

Veblen's Institutional Approach and Agribusiness Coordination

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Abstract

The paper aims to investigate Thorstein Veblen's evolutionary framework to the analysis of agribusiness systems. Veblen's theory argues that institutions are as much the result of individual choices as act over choices through the enforcement of mental habits. So there is a recursive relationship between individuals and institutions. Veblen's stressed out contributions: (i) a broad concept of institution, and (ii) institutional recursive relationships, both are of great value for the investigation of agribusiness systems. The article provides an assessment of Monsanto's role in the Brazilian market of genetically modified seeds (GM). In accordance with the performed assessment Monsanto may be considered as an institution in that market, because its performance enforces and establishes routines and habits among market players, like the examples of the scheme to collection of royalties fees at soybean trading facilities, and the role of Monsanto in the enactment of the Brazilian GMO property rights regime.

Keywords: institutionalism, agribusiness systems, genetically modified seeds

1. Introduction

The paper aims to apply the theoretical contributions of Veblen's evolutionary approach to empirical investigations related to the analysis of agribusiness systems. The theoretical underpinning is that relations among players in agribusiness systems are the result of formal and informal norms and rules that mold collective action in an evolutionary framework. In this approach, agriculture production faces market trends that induce stronger coordination among players to face a challenging market environment.

The need for agribusiness systems to apply to market requirements is related to a large range of points: new technological paradigms and consumer trends, demographic changes, new perceptions about social and environmental responsibilities, to mention just a few. Those points induce new relational arrangements among players within the diverse ties of agribusiness networks, including input producers, farmers, processing industries, wholesalers and retailers related to domestic and foreign markets. (Saes & Silveira, 2014).

The conventional perspective about the governance of agribusiness systems is based on the study of transactions in supply chains. That approach applies the ideas of NIE - New Institutional Economics to the analysis of governance structures in agribusiness systems (Zylbersztajn & Farina, 1999; Zylbersztajn, 2005). The main trait of that theoretical approach is that minimizing transactions costs entails the choice of governance structures in a spectrum that lies within the firm, hybrid and market forms. The main premises are that individuals operate with bounded rationality in markets where uncertainty and opportunism are pervasive. The firm in that approach is an institution that curtails transaction costs related to asset specificity, uncertainty and frequency by internalizing transactions under the fiat of its bureaucracy. The choice for vertical integration is the result of the efficacy of minimizing transaction costs (Williamson, 1985).

The functioning of agribusiness systems in nowadays however is distinctive from the several constitutive hypothesis of NIE. Governance arrangements are chosen as a consequence of firms' strategic choices that derive from a broader set of objectives than transaction costs. Arrangements like vertical integration, outsourcing, forward and futures contracting are examples of the coordinating role of leader firms (Zylbersztajn, 2005). As those arrangements are implemented, they tend to become routine practices followed by players in the agribusiness system, not as a result of rational deliberation, based on economic efficiency. Mainly they are due to the inductive role of leader firms in processing and distribution channels. It is observable that the relations among players in agribusiness systems, specifically between farmers, processing and trading companies are

related to several asymmetries. As an essential characteristic, there is the trend of increasing industrial concentration in agriculture inputs, processing and distribution channels with fewer firms that have higher market shares (Guanziroli, Buainain & Souza Filho, 2008). So according to Williamson's cognitive map of contract (1985), there are several situations in which the monopoly approach overcomes efficiency.

Related to that point is the main contribution of the evolutionary approach and specifically Veblen's. First the understanding of the concept of institutions to Veblen regards them as "... *habits of thought common to the generality of men*" (Veblen, 1909). Institutions are by that definition the result of an adaptive process of the involvement of individuals' choices. The processing model of Veblen takes the institutional path as endogenous, and in that sense, individuals' choices are influenced by habits and routines (Hodgson, 2007).

Brazilian genetically modified (GM) seeds agribusiness system provides an applied and relevant illustration of Veblen's theoretical approach. The agribusiness sector comprises 21,5% of the Brazilian GDP and provides 37% of the employment in the country (CEPEA, 2016). In accordance to the Brazilian Agriculture Office, the agribusiness sector was responsible to 46% (US\$ 88 billion) of the total value exported by Brazil in 2015. Related to the exports of soybeans, the participation reached to US\$ 20, 9 billion, and the country has become the largest soybeans exporter and the second largest producer, after the USA (MAPA, 2016).

