Received: 8 September 2020 | Revised: 11 May 2021 | Accepted: 13 May 2021

DOI: 10.1111/joac.12436

ORIGINAL ARTICLE

Journal of Agrarian Change WILEY

Soybean production in Paraguay: Agribusiness, economic change and agrarian transformations

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Funding information
Universidade Federal da Integração Latino-Americana (UNILA) (Federal University of Latin American Integration), Grant/Award Numbers: 109/2017/PRPPG, 80/2019/PRPPG

Abstract

Contemporary corporate-led agricultural commodity production has seen profound transformations in rural spaces. This article focuses on soybean production in Paraguay, analysing corporate activity in the productive, commercial and economic dynamics of the soybean market and identifies the impacts of this monoculture on small farmers. Drawing on mixed methods, the research points to high levels of concentration of this market in the hands of a few transnational companies, which control the value chain via contractual relations with farmers. Through a complex set of relations, soybean production has seen smallholder farmers fall into debt and become unable to maintain their activity and migrate to new regions, leasing their land and, in the worst cases, lose both their land and status as farmers.

KEYWORDS
agrarian change, corporate food regime, Paraguay, smallholder farmer, soybean production

1 | INTRODUCTION

Over the past few decades, the agricultural commodities market and production has undergone dramatic transformations in the economic, political, institutional, regulatory, financial, social, technological and organizational fields, which substantially changed the dynamics of the whole agri-food system. Despite different readings about the contemporary moment, understood as a 'corporate food regime' (McMichael, 2005, 2012, 2020), or 'neoliberal food regime' (Otero, 2012; Pechlaner & Otero, 2008), or 'neoliberal food system' (Ioris, 2017; Wolf & Bonanno, 2013) or 'financialization in the agri-food system' (Burch & Lawrence, 2013; Clapp, 2014; Clapp & Isakson, 2018), all of them recognize the growing economic concentration of agri-food markets in the hands of a limited group of transnational conglomerates allied with financial capital. Furthermore, the transformations in agricultural markets led to changes in

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agricultural characteristics and dynamics, affecting land distribution, the use of natural resources, labour relations, socio-territorial conflicts, the role of the State and so forth. (Bernstein, 2010, 2016; Borras & Franco, 2012; Kay, 2008, 2015, among others).

Latin America is one of the regions where such movements can be clearly grasped, especially the Southern Cone—formed by Brazil, Argentina, Paraguay, Bolivia and Uruguay—globally established as a major agricultural and livestock region, where soy features as a leading product (Oliveira & Hecht, 2016; Turzi, 2016; Wesz Jr., 2016). The cultivation of this oilseed experienced a striking expansion in the region, which became the main area of soy cultivation worldwide, with its countries accounting for more than half of current global production, whereas in 1970 they represented only 4% (USDA—United States Department of Agriculture, 2020). Although Brazil and Argentina are the countries with the largest areas planted with soybeans in the region, Paraguay is the one where its impacts are most dramatic, having a heaviest economic and productive dependence on soy, which is considered 'the backbone of agribusiness' (Rojas Villagra, 2009). While in 1995 the oilseed dominated 28% of the cultivated area and 12% of total exports (Fogel & Riquelme, 2005), in 2018, it occupied more than 70% of the country's arable land during the summer and accounted for 40% of total exports (MAG—Ministry of Agriculture and Livestock, 2020; Cappro—Paraguayan Chamber of Processors and Exporters of Oilseeds and Cereals, 2020). Paraguay became the sixth largest soy producer worldwide and the fourth largest exporter of the oilseed (USDA—United States Department of Agriculture, 2020).

In the Latin American Southern Cone, soy has engendered various agrarian transformations (Arbeletche & Guibert, 2018; Gras & Hernández, 2013; Leguizamón, 2016; McKay & Colque, 2016; Oliveira & Hecht, 2016; Sauer & Pereira Leite, 2012, among others). In Paraguay, particularly, studies have shown that soy cultivation has led to the expropriation and expulsion of peasants and indigenous people from their lands with the advance of the agricultural frontier.[1] This has happened by means of either persuasive or violent pressure on their lands to expand cultivation areas; indiscriminate use of agrochemicals contaminating people and their surroundings, mostly food crops and livestock; control and appropriation of water resources, limiting access to water for consumption, production and fishing; and deforestation of native vegetation, thus reducing hunting options (Correia, 2019; Ezquerro-Cañete, 2016; Guereña, 2013; Irala & Pereira, 2016; Palau, 2019; Riquelme & Vera, 2015; Wimer & Hellmund, 2020).

These are profound changes that directly impact on social groups that have their roots in those territories, who are not part of the productive activity but still are affected by it (or rather, by the actors who control and drive these movements). On the other hand, there is a significant group of smallholder farmers who cultivate the oilseed in Paraguay (52.4% of soy producers had up to 20 ha in 2008[2]) (MAG—Ministry of Agriculture and Livestock, 2009), whose effects of such integration—for both these farmers and the agrarian spaces—has not gained the deserved attention in academic literature.

Therefore, the objective of this article is to analyse the impacts of soy production on small farmers who cultivate the oilseed in Paraguay[3] considering the corporations involved and the productive, commercial and economic dynamics present in this market. The main argument here is that the transformations in modern agricultural production, conducted and coordinated mainly by global corporations, have, on the one hand, attracted small farmers into soybean production and, on the other hand, engaged them in a circle of dependency and debt that has complex and profound effects on agrarian dynamics.

