may be relevant to explain the interplay of governance structures in plural forms.

We hope that the classification proposed here contributes to the design of new research in the area, saving efforts that would be wasted if the researcher tries to harbor all cases of plural forms under a single theoretical model.

Conflicts of interest

The author declares no conflicts of interest.

References

Azevedo, P. F. (1997). Integração Vertical no Sistema Agroindustrial Citrícola: Instrumento de barganha ou de eficiência. *Revista de Economia Aplicada, São Paulo*, *1*(3), 373–391.

Bradach, J. L. (1997). Using the plural form in the management of restaurant chains. *Administrative Science Quarterly*, *42*, 276–303.

Bradach, J. L., & Eccles, R. G. (1989). Price, authority and trust: From ideal types to plural forms. *Annual Review of Sociology*, *15*, 97–115.

Cano, A. (2016). *Formas plurais de governança das transações de suprimento de cana de açúcar: Estudo de quatro casos polares em unidades da agroindústria canavieira paulista* (Tese de Doutorado). Universidade Federal de São Carlos.

Cheung, S. (1969). Transaction costs, risk aversion, and the choice of contractual arrangements. *Journal of Law and Economics*, *13*(1), 23–42.

Coase, R. H. (1937). The nature of the firm. *Economica*, *4*, 386–405.

Dutta, S., Bergen, M., Heide, J. B., & John, G. (1995). Understanding dual distribution: The case of reps and house accounts. *The Journal of Law, Economics & Organization*, *11*(1), 189–204.

Feltre, C., & Paulillo, L. F. O. (2013). A pluralidade nas transações de cana-de-açúcar no Oeste Paulista [The plurality of sugar cane transactions in western São Paulo]. *Revista de Administração Contemporânea*, *17*(6).

Feltre, C., Paulillo, L. F. O. & Souza Filho, H. M. (2014). O Setor Sucroalcooleiro da Região Centro-Sul do Brasil: os Casos das Usinas São Manoel-SP e Adecoagro-MS. In Ménard, C. (Org.), Saes, S. (Org.), Silva, V. L. S. (Org.), & Raynauld, E. (Org.). (2014). *Economia das Organizações* (1st ed.). São Paulo: Atlas.

Gallini, N. T., & Lutz, N. E. (1992). Dual distribution and royalty fees in franchising. *Economics & Organization*, *8*(3), 471–501.

Gulati, R., & Nickerson, J. A. (2008). Interorganizational trust, governance choice, and exchange performance. *Organization Science*, *19*(5), 1–21.

Hansen, Z., Owan, H., Pan, J., & Sugawara, S. (2014). The impact of group contract and governance structure on performance – Evidence from college classroom. *The Journal of Law, Economics, & Organization*, *30*(3), 463–492.

Hölstrom, B., & Roberts, J. (1998). The boundaries of the firm revisited. *Journal of Economic Perspectives*, *12*(4), 73–94.

Lewin-Solomons, S. B. (1999). *Innovation and authority in franchise systems: An empirical explanation of the plural form. Working paper 0015*. Cambridge University, Department of Applied Economics.

Madhok, A. (1996). The organization of economic activity: Transaction costs, firm capabilities, and the nature of governance. *Organization Science*, *7*(5), 577–590.

Marino, M. K. (1999). Análise da evolução da relação contratual entre produtor e agroindústria citrícola após a extinção do contrato padrão. In *II workshop Brasileiro de Gestão de Sistemas Agroalimentares*.

Meiseberg, B. (2011). The prevalence and performance impact of synergies in dual distribution networks. In *Paper presented at the Emnet Conference*.

Ménard, C. (2013). Plural forms of organization: Where do we stand? *Managerial and Decision Economics*, *34*(3), 124–139.

Ménard, C. (Org.), Saes, S. (Org.), Silva, V. L. S. (Org.), & Raynauld, E. (Org.). (2014). *Economia das Organizações* (1st ed.). São Paulo: Atlas.

Menezes, R. G. F. de. (2005). *Percepção de risco e escolha dos contratos nas transações de venda do café* (Dissertação de Mestrado). Universidade de São Paulo.