One of the major consequences of the increasing participation of soybeans production in Brazil was the adoption by farmers of genetic modified technologies. The role of Monsanto in the market of GM seeds increased as well in that time span, as it acquired several Brazilian seeds companies¹ following a strategy of expanding its market share (Carvalho & Pessanha, 2001). That strategy had as complementary objectives to induce revenues of its major brand product (Roundup) and at the same time to diversify and boost its portfolio of products by applying biotechnologies to agriculture production. In the legal arena, that process was accompanied by the approval of bills by the Brazilian Congress that enabled the appropriation of economic rights from the development of genetically modified cultivars (Fuck & Bonacelli, 2008). As a consequence, there was a boost in court litigations especially by farmer organizations questioning the legislation of royalties.

In summary, the paper provides an assessment of Veblen's evolutionary framework for the analysis of agribusiness systems by the use of Monsanto's institutional role in the Brazilian GM seeds market. The research made use of Monsanto's case study to illustrate Veblen's contributions to the understanding of organizations as institutions, and the endogenous process of the formation of habits and routines. Both provide theoretical constructs that are of key importance for understanding the institutional change in agribusiness systems.

2. Veblen's Evolutionary Approach and the Original Institutional School

Institutional Economics is a branch of thinking that has its starting point from the assumption that economic behavior is conditioned by the social environment that surrounds transactions. The characteristics of social interactions - political, juridical, organizational, domestic life, among others - have influence on the economic system, and so forth to societal well-being. That process also works in a reverse way, in the sense that the functioning of the economic system provides incentives to changes in the organization of society.

The study of institutions in economic thinking is pervasive since the Classical School, from publications of Adam Smith (1776), John Stuart Mill (1848), and Alfred Marshall (1890), however, the institutional approach gained strain in the works of the German Historical School. In accordance with Brue (2005), the German Historical School supported the idea that economic systems should be studied as an integrated and intertwined part of social reality. That school argued against the use of abstract and deductive models of thinking and was in favor of a theorizing that was grounded on inductive methods of study of society. Among several authors, Gustave Schmoller's (1838 – 1917) contributions were pivotal as the leader of that school of thinking. Schmoller defined the functional concept of institutions as "[...] *it offers a firm basis for shaping social actions over long periods of time*" (Schmoller, 1900, apud Furubotn and Richter, 2005). In accordance with Schmoller (1915), institutions have the role of providing mechanisms to curb specific interests of individuals and groups that jeopardize social order.

In that perspective, institutions balance social gains and costs, and by doing that limit the scope of class conflicts. Schmoller (1915) believed that institutions should be envisioned to strengthen moral and ethical codes of behavior that curb opportunism and egoism. In that view, the operation of markets requires a social order that provides the collective bargaining of interests. Consequently, markets are the result of the previous development of institutions that enhance trust and cooperation implemented by design and not by the autonomous functioning

¹Agroceres, Agroeste, Canavialis, Alellyx e Monsoy.

of the capitalist economy (Peukert, 2001).

John R. Commons (1931) has pointed out that conflicts of interest among agents make it necessary for the society to work out social arrangements – the institutions – that guarantee a framework of rules to govern interactions. These rules are emanated from the legal regime and from informal practices that induce trust and cooperation among individuals. Therefore, institutions are what Commons called “collective action” that are envisioned to guarantee the functioning of society in general and the effectiveness of the economic system in special. In that approach, institutions have an important role to economic performance by reducing costs related to the enforcement of transactions. That costs are related to bounded rationality and opportunism that are pervasive among economic interactions (Furubotn & Richter, 2005)

According to the Original Institutional School (OIS), human intelligence is linked to the social environment that surrounds it. By this standpoint, cognitive capacity is a social by-product developed from the exercise of natural propensities in social interactions, and the characteristics of it depend upon the society in which individuals are born. Wesley Mitchell (1916) in his analysis of the role of money in society provided a clear exposition of that view that “*intelligence is a social product*”. One of the basic assumptions of institutional thinkers is that human behavior is learned and depends upon acculturation of beliefs that are the result of social exposition to other human beings. In accordance to Clarence E. Aires (1921), human “nature” and social institutions are interconnected with each other, hence behaviors are consequence of beliefs “...worked into the whole cultural-emotional life of a people by the practice of generations” (Aires, 1921).