[1]A characteristic of Paraguayan agrarian history is its high inequality in land distribution (Ezquerro-Cañete & Fogel, 2017; Galeano, 2012; Pereira, 2019; Riquelme & Kretschmer, 2016). According to the last Agricultural Census (2008), a small group of landowners owns a huge part of the area (1.6% of them control 79.0% of all land) and many peasants have their access to land narrowly restricted (58.2% of farmers holds altogether only 2.1% of all agricultural land) (MAG—Ministry of Agriculture and Livestock, 2009). Guereña and Rojas Villagra (2016, p. 14) even affirmed that 'Paraguay has the most unequal land distribution in the world, with a small landowning oligopolistic elite that includes a significant number of foreign landowners concentrating almost the entire agricultural area, while the vast majority of peasant and indigenous families lack sufficient land to survive.'

[2]These data will be detailed and discussed in Section 5.

[3]There is no official regulation in Paraguay differentiating between small, medium and large farms. Only peasant family farming is officially defined as that comprising up to 50 ha in the eastern region (Riquelme, 2016). For this reason, here, we refer as smallholder farmers those who hold up to 50 ha of total area, although our focus will be mainly on those with less than 20 ha.

The study applied both qualitative and quantitative approaches, with emphasis on field research conducted in Paraguay between 2014 and 2020. We conducted 182 semi-structured interviews with different actors involved in the production chain, such as soy farmers, inputs retailers, agrochemical factories, seeds suppliers, trading companies, cooperatives, silos and business associations from different regions of the country (Departments of Alto Paraná, Itapúa, Canindeyú, Caaguazú, Amambay, San Pedro and Boquerón), and also with government officials, and scholars who research on the subject. To complement the gathered information, the country's main agricultural fairs were visited, such as Expo Santa Rita (in the district of Santa Rita—Alto Paraná), Regional Expo Canindeyú (in the district of La Paloma del Espíritu Santo—Canindeyú) and Innovar (in the district of Colónia Yguazú—Alto Paraná). A literature review was carried out, as well as the collection of information published in the media, especially newspapers and magazines; in reports, institutional bulletins and private balance sheets of companies operating in the soy production chain in Paraguay. In addition, secondary data from the Agricultural Census of 1956, 1981, 1991 and 2008 and other information provided by different institutions were systematized.

Besides this introduction and the final remarks, this article is structured into five parts. Initially, the soy expansion process in Paraguay is contextualized and the corporations involved in this market and their respective market share are presented. Then, the focus is put on the productive, commercial and economic dynamics of soybean cultivation in Paraguay, and the participation of smallholder farmers in soy production is analysed. Finally, the effects of the entry into this market on both farmers and the agrarian spaces are presented.

2 | THE EXPANSION OF SOYBEAN IN PARAGUAY

In the last two decades, there has been vast expansion of agricultural commodities in different regions of the globe. Although not a new movement, it carries important novelties, such as institutionalization of global forms of governance, with decreasing decision-making capacity by national states; greater integration and extension of the value chain, with increased subordination of agriculture to agro-industrial capital; expansion and intensification of the role of capital in production processes; greater dependence on resources external to the farm, with increased dependence on financial capital; standardization of applied technologies (based on intensification of industrial inputs and use of transgenic seeds), whose optimization requires increased scales of production; greater concentration of both land (by few producers) and agricultural production (in a few agricultural activities), with increasing purchase and leasing by foreigners and non-agrarian actors; and the presence of flex crops, whose multiple uses (food, feed, fuel, fibre, raw material, etc.) mitigate investment risks and maximize return; new balance between national and international markets, with greater weight of exports in the destination of production (Borras et al., 2016; Bühler et al., 2016; Frederico & Gras, 2017; Gras & Hernández, 2013; Heredia et al., 2010; Sauer, 2018; Wilkinson & Pereira, 2020).

These contemporary elements form the modern Paraguayan agriculture, but to better understand the current situation of soy in the country, we need to go back in time a few decades to know how this cultivation has expanded. Soy was introduced in the country in 1921 (Bosio, 2015). However, until the mid-20th century, it was a crop rarely present in rural properties. Data from the 1956 Agricultural Census indicate that less than 250 ha was planted with soy across the country, whose production was below 200 t (MAG—Ministry of Agriculture and Livestock, 1960). In the 1960s, the oilseed began to spread, though production was still below 40,000 tons and planted area was under 15,000 ha, therefore occupying less than 2% of the agricultural land in Paraguay. In the 1970s, soy cultivation gained impetus, surpassing 350,000 ha, with a production of 550,000 tons in 1979 (Figure 1) (Faostat—Statistics Division of the Food and Agriculture Organization of the United Nations, 2020).