Miranda, B. V., & Chaddad, F. R. (2014). Explaining organizational diversity in emerging industries: the role of capabilities. *Journal on Chain and Network Science*, *14*(3), 171–188.

Mizumoto, F. M., & Zylbersztajn, D. (2005). *Estratégia de Canais de Distribuição Múltiplos: Casos na Avicultura de Postura Brasileira*. São Paulo: Seminários em Administração.

Nunes, R., & Makishi, F. (2014). O Setor de Cachaça: O Caso da Companhia Müller de Bebidas e da Indústria de Bebidas Pirassununga. In C. Ménard (Org.), S. Saes (Org.), V. L. S. Silva (Org.), & E. Raynauld (Org.), *Economia das Organizações* (1st ed.). São Paulo: Atlas.

Oxenfeldt, A. R., & Kelly, A. O. (1968). Will successful franchise systems ultimately become wholly-owned chains? *Journal of Retailing*, *44*, 69–83.

Pongeluppe, L. S., Moron, C. R., & Lazzarinni, S. G. (2014). O Setor de Papel e Celulose: O Caso das Empresas Klabin e Grupo Orsa. In C. Ménard (Org.), S. Saes (Org.), V. L. S. Silva (Org.), & E. Raynauld (Org.), *Economia das Organizações* (1st ed.). São Paulo: Atlas.

Puranam, P., Gulati, R., & Bhattacharya, S. (2013). How much to make and how much to buy? An analysis of optimal plural sourcing strategies. *Strategic Management Journal*, *34*(10), 1145–1161.

Rothaermel, F. T., Hitt, M. A., & Jobe, L. A. (2006). Balancing vertical integration and strategic outsourcing: Effects on product portfolio, product success, and firm performance. *Strategic Management Journal*, *27*(11), 1033–1056.

Saes, M. S. M, & Silveira, R. L. F. (2014). New forms of organization in the Brazilian agribusiness chains: recent trends. *Estudos Sociedade e Agricultura (UFRJ)*, *22*(2), 386–407.

Sauvée, L. (2013). Hybrid governance: Sketching discrete alternatives. *Journal on Chain and Network Science*, *13*(1), 1–9.

Silva, V. L. S., & Azevedo, P. F. (Org.). (2011). *Teoria e Prática do Franchising: Estratégia e organização de redes de franquias* (1st ed.). Sao Paulo: Editora Atlas.

Smith, A. (1986). The Principles which lead and direct Philosophical Enquiries illustrated by the History of Astronomy. In R. L. Heilbroner (Ed.), *The essential Adam Smith*. New York and London: W.W. Norton & Co.

Smith, M. S. J., Martnelli, D. P., & Machado Neto, J. A. (2014). O setor de Couro para Calçados: O caso das Empresas Doctor Pé e Carmen Steffens. In C. Ménard (Org.), S. Saes (Org.), V. L. S. Silva (Org.), & E. Raynauld (Org.), *Economia das Organizações* (1st ed.). São Paulo: Atlas.

Souza Filho, H. M., & Paulillo, L. F. (2005). *Public policies, transaction costs and access to commodity chain markets*. Working paper of the Food Agricultural Organization – United Nations Organization.

Tadelis, S., & Williamson, O. E. (2013). Transaction cost economics. In R. Gibbons, & J. Roberts (Eds.), *The handbook of organizational economics* (pp. 159–192). Princeton University Press.

Williamson, O. E. (1975). *Markets and hierarchies: Analysis and antitrust implications*. New York: Free Press.

Williamson, O. E. (1979). Transaction-cost economics: The governance of contractual relations. *Journal of Law and Economics*, *22*(1), 233–261.

Williamson, O. E. (1996). *The mechanisms of governance*. Oxford: Oxford University Press.

Wolak, F. A. (1996). Why do firms simultaneously purchase in spot and contract markets? Evidence from the United States steam coal market. In D. Martimort (Ed.), *Agricultural markets (contributions to economic analysis, Vol. 234)* (pp. 109–168). Emerald Group Publishing Limited.