In that regard, the remarkable evolutionary approach from Thorstein Veblen was developed based on the generalized principles of Charles Darwin writings. Veblen’s contributions covered a vast array of original propositions that aimed to establish in Economics a theoretical framework in accordance with evolutionary principles and pragmatist psychology related to habits evolvement among individuals and society (Hodgson, 2007). The innovative perspective of Veblen (1898) starts with a concept of institution that is related to the structuring of social interaction based on prevalent social rules. In accordance with the author, the language, the currency, the legal system, the weight and measures system, the good manners etiquette, the firms, among several others, are instances of institutions. In regard to that definition of institution, it is highlighted in Veblen’s theorizing that organizations are also institutions, because they enforce rules and norms that govern individuals’ interactions internally to the firm and their engagement with external players (Hodgson, 2006).

Hence, in accordance to Hodgson (2007), institutions’ main purpose is to provide order over individuals’ expectations about possible behaviors and to increase predictability in human activities. Institutions at the same time that restrain individuals enable behaviors by providing coordination to social interaction. In that sense, the role of institutions is to enforce possible options of behavior and magnify the scope of sociability. Also it is stated in Veblen’s (1898) framework that evolutionary premises are not based on unidirectional causal relationships. The basis of his analysis is the perception that the rationale of individuals is embedded in mental habits that are formed by the trajectory of social organization. In that view, the working out of the economic system is the result of mental habits that are propensities to behave in particular ways when facing particular situations (Hodgson, 1998). For Veblen (1909), the human nature does not resemble the utilitarian perspective, but it is a complex mix of factors related to genetically inherited traces and experience gained from the social interaction. In that sense, human behavior is the result of habitual practices and proclivities that are continuously assessed by their fitness to the social environment. Hence, individuals’ decisions influence and mold society, but also inversely the social environment induces individuals’ choices and behaviors in a recursive way. The holistic understanding is stressed out in Veblen’s approach by the endogenous character of the causal relationship between individuals and institutions, called by Hodgson (2007) as “*reconstitutive downward causation*”.

Veblen supports the view that the variable that links institutions to individuals’ choices is the functioning of habits that are forged by behavior patterns. The mechanism is not unidirectional and also provides the causal connection exercised by individuals’ choices over institutions, position in line with NIE point of view. The evolutionary dynamics of Veblen’s approach is based on the notion that individuals’ choices determine institutional evolvement and induce the emergence of habits that are reinforced or not by their effectiveness. The process of change is procedural and endogenous and provides important implications to institutional path-dependence and has no maximizing assumptions.

By that theoretical standpoint, institutions are recurrent ways of thinking that are embedded in the habits molded by society in general and by organizations in particular. Therefore, the institutional analysis of Veblen does not regard organizations only as governance structures that minimize transaction and production costs. Organizations have the role of institutions because they induce patterns of behavior that rule over collective interactions. In that

sense, habits can be enforced by the organizational culture and spread to the social structure through organizations' external relationships (Hodgson, 2007).

In a micro-institutional perspective, firms are institutions because they enforce rules and norms in relations performed under the *fiat* of the hierarchy. The development of governance rules and norms under the organizational domain of the firm is based on tacit knowledge and has idiosyncratic character. Learning and acculturation have important roles to strengthen rules and norms that increase the homogeneity of behaviors in accordance with organizational cultures.

It is important to make clear that the understanding of the institutional role of the firm is not objected by the NIE perspective. In the Douglass North macro-institutional framework firms are envisioned as organizations and not institutions, because in it they have the role of actors in the greater societal arena. That is consequential of his analytical emphasis on a macro-institutional perspective, and it is not an all-encompassing assertion that firms have not micro-institutional role (Hodgson, 2006). In accordance to Lopes (2013), the distinction between Veblen and North approaches is related to the emphasis and direction of causality. In Douglass North framework, institutions have the role of restricting behaviors (rules and norms), while in the Veblen's approach institutions are the result of individuals' habits of thought.

Veblen's contributions to economics have a broad spectrum of applications to the analysis of agribusiness systems. The understanding of organizations as institutions that induce habits of thought sheds light on the ability of leading firms to enforce practices that become behavior patterns in agribusiness systems. Therefore, those strategies require the imposition of rules and norms to most of agribusiness stakeholders. Collective action is molded by the intentionality of leading firms that induce convergent or divergent behaviors by other players (Pereira, Datheim & Conceicao, 2014).