This scenario, however, started to change due to significant increase in demand and price in the international market, related to the incorporation of this oilseed, on a global scale, into the production of vegetable oil and proteins for animal feed (pigs, poultry and cattle) (Du et al., 2008). In Paraguay, the strengthening of the agro-export model encouraged by Stroessner dictatorship (1954–1989) was key for this process, especially the First National Soy

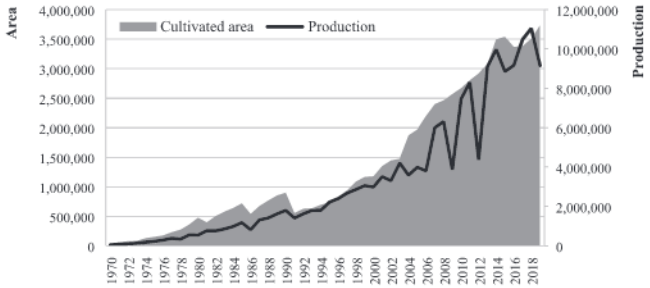

FIGURE 1 Soy cultivated area (hectares) and production (tons) in Paraguay (1970–2019).
Source: Faostat—Statistics Division of the Food and Agriculture Organization of the United Nations (2020) and Cappro—Paraguayan Chamber of Processors and Exporters of Oilseeds and Cereals (2020)

Program, launched in 1972 and disseminated in the following years, which included among its initiatives the supply of rural credit to farmers. Yet only those farmers who held land deeds and 'semi-mechanized' production could participate, as 'they would be in a better position to increase the cultivated area as well as modernize production, as the dictatorial government aimed' (Klauck, 2011, pp. 873–874).

Furthermore, the expansion of soy monoculture in Paraguay is strongly linked to the settlement of numerous Brazilian farmers in the eastern region of the country in the 1960s and 1970s.[4] This migration resulted from the displacement of many farmers from their original properties for the construction of the Itaipu hydroelectric plant, which expropriated 42,000 people, mostly smallholder farmers, in western Paraná (Brazil). Moreover, the modernization of Brazilian agriculture, characterized by the expropriation of millions of smallholder farmers, sharecroppers, tenants and squatters and by the concentration of land ownership, was also decisive in forming a large group of farmers willing to migrate (Blanc, 2015; Moraes Silva & Melo, 2009; Zaar, 2001).

In Paraguay, in turn, Stroessner sought to consolidate an export-led agricultural model favouring the entry of Brazilian farmers (seen as 'modern') to expand areas of crops—especially soybeans—aimed at the international market.[5] To this end, he revoked a law that prohibited land purchase by foreigners within 150 km of country's borders and offered facilities in concession of land and financing of agricultural activities. Brazilian farmers were also attracted by low prices and high fertility of land, low population density in the region, high international prices of produce, the absence of taxes on agricultural production and the total permissiveness of the State regarding deforestation (Nickson, 1981; Pappalardo, 1995; Rojas Villagra, 2015; Vázquez, 2006).

Amid this, soy crops continued to grow in the 1980s. The boom in the country happens, however, from 1991 to 2015, when an uninterrupted expansion of the cultivated area occurred, from 550,000 ha to 3.5 million hectares (an over sixfold increase). It is important to say that this growth has been sustained by increasing international demand—mainly from China, resulting from its urbanization and changing patterns of food consumption (Wilkinson et al., 2016)—and prices[6]—that, despite strong fluctuations, remained above historical averages, especially between 2007 and 2015 (USDA—United States Department of Agriculture, 2020). Although the year 2016 presents an inflection in this upward trend of soybean planted area in Paraguay (due to the grain price being at the lowest level in the last 8 years), expansion resumes in the following harvests, reaching a record of 3,736,158 ha in 2019 (Figure 1). In brief, the expansion of soy monoculture in Paraguay results from the direct interaction between international, regional and domestic economic and political factors.

[4]For an in-depth debate on Brazilian migration in Paraguay, see, for example, Nickson (1981), Souchaud (2008), Blanc (2015), Pereira (2019) and Wesz Jr. (2020b).

[5]During field research, several accounts by Brazilian farmers indicated the support received from the Paraguayan State: 'Stroessner signaled that Paraguay was changing, so he made it easier for Brazilians to arrive at that time'; 'In 1974 the IBR [Rural Welfare Institute], which was a governmental colonization agency, went to the Palotina region [Paraná, Brazil] to hold a lunch meeting to invite Brazilian settlers to purchase cheap land in Paraguay'; 'In Paraguay land acquisition was facilitated, there was not much bureaucracy for foreigners to buy land and the price was affordable'; 'Eighty hectares, its purchase was financed to pay in three years, a financing option that did not even exist in Brazil and I do not know if Paraguayans had these facilities'.

[6]The agricultural commodities market, which has in soy a classic example, is characterized by prices set internationally and trading on global stock markets such as that of Chicago.

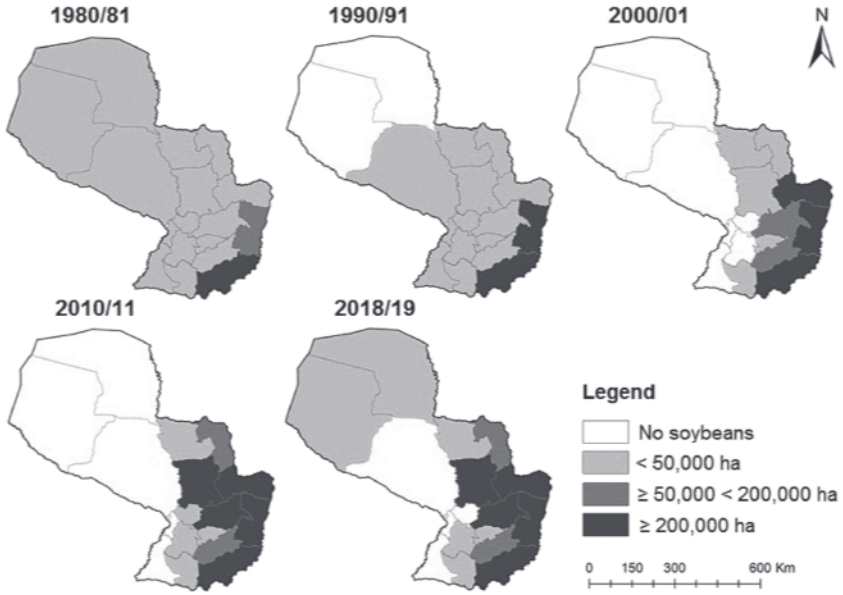

FIGURE 2 Soybeans cultivated area by department in Paraguay.
Source: MAG—Ministry of Agriculture and Livestock (1983, 1993, 2020). Elaborated by the author