In agribusiness systems, collective action is strongly influenced by the organizational strategies originated from the roles of input, processing, and trading firms. Farmers' response to those strategies strengthens or weakens collective action depending upon the distribution of economic incentives along the supply chain. In that sense, there is a dual relationship between organizations and institutional change in agribusiness systems. Operational practices based on rules and norms are implemented by business strategies that induce convergent or divergent responses by farmers and suppliers and influence supply chain coordination. The dynamics of that process resembles Veblen's evolutionary framework based on bottom-up and top-down recursive relationships, described by Hodgson (2007), against NIE methodological individualism.

In the next section, it will be assessed the corporate trajectory of Monsanto in the market of GM seeds. The perspective followed in that section is to discuss the role of that company in accordance with Veblen's standpoint and use it as an illustration of the compliance of the theory to the analysis of agribusiness systems.

3. Veblen's Evolutionary Framework and the Institutional Development of the Brazilian Market of Genetically Modified Seeds

3.1 Description of the Role of Monsanto in the Brazilian GM Seed Market

Monsanto started its operation in Brazil in 1951 by the acquisition of firms that had participation in the market of inputs to agriculture. In 1970, it synthesized glyphosate in the country, the active principle of Roundup herbicide. Roundup is the most sold chemical product in the world, and it is registered to use in more than 120 countries (Monsanto, 2015). In 1984 Roundup started to be produced in the country after the investment by Monsanto of its first factory in Brazil to the production of the line Roundup Original, Roundup WG, and Roundup Transorb (Moura & Marin, 2013). The year 2000 was a turning point to Monsanto, then a large chemicals conglomerate with a small agriculture division, when it was bought by Pharmacia & Upjohn, and afterwards it was focused totally to the agriculture markets (Hindo, 2007). Since 1981, Monsanto began to invest in biotechnology, but the choice to turn that the central focus of the company happened in the 1990 decade. In Brazil in the years following 1995, it was initiated a strategy to buy-out several leading Brazilian seeds companies (Pelaez & Schmidt, 2000).

In 1997, Monsanto reached the leading position in the seeds market in Brazil, when it acquired the soybeans genetic improvement program of FT seeds, a firm that had a strategic position in the development of cultivars to tropical agriculture. The merger of Monsanto seeds operations with FT had the result of the formation of a new division called Monsoy (Santini & Paulillo, 2003).

Monsanto obtained by that gradual strategy of expansion a hegemonic market share in soybeans and corn seeds and agri-chemicals in Brazil. In accordance to the diverse Brazilian soil and weather conditions, those investments had to be accompanied by the increase of its germplasm bank of cultivars. That trend was

worldwide, for instance in 2007, more than half the crops grown in the U.S., including nearly all the soybeans and 70% of the corn, were genetically modified cultivars. Also, 90% of the genetically modified seeds in the world were sold either by Monsanto or by competitors that licensed Monsanto genes in their seeds (Hindo, 2007).

At that time, Monsanto still did not have enough background in the seeds market and did not have developed technologies fitted to Brazilian conditions of tropical agriculture. That was the main reason for the strategy to acquiring firms that already had developed previously germplasm banks and cultivars adapted to Brazilian environments (Moura & Marin, 2013).

In accordance to Palaez and Schmidt (2000), the public debate about the diffusion of transgenic soybeans was a difficult endeavor for Monsanto during its trajectory of expansion in Brazil. In 1998 Monsanto submitted to CTNbio, the Brazilian agency responsible for approving the commercialization of genetic modified products, a technical assessment of the Roundup Ready soybean cultivar. Environmental activists based on NGO's and IDC – Defense Consumer Institute had success in obtaining a temporary court decision that prohibited CTNbio from approving Roundup Ready soybeans cultivar.

At the same time, the debate in the Federal Congress, more precisely in the Environment Committee, to the discussion on the commercialization of transgenic cultivars had the leading participation of Monsanto's technicians and researchers. The technical support team of the company, as well as its connections with worldwide research centers, universities, and regulation agencies, favored the legislation to be approved by the Legislative House (Pelaez & Schimidt, 2000).