Today, soy accounts for 2 out of 3 ha planted in Paraguay in the summer (Faostat—Statistics Division of the Food and Agriculture Organization of the United Nations, 2020), demonstrating the centrality of this oilseed in national agriculture. As shown in Figure 1, production fluctuated strongly due to climatic problems in some years, even though the harvested volume jumped from 1.4 to 11 million between 1991 and 2018 (MAG—Ministry of Agriculture and Livestock, 2020).[7] Exports are the main destination for soybean produced in Paraguay. Considering the total soybean export (grain and processed) in the last 20 years (between 1999–2000 and 2018–2019), it accounts for over 91.9% of the whole Paraguayan production, with 64.4% exported as grain[8] and 27.3% processed (such as oil and bran), with 3.1% remaining for seed and 5.0% for internal consumption (mainly as meal) (Capeco—Paraguayan Chamber of Exporters and Marketers of Cereals and Oilseeds, 2020).

In spatial terms, the commercial cultivation of soybeans in Paraguay went from east to west (Figure 2), beginning in the Department of Itapúa, where settlers of European origin were already installed and had land and capital to boost oilseed production. At the end of the 1970s, the Department of Alto Paraná begins to expand cultivation, 'with the strong impetus of Brazilian migrants and agro-industrial companies' (Rojas Villagra, 2015, p. 80). Despite the greater concentration in Itapúa and Alto Paraná, soybean cultivation was present in all departments of Paraguay in 1980–1981 (MAG—Ministry of Agriculture and Livestock, 1983), as it was used as fodder for dairy cattle. However, the oilseed gradually loses this characteristic and starts to be cultivated exclusively for commercial purposes. In addition to the consolidation of production in the departments of Itapúa, Alto Paraná and Canindeyú, where Brazilian producers predominated, soybean expanded greatly in San Pedro and Caaguazú. Production also grew in Amambay, Caazapá, Misiones and Concepción (MAG—Ministry of Agriculture and Livestock, 2020), including with migration of

[7]It is worth noting that illegal monoculture of transgenic soybeans began in 1996 in Paraguay, smuggled from Argentina; only in 2004, this cultivation was regulated by law (Correia, 2019; Hetherington, 2013). Until 2019, nine varieties of transgenic soybeans were approved in the country (MAG—Ministry of Agriculture and Livestock, 2020).

[8]Although official statistics present Argentina as the main destination, it is only a stopover before heading to China, as Paraguay has no diplomatic relations with the Asian country because it recognizes Taiwan. The industry minister himself has already publicly commented on such a practice (Valoragro, 2018). Therefore, the expansion of soy in Paraguay is also linked to the growing Chinese demand (Giraudo, 2020).

Brazilian (or descendants) farmers to these regions (Wesz Jr., 2020b). Another novelty is the expansion of soy production in the Chaco region, especially in Boquerón, which according to the media and interviews has the potential to add another 2 million hectares for soy cultivation.[9]

Modern soy production stands out for its high and growing dependence on products external to the farm, such as transgenic seeds (increasingly specific to particular environments), synthetic fertilizers (produced with new raw materials and formulations) and agrochemicals (a huge variety of fungicides, herbicides and insecticides), in addition to the use of modern machinery and equipment, such as tractors, seeders, sprayers and harvesters (Cáceres & Gras, 2020; Gras & Hernández, 2013; Gras & Hernández, 2016; Guibert et al., 2015). By offering these products to farmers and buying oilseed, transnational corporations have assumed an increasing role and market share in Paraguay.

3 | TRANSNATIONAL CORPORATIONS IN THE SOYBEAN MARKET IN PARAGUAY

The theoretical debate on 'corporate food regime', besides bringing different elements to the discussion, exposes the role and centrality of corporations in the contemporary agri-food system. For McMichael (2005, 2012, 2020), the corporate food regime expresses a new moment in the political history of capital, in which the States serve the markets (i.e., the interests of corporations and their financial and industrial logic), given the increasing centralization of power in both transnational companies and financial capital. Thus, a corporate hegemony is established, capable of promoting an organizational arrangement for controlling not only food production but also the flows of commercialization, distribution and prices.

These corporations, as Pereira (2019) argues, besides controlling food trade, indirectly control the territory. For the author, through these global companies, the capital controls the production chain both upstream and downstream, dispensing with land appropriation and having lower incidence of conflicts (as compared to direct control). Furthermore, according to Gras and Hernández (2013, 2016) and Goldfarb (2013), their power is directly related to the ability to dominate parts of the space, imposing their logic of reproduction and appropriating the value of agricultural production without the need of land ownership (although in Paraguay, as we will see below, there has been some news in this direction).

This centrality assumed by corporations in contemporary agri-food systems is directly connected with the movements of markets globalization and economic liberalization, whose outcomes include change in the equity structure of companies, which can be seen in the expansion of Foreign Direct Investment and in the increasing fusions and acquisitions of companies. Furthermore, there was an increase in internationalization of markets, business concentration and centralization of capital (Kay, 2008; Murphy et al., 2012; Wesz Jr., 2016).

In Paraguay, the first soybean areas were formed primarily with inputs and machines brought by immigrants from Brazil. However, with the strengthening of cultivation, silos (large storage facilities) began to be built, particularly by more capitalized Brazilians who traded various products and services. As a farmer comments, in the 1980s and 1990s: 'I used to sell soy to the silo, it was the silo that provided seed, fertilizer, pesticide, herbicide'. Until 1990, according to information collected during field research, the companies that most assisted farmers in cultivating soybeans were the Agro Santa Rosa, Agrocereales, Silo Santa Monica, Silo Amambay and Agro Silo Santa Catalina (Favero Group).

The marked expansion of soy in the country and the intensification of commercial and financial opening since the 1990s (following regional and global movements) sparked increasing interest of leading global companies in this area, especially after the 2000s. As a farmer argues, 'It is not very long ago that the multinationals arrived; before

[9]Chaco has been the main target of land purchases by foreigners in Paraguay in the 21st century, including Brazilians, Argentines, Uruguayans and Europeans. Besides being the region with the highest rates of deforestation in the country, there are several land conflicts involving indigenous population, including the Ayoreos, the only isolated indigenous people outside the Amazon (Pereira, 2019).

there were private silos'. Indeed, during the first decades, the main actor in organizing soy trade was the private silos, which bought the oilseed from producers and supplied these latter with production inputs, acting as intermediaries between producers and the exporting agro-industries. However, the emergence of inputs resellers that also started to invest in oilseed storage facilities and that sophisticated the commercial relationship with rural producers via contracts, the silos began to lose space. Furthermore, since the arrival of global trading corporations (Cargill, ADM, Bunge, Dreyfus and COFCO), many silos were acquired by these corporations, and those that remained had a hard time competing with these firms (increasingly globalized and verticalized) and became restricted to less competitive regions, where soy crops are not quite significant and established. The arrival of these global transnational corporations to the country occurred mainly via acquisition of smaller companies that already operated in Paraguay, thus leveraging the expertise and structure of the latter—as did Dreyfus when it acquired the processing plant from Mercantil Comercial (Merco). Other companies opted for entering the country through partnerships with firms operating there, what served as a 'pre-test' for the global company to better understand local conditions before making major investments in Paraguay. In some cases, the 'partner company' was subsequently acquired by the transnational corporation—as did ADM with Agrocereales and Silo Amambay (Arrúa, 2019; Rojas Villagra, 2009; Wesz Jr., 2018).

Currently, in Paraguay, soybean is traded by global transnational companies and by regional (mainly Brazilian and Argentine) and national ones (Arrúa, 2019; Garay, 2015; Rojas Villagra, 2009; Wesz Jr., 2018). Among the formers, there is a prevalence of American (Cargill, ADM, Bunge, Monsanto, Dow, Dupont, John Deere, CNH and AGCO) and European firms (Dreyfus, Bayer, Syngenta, Basf and Yara); also, more recently, Chinese companies are gaining traction (Cofco and ChemChina). Argentine companies predominate in the seed sector (GDM Seeds, Agseed, Santa Rosa Semillas and Relmó) but also operate in grain trade (Vicentin and AGD). Regarding Brazilian presence, two situations are seen (here, taking no account of Brazilian farmers): Brazilian companies that operate in the country, such as Ovetril, Lar, C. Vale, Amaggi and TMG; Paraguayan firms controlled by Brazilians, especially inputs retailers. In this latter case, the firms were incorporated in Paraguay, but they are owned (fully or in part) by Brazilian businesspersons and their descendants, as is the case with Agrotec, Agrofértil, Tecnomyl, Favero Group, Ciabay, Diagro, Agrícola Colonial, Sul América Insumos Agrícola, among others (Wesz Jr., 2018).

In what follows, we indicate the main companies by sector (machines, seeds, agrochemicals, fertilizers and soybean trade), highlighting their degree of market concentration. In the tractor and harvester sector, there is a high concentration in three leading global companies: CNH (with the brands Case IH and New Holland), AGCO (with the brands AGCO, Valtra and Massey Ferguson) and John Deere. It is worth noting that in Paraguay, there is no tractor and harvester manufacturing plants, only dealerships spread out in the main agricultural regions, which import these machines and act as representatives of the brands. While in the tractor market, the three firms controlled more than 90% of imports in 2018, in the case of harvesters, CNH and John Deere alone almost reach this same percentage (Figure 3) (Cadam—Chamber of Automotive and Machinery Distributors, 2019).

In the seed sector, the world's leading breeders (responsible for creating new varieties) besides Brazilian and Argentine companies are present in the country. According to Aprosemp—Association of Seed Producers of Paraguay (2019), in 2010, the three main companies controlled 58.5% of the soybean seed market in Paraguay, a figure that rose to 83.0% in 2014, reaching 87.2% in 2018 (Figure 3). The growing concentration over the years is mainly linked to recent mergers and acquisitions occurred globally—the leading company in 2018 is the Chinese state-owned ChemChina (which acquired Syngenta in 2017 and Nidera in 2018), followed by the German Bayer (which bought the American Monsanto in 2018), the Argentine GDM Seeds (formed when the Argentine Don Mario bought 80% of the American company DM Seeds) and the Brazilian TMG. Besides the greater concentration in the segment, there was a reduction in the regional capital in this market.