However, for legal reasons, Monsanto was not able to start to marketing Round Ready, because the firm was not able to cancel the petition deferred by the Court of Law that prohibited the soybeans cultivar to be commercialized without previous environmental impact studies. Nevertheless, GM soybeans cropping was not halted in Brazil, especially in the South region of the country, by the smuggling of seeds from Argentina. Widespread cropping was performed by farmers with the use of seeds that crossed borders illegally. At the same time MAPA, the Brazilian Agriculture Office maintained its support to Monsanto and approved the patent registry of five cultivar varieties of GM soybeans developed by the Monsoy division (Monteiro & Zylbersztajn, 2013).

In the institutional arena, the CPL – Cultivars Protection Law was a landmark to the trend of adapting the regulatory framework of the country to the international property rights standard. In accordance with Pessanha & Wilkinson (2005), the USA and European countries were the first ones to passed bills that guaranteed property rights to the development of cultivars. In the USA in the 1930 decade, the “Plant Protection Act” (PPA) was enforced to ascertain property rights on plants that have asexual reproduction. In the 1970 decade, the “Plant Variety Protection Act” (PVPA) extended the rights to all sexual reproduced plant varieties. In Europe the most important system to register cultivars was the Community Plant Variety Rights (CPVR) system created by EU Regulation that was implemented on the 1991 Act of the UPOV Convention, and it provided protection to plant varieties throughout the EU (Moura & Marin, 2013). In accordance with Wilkinson and Castelli (2000), that trend was the result of the GMO companies' pressure on governments to pass legislations that guaranteed property rights with worldwide enforcement. That goal was first accomplished in the USA, later it was followed by the OECD countries, and afterwards by the developing countries.

Following Moura and Marin (2013), it was drafted by the World Intellectual Property Organization (WIPO), an agency of United Nations Organizations, a report directed to the protection of technological innovations and intellectual property rights in agriculture biotechnology. The authors, however, stressed out that the debate in the draft was captured by regulating agencies and biotechnology companies. That report induced countries to implement legislations that enforced property rights in accordance to TRIPS – Trade Related-Aspects of Intellectual Property Rights, one of the three pillars of the WTO – World Trade Organization. That agreement included enforcement procedures that allowed retaliation amendments across agreements under the resolution of disputes by WTO (Maredia, 2001). The Brazilian government was induced to comply with the WTO Agreement and to pass the legal framework in accordance to TRIPS regulation (Buanain & Carvalho, 2000).

Pelaez and Schmidt (2000) pointed out that at the time of the discussion of the legislation in Brazil there was a fierce enrollment of the USA government in support to American international companies. The direction of the enforcement was to guarantee institutional reforms worldwide that were in favor of property rights to biotechnology development related to chemicals, food and pharmaceutical products. The debate was incorporated into the liberalization discussions by WTO and GATT, and was a necessary step for further expansion of the multilateral discussions on trade.

In result of the influence of the international legal framework and in order to enforce intellectual property rights it was promulgated the Industrial Property Law (Law n°9.279, 05/14/1996) (Brasil, 1996) and the Cultivars Protection Law (Law n°9.456, 04/25/1997) (Brazil, 1997). Afterwards, it was enacted in 2005 the law n°11.105 “Biosecurity Law” which established control and monitoring mechanisms regarding genetically modified organisms (GMO). In accordance with the Agriculture Department (MAPA) all activities related to GMO have been regulated by the law n°11.105/2005 (Brazil, 2005), , in the legislation it was enacted the CNBS – National Council of Biosecurity, and the CTNBio – National Technical Commission for Biosecurity. The CNBS by the 8th article of the Law n°11.105/2005 is an agency for superior advising of the Presidency with the objective to formulating and implementing the National Biosecurity Policy (NPB).

Regarding the political discussions about the regulation of GMO organisms, Pessanha (2002) has stated the leading role of interest lobbies on members of the Federal Congress and the public opinion. In the same direction, Araujo (2001) described in detail the political connections of economic interests groups that worked in favor of GMO corporations’ points of view. Moura and Marin (2013) also pointed out that in consequence of the great investments and risks related to the technological development of GMO organisms it was of key strategic importance for corporations the result of the deliberations of Congress.

It is important to stress that up to 1995 there was no property rights protection to biotechnological innovations in Brazil. Bruch et al. (2005) supported the need for institutional guarantees to those activities. However, the design of the incentives supported by the legislation should have balanced the interests of the diverse members of the society with the ones of the biotech companies. In regard to the Cultivars Protection Law (1997) property rights were enacted to protect the development of new genetic uses of DNA sequences to applied ends like GMO seeds, and not to patent the final organism itself. The legislation aimed to incentive the development of new cultivars and to induce innovations developed by international corporations to be incorporated into Brazilian agriculture systems. The multiplication of cultivars by users was restrained by law, and it was enforced the right of charging royalty fees to the genetic component of innovations.