The agrochemicals sector was traditionally formed by two large groups of key players: (i) companies that produced and commercialized their own brands (Syngenta, Basf, DuPont, Dow, Bayer and Monsanto) and (ii) companies that marketed and distributed third-party brands (resellers), such as Agrotec (Basf and DuPont reseller), Agrofértil (Monsanto), Dekalpar (Monsanto and Bayer), Diagro (Dow), Ciabay (Bayer and Dow), Glymax (DuPont), Colonial

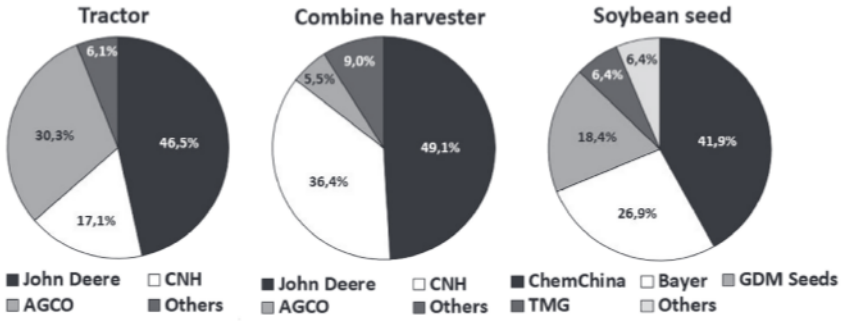

FIGURE 3 Market share of tractor, combine harvester and soybean seed sectors in Paraguay in 2018.
Source: Cadam—Chamber of Automotive and Machinery Distributors (2019) and Aprosemp—Association of Seed Producers of Paraguay (2019). Elaborated by the author

Agricultural (Syngenta), Aktra (Monsanto) and Lar (Dow and Syngenta) (Wesz Jr., 2018). However, in recent years, resellers started to commercialize their own brands of agrochemicals by importing generic products from China, though still reselling the products of transnational companies. This affected the market structure, since the global leaders (Monsanto/Bayer, Syngenta/Nidera/ChemChina, Dow/Dupont and Bayer), despite increasing mergers, experienced a reduction in their participation from 50.6% in 2014 to 28.8% in 2018 (DNA—National Customs Directorate, 2020).

The fact that domestic companies (although mostly controlled by Brazilians) of different sizes take advantage of the legal flexibility afforded by the State to import agrochemicals, either already manufactured or their raw material from China (to later formulate them domestically) is a peculiarity of the Paraguayan case.[10] This movement has importantly impacted the structure of this market, as a way for local traders to bypass the corporate oligopoly of global leaders.

In the fertilizer sector in the country, the main soybean trading companies prevail, with their own brands of fertilizers that are offered to producers before harvest in exchange for grain. This is the case of Cargill that, together with IMC Global, controls Mosaic, which held a quarter of the Paraguayan fertilizer market in 2017 (DNA—National Customs Directorate, 2020). The same is true of Bunge, Dreyfus and COFCO. In the case of brands that arrive in the country via resellers, we can mention Yara, whose main representative in Paraguay is Agrofértil and Glymax; and Fertipar, a Brazilian fertilizer company, whose product is sold by Matrisoja, Lar, Ciabay, among others. Some resellers have also invested in their own production, such as Dekalpar, Agrofértil and Agrotec, similarly to the case of agrochemicals market. However, if with agrochemicals the four companies with the largest market share controlled 31.8% of the sector in 2018, in the fertilizer sector this share reached 58.3% (DNA—National Customs Directorate, 2020).

Regarding soy trade, the predominance and power of the leading global companies in soybean trade is even clearer, with ADM, Bunge, Cargill and Dreyfus—popularly known as ABCD (Murphy et al., 2012; Wesz Jr., 2016)—standing out, together with the Chinese state-owned COFCO (China Oil and Foodstuffs Corporation) and the Russian Sodrugestvo, both of which gained traction more recently. In the case of soybean oil and meal, ABCD controlled more than 85% of this sector in 2019, with ADM in the lead, followed by Cargill, Dreyfus and Bunge (Figure 4). As to the soybean market, the leading company is COFCO, established in the country after acquiring

[10]Unlike other countries in the region, Paraguayan regulations allow companies to import concentrated and generic agrochemicals. As reported by one of the interviewees, 'in other countries, generic formulas are not commercialized. For example, in Brazil there is only one fungicide, with a specific composition and produced by one brand, while in Paraguay you have about 15 different varieties of the same product. Each [company] can choose what to do: if you want to mix components, make your product and fill in China, put your brand and send it here, you can do it. Or you can also import the components and mix them here.'

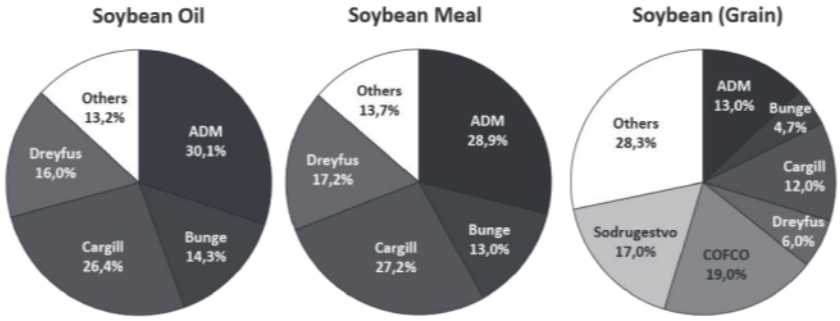

FIGURE 4 Market share of soy complex exports in Paraguay in 2019.
Source: DNA—National Customs Directorate (2020) and Capeco—Paraguayan Chamber of Exporters and Marketers of Cereals and Oilseeds (2020). Elaborated by the author

Noble and Nidera, in 2014 (Wilkinson et al., 2016), and which held 19% of total exports in 2019, followed by Sodrugestvo (17.0%), which entered the country in 2014, through a joint venture with the shareholders of Gimenez Family, the owners of the largest chain of port terminals in Paraguay. Next are ABCD that hold less power in grain export because they allot part of the soy to their industries (Capeco—Paraguayan Chamber of Exporters and Marketers of Cereals and Oilseeds, 2020).

These data illustrate an important change that has been occurring in the global agri-food market, namely, that companies from emerging countries, members of the BRICS, are setting up processing plants, acquiring strategic assets and building logistical capacities 'abroad' (Escher, 2020; Wilkinson, 2009). Firms such as COFCO and Sodrugestvo have gone international and, by reproducing the scales of operation and strategies of already consolidated firms such as ABCD, have defied their so far unabated market power and hegemony, bringing important implications for global value chains. As Escher points out (Escher, 2020, p. 64), these 'few state-backed agribusiness and food industry corporations [have been] able to enter the global oligopoly competition for resources, markets, profits and power to the point of challenging the longstanding North Atlantic dominance'.

The agricultural sector has an enormous weight in the Paraguayan economy, where agricultural products have a predominant share of the country's total exports (Borda & Caballero, 2020; Duarte et al., 2017). The ABCCD (adding COFCO in the acronym) and Sodrugestvo are ranking generally among the 10 largest exporting companies in Paraguay, with Cargill always leading—in 2013, it alone accounted for 29.0% of Paraguay's total exports (DNA—National Customs Directorate, 2020). By focusing on the last 10 years (2010–2019), the six companies controlled, annually, between 29.8% and 51.6% of total exports (DNA—National Customs Directorate, 2020), what reveals the high commercial and economic power of these transnational corporations in the country, a position reached very quickly, considering that, until the mid-2000s, only Cargill had a leading role in Paraguay. This considerable weight in foreign trade as a whole, including in generating surplus, provides them with an important asset when negotiating strategic issues with the State (Wesz Jr., 2016). It is in this context that the State, as pointed out by Otero (2012) and Correia (2019), promotes policies and regulations that facilitate corporate control and dominance by multinational agribusiness and becomes permissive with what several authors have called 'new-extractivism', 'agrarian extractivism' or 'agro-extrativism' (Burchardt & Dietz, 2014; Gudynas, 2012; McKay, 2017; Petras & Veltmeyer, 2014).

Although the performance of global leading American and European transnational companies has grown in Paraguay, showing increased market power in recent years, there are two relevant particularities worth highlighting. The first one is that companies from emerging countries are relevant in Paraguay, especially Brazilian and Argentine ones—which due to their proximity have long been active in the country—which were more recently joined by corporations from China (COFCO and ChemChina) and Russia (Sodrugestvo). The second particularity is found in the

segment of agrochemicals and, to a lesser extent, in fertilizers, with the emergence of local merchants that import products from China as a way to bypass the corporate oligopoly. If the first issue has gained more prominence in international literature and can be seen also in other countries (Escher, 2020; Mackey, 2015; McMichael, 2020; Wilkinson et al., 2016), the second seems to be peculiar to Paraguay and has not yet been sufficiently explored in studies on the topic carried out in the country (Arrúa, 2019; Garay, 2015; Rojas Villagra, 2009, among others).

It is an increasingly more corporate and concentrated market, 'dominated by a few multinational companies that collaborate to control the agro-industrial chain from the beginning (upstream) to the end (downstream)' (McKay, 2018, p. 72). After recognizing the main players and their market power in Paraguay, in the next section, we will analyse how these companies establish negotiations with rural producers. Examining this, in light of the productive, commercial and economic dynamics of soy cultivation, is important to understand how small producers have embarked on this productive activity and how that relationship has led this group to a cycle of dependency and indebtedness.

4 | PRODUCTIVE, COMMERCIAL AND ECONOMIC DYNAMICS IN SOYBEAN CULTIVATION IN PARAGUAY

During fieldwork, a consensus was noticed among farmers, when asking about the productive characteristics of soybean crops, in that it is a culture based on a modern technological apparatus, which requires the use of adequate machinery, highly productive seeds, generous use of fertilizers, use of different agrochemicals at different times and so forth. Besides, every year, new types of inputs and machines are introduced in the market, which promise to expand yields per area, as it can be seen in field demonstrations exhibited in the main agricultural fairs in the country. As a result, it is increasingly common to find farmers who resort to services external to the farm in support of production, such as hiring specialized technical assistance, subscribing climate reports, participating in training courses on the use of certain technologies (from equipment to applications), hiring tilling and harvesting services (among farmers that lack machinery) and hiring finance specialists to manage the farm (as already pointed out by Cáceres & Gras, 2020; Gras & Hernández, 2013, Gras & Hernández, 2016; Guibert et al., 2015).