In support to that perspective, the referee of Alessandro Octaviani Luis, a member of CADE² – Economic Defense Administrative Council, in the case of the process n°08700.004957/2013-72, related to Bayer S.A against Monsanto Ltda (CADE, 2016), stated that the Cultivar Protection Law allowed farmers to save seeds for own use. In that legal viewpoint, farmers would acquire the GMO technology only once, paying afterwards royalties to the genetic developers, in accordance with Industrial Property Law.

However, the lack of control over the origin of GMO seeds induced Monsanto to develop a scheme to collect royalty fees indirectly. In that scheme payment slips are delivered to farmers at the moment of them acquiring seeds from dealers. When farmers sell their production to trading companies, it is performed a field test to detect GMO traits in grain production. If the amount of royalty credits generated from payment slips is smaller than the amount of grain delivered by famers, Monsanto charges a default rate in the value of 2% of the production that exceeds the farmers’ credits (Monteiro & Zylbersztajn, 2015). Therefore. the incentives for Monsanto to develop a royalty collection scheme in Brazil are related to the difficulties of enforcing property rights:

The property rights protection strategy used by Monsanto was based on unbundling the attribute ‘tolerance to glyphosate’ from the seed, which introduced a particular way to negotiate about the attribute regardless of the way the seed was purchased or acquired This strategy is relevant because the collection of royalties is based on seeds purchased in the black market and on saved seeds. The case contrasts with the U.S. case, in which Monsanto’s protection effort focuses exclusively on combating seed saving (Monteiro & Zylbersztajn, 2015).

The dominant position of Monsanto in the GMO seeds market enabled it to enforce commercial practices related to three different mechanisms in Brazil. In accordance to Eduardo Pontual, another member of CADE, in his exposition related to a process of non-competitive acts in the licensing of soybeans seeds technology (CADE, 2016), Monsanto envisioned a complex framework to collect property rights fees. The company charges “seed royalties” that are fees paid at the moment of acquiring seeds, and “grain royalties”, that are paid by farmers at the moment of delivering grain to trading companies, and also “multipliers royalties” that are paid by seeds multiplier companies to Monsanto.

In that regard, Araujo (2001) addressed that during the discussions about the Brazilian property rights legislation, the risks related to the oligopolistic market concentration have been previously envisioned. That view was related the ongoing trend of mergers and acquisitions in biotechnology and agrichemicals industries. In that

²CADE is a federal agency that works in favour of free competition, it is responsible to investigate, litigate and decide over processes on concurrence litigations (CADE, 2016).

sense, the Brazilian institutional environment built by the Industrial Property Law (Brazil, 1996), the Cultivars Protection Law (Brazil, 1997) and the Bio-security Law (Brazil, 2005) have been envisioned to deliver incentives to innovation and development in agriculture, but also provided tools for Monsanto to strengthen its market position.

3.2 Analytical Framework

Institutional economics is centered on the importance of the institutional environment (institutional matrix) to economic performance. In accordance with his approach, institutions are the formal rules (laws) and informal rules (customs and traditions), and organizations are groups of individuals united by the same goals. To that extent, North (1994) highlights the difference between the roles of institutions, understood as the rules of the social game, against organizations, that are the social players forged by groups of individuals acting in accordance with economic incentives. Institutions in accordance with North (1990) can restrain uncertainty in economic and social interactions, and hence are envisioned to reduce transaction costs. Organizations, on the other hand, may work in favor of the institutional change in consequence of opportunities of economic gains. On the North's perspective (1994), the institutional matrix provides the economic opportunities that induce the engagement of organizations. North (1991) proposed that long-run economic growth requires institutions to change over time in face to new market environments, and to improve economic productivity and decrease transaction costs. Institutions in that regard shape the structure of incentives in society and can sign behaviors that induce economic gain. North (1994) also stressed out that path-dependence may curb societal capacity to transform its institutions, and hence halting society to benefit from new economic opportunities.

Institutional change is pivotal to North's approach, and it is the result of the interaction between organizations and the institutional matrix. Exogenous changes in the business environment are captured by the cognitive capacity of individuals in a continuous learning process that alter their mental models (North, 2005). The endogenous and interactive process of transformation of individuals' mental models is channeled by organizations to the transformation of the institutional matrix, and hence to the transformation of the formal and informal rules that govern the economic system. That process does not follow maximizing principals of rationality and it is consequential of collective learning that may result in stable beliefs that are self-enforced (North, 2005)³.

Hodgson (2006) highlighted that the theoretical approach of NIE is grounded on the methodological individualism that provides an unidirectional causality relationship from individuals to institutions. That understanding relies on the assumption that individuals' mental models are not endogenously influenced by institutions. Market economies provide strong incentives to changing the institutional matrix in accordance to economic incentives. Organizations have the role of grouping together individuals' efforts to changing the institutional matrix, and so forth, organizations are related to the process of institutional change. The causal relationship has the initiative of individuals to organizations and institutions.

In a micro-institutional perspective, firms are institutions because they enforce rules and norms in relations performed under the *fiat* of the hierarchy. The evolvement of governance rules and norms under the organizational domain of the firm is based on tacit knowledge and has idiosyncratic character. Learning and acculturation have important roles to strengthen rules and norms that increase the homogeneity of behaviors in accordance with organizational cultures.

Veblen's contributions to economic science have a broad spectrum of applications to the analysis of agribusiness systems. The understanding of organizations as institutions that induce habits of thought sheds light on the capacity of leading firms to enforce practices that become behavior patterns in agribusiness systems. Therefore, those business strategies require the imposition of rules and norms to most of agribusiness stakeholders. Collective action therefore is molded by the intentionality of leading firms that induce convergent or divergent behaviors by other players (Pereira, Dathein & Conceicao, 2014).

In agribusiness systems, collective action is strongly influenced by organizational strategies planned by input, processing, and trading firms. Farmers' response to those strategies strengthens or weakens collective action depending upon of the distribution of economic incentives along the supply chain. In that sense, there is a dual relationship between organizations and institutional change in agribusiness systems. Operational practices based on rules and norms are implemented by leading firms' strategies that induce convergent or divergent responses

³Institutional literature tends to differentiate the concept of rules from norms, rules are the result of the fiat power of authority control that establishes sanctions to deviated behaviours, norms are, on the other hand, the consequence of collective perceptions about desired behaviours. Hence norms have the enforcement provided by the possibility of loss of reputation, and not by the enforcement of a hierarchical authority (Hodgson, 2006).

by farmers and suppliers that influence supply chain coordination. The dynamics of this process resembles Veblen's evolutionary framework based on bottom-up and top-down recursive causal relationships, described by Hodgson (2007), against NIE methodological individualism.

Following this framework, the vision that underlay the institutional matrix that was implemented in the GMO seeds market aimed to diminish uncertainty and opportunism among market players. However, real world institutions are not always the result of efficient outcomes, because interest groups can dominate the institutional debate. In that regard, the legal framework enacted in Brazil in support to property rights enforcement was a by-product of an international agenda that aimed to strengthen international property right regimes (IPR). That point of view regarded institutional reform as conditional to developing countries to modernize their agriculture systems and to become more integrated into the world trade.

Agricultural development in developing countries has, in the past, benefited from the wide availability of plant and animal genetic resources, freedom to operate with the most modern scientific methods, and technology spillovers. However, the already expanded IPR regimes in the industrialized world and the IPR changes required by the TRIPS agreement in the developing world is expected to have profound implications on the way scientists exchange materials and ideas, and especially the way agricultural research is organized (Maredia, 2001)

Nonetheless the intentions that grounded the framework that enforced property rights in Brazil, the applied result was to enable Monsanto to carry out its strategic plan to conquer a prevalent role in GMO seeds market. In accordance with Veblen's approach (1909; 1898) and Hodgson (2006; 2007), it is possible to realize the institutional character of Monsanto, in the sense of its capacity to enforce habits that are followed by farmers, trading companies, and seed multipliers. That is attested by Monsanto's paramount role during the enactment of the institutional matrix that was in favor of its corporative interests, and also by the enforcement of the scheme to collect royalty fees that embraced all players of the agribusiness system. On the other hand, the legal disputes about royalties collection from GMO seeds indicate the endogenous and recursive relationship between institutions and actors in line to Hodgson's (2006; 2007) concept of "reconstitutive downward causation". Monsanto enforcement of practices induced players of the GM seed agribusiness system, especially farmers, and multiplier seeds companies to act to alter the institutional matrix. That resulted in court disputes that provided new legal interpretations of the application of the property right laws.

Figure 1 provides a visual assessment of Veblen's framework applied to the analysis of the institutional relationships in the Brazilian seeds agribusiness system. In accordance to that approach market players have mental models that lead to habits of thought that are embedded in the institutional matrix. However, in accordance to the "reconstitutive downward causation" institutions also have a recursive influence on the evolution of habits of thought. In Veblen's theoretical model institutions are not envisioned to deal with transaction costs, but to restrain and enable behaviors that induce habits of thought. In the framework of the Figure 1, Monsanto, CTNbio, CADE and MAPA are all institutions that act over habits, plus the legal system. Institutions and market players have roles over habits of thought that induce the choice for governance arrangements (e.g. contracts, relational, hierarchy) and the resulting coordination in agribusiness.

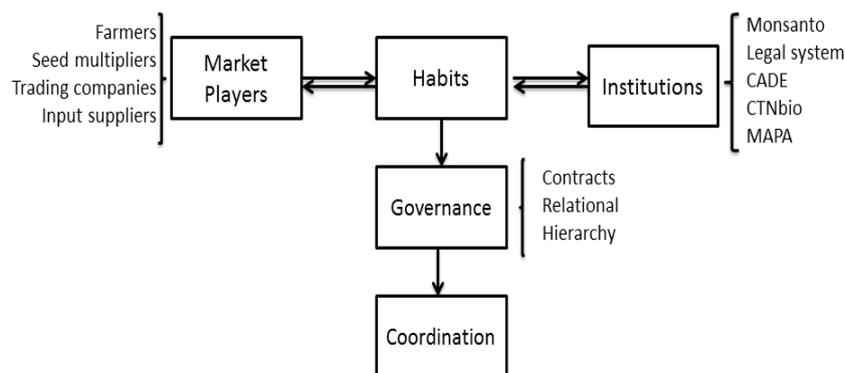


Figure 1. Brazilian GM seed institutional framework based on Veblen's approach

Source: Elaborated by the author

The approach outlined in Figure 1, hence, stands out in a distinctive position from North's institutional perspective in which firms are only governance structures that aim to minimize transaction costs. In that sense, Veblen's diverse concept of institution provides a theoretical tool for understanding the endogenous character of

institutional change in agribusiness. Also, it enables to outline models in which firms have institutional roles that go beyond transaction costs minimization. The Monsanto's case study makes clear that leading organizations in agribusiness are able to enforce routines and habits of behavior on market players and strengthen coordination in agribusiness supply chains.

4. Conclusions

In line with Veblen (1900; 1898) and Hodgson (2006; 2007) theoretical frameworks, Monsanto is able to coordinate GMO seeds market in accordance with its strategic objectives by enforcing routines and habits of behavior to other players in that agribusiness system. Consequently, Monsanto by the interaction with stakeholders in the GMO seeds agribusiness was able to enforce habits of behavior as a consequence of its leading position, and by extension to ensure systemic coordination in accordance to its interests. That enforcement was possible by the role Monsanto features in the GM seed agribusiness system over farmers, input firms, and seed multipliers firms to whom it maintains commercial interactions. The scheme to collect royalty fees from farmers is an instance of an operational rule that was implemented by Monsanto in consequence of its institutional role. In the same direction, Monsanto was able to influence the enactment of a legal regime that supported its economic interests in Brazil as well internationally.

In this sense, the Veblenian perspective is distinctive from NIE, because it does not follow the approach of methodological individualism in which institutions are the result of individual choices. Veblen's theory argues that institutions are as much the result of individual choices as act over choices through the enforcement of mental habits. So there is a recursive relationship between individual and institutions. Veblen's both stressed out contributions (i) a broad concept of institution, and (ii) institutional recursive relationships are of great value to the investigation of agribusiness systems.

Therefore, in accordance to Veblen's approach, Monsanto is an institution because it is able to enforce and restrain behaviors in the GMO seeds agribusiness system. On the other hand, Monsanto has induced counteractions by farmers and seed multipliers that aimed to alter the institutional matrix established. Both instances are evidence of the endogenous character of the institutional change in agribusiness that resembles Veblen's evolutionary approach.

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