While new technologies are highly productive and have great potential, they are also very sensitive and fragile when their ideal contexts are absent. In the case of new varieties of transgenic seeds, for example, besides being expensive, when a climate problem occurs or inputs are not used according to guidelines, they tend to lose productivity. A farmer commented that 'today, soybean varieties are very productive, but they are also more vulnerable and less resistant, and that is why we have to follow exactly what the company tells us to do'. However, following these guidelines leads to a high production cost, which implies high investments at each harvest.[11]

That is why 93.5% of the interviewed soy farmers (107 in total) said that they need capital external to the farm for producing the oilseed and 86.0% of them mentioned that on their own resources alone it would be impossible to grow it. As to financing of the crops, although some public and private loans are available, few soybean growers (13.1%) resort to these due to either the weak presence of public rural credit programmes in Paraguay or the excessive bureaucracy and demands by private banks. The actors that, in fact, finance soybean cultivation in Paraguay are trading companies, input resellers and cooperatives, which grant loans to 97.2% of the soy growers who claimed to depend on external resources (even most of those who access capital via the bank system also resort to these actors).

Although these companies conduct arrangements that involve payment in cash (mainly with large capitalized farmers), two types of short-term financing contract predominate. The first is the exchange of products and services

[11]This cost also raises as the manager of an input retailer points out, because 'engineers [agronomists] earn commission, they have a salary and also earn a commission on everything they sell. So, there are some technicians who recommend fertilizers, pesticides, as much as possible. They are after the commission and the poor farmer believes them and buys'.

(mainly seed, agrochemicals, fertilizers and technical assistance) for grain.[12] Known as barter, the farmer pays in kind, without monetary intermediation. As a soybean grower points out, 'I take what I need for production and then pay the value of the products plus interest in soybeans.' The second type is the grant of financial advances to farmers, such as a loan to finance the crop, which can be paid added of an interest rate either in kind or in cash. These companies, therefore, operate as financial agents, making it more difficult to determine 'the extent to which the traders' strong profit performance is based primarily on their financial activities as compared to their traditional physical trading. The reality is likely a bit of both.' (Murphy et al., 2012, p. 24).

In Paraguay, Cargill and ADM operate with those two types of contracts, according to their respective excerpts from interviews.

> Before, Cargill's focus was on buying soybeans, but today we are already concerned with origination. Then we finance the farmer, offering a diversified portfolio of products and services, such as seed, fertilizer, agrochemicals. And, to offer all this, we have partnerships with Syngenta, Tecnomyl, Monsanto, Agrotec and Dekalpar. Offering all this to farmers means a greater risk for the company, for example, if a drought occurs, the farmer harvest poorly and has no way to pay off the debt. But the company also gets a higher margin in this modality and has a guarantee that the farmer will deliver the grain to us, which gives a greater origination of grain. [...] Cargill also offers financing to farmers at an interest rate of 8% for those offering mortgage on the land and 18% without a mortgage. But, of course, it also depends on the customer. Anyway, our interest rates vary between 8 and 18%. And we also offer insurance.

> We have fertilizers, seeds, lime products, agrochemicals and even fuel. Everything the farmer needs, including cash. We finance in cash for our customers who can offer some form of security. [...] ADM does not have all the products, but we have partners, which are other companies in the agribusiness, even multinationals, which is the case with Syngenta, and others. Almost everything that the farmer needs to produce can be found here at ADM. [...] Our idea is not to sell the product, in fact, we do not sell anything, we buy grain. The product is a means for seeking grain in the market, because every sale we made generates a grain contract, you know?

This form of arrangement makes farmers highly dependent on the companies, because a single actor becomes the financing agent, the supplier of inputs, the technical assistance agency and the buyer of produce. Consequently, the farmer becomes 'immobilized' in the face of the company's interests, creating a continuous relationship between them and preventing more independent actions by soy growers. The greater the farmers' dependence on the firm, the less favourable for the farmer are the contracts signed with the companies, which involves differences in interest rates, input prices, delivery terms, security and general conditions of the contracts (Fernández, 2007; Wesz Jr., 2016).

Besides the already described elements, the farmer is also exposed to the international price of soy (more and more volatile) and to climatic conditions (increasingly unstable), which has a direct impact on yield per area. These dynamics increasingly intensify the relations of farmers with the environment outside farm, reflecting the growing 'externalization' of agricultural activity. It is an intensification of commodification processes pushing for specialization to comply with market imperatives (Ploeg, 2019).

This set of elements affects the economic dynamics of soybean cultivation, marked by the large fluctuation in net margins between harvests, given the wide variation in production costs, soybean prices and productivity. In Paraguay, in some years, soy has been highly profitable (as in 2007–2008, 2012–2013 and 2013–2014, when profitability exceeded US$ 600 per hectare) and in others the net margin was negative (as 2005–2006, 2011–2012 and

[12]As the representative of a company expressed, 'we are a supermarket, everything a farmer needs for producing, he or she will find here.'

2018–2019) (Wesz Jr., 2020a). In addition to these variations between harvests, the fluctuation also occurs according to the farmer's profile. Soy farmers 'with smaller areas have a much higher production cost, harvest less per unit area and receive lower prices for their soy' (Wesz Jr., 2020a, p. 173); that is, the net margin decreases with decreasing scale of production. Nevertheless, soybean production is present among small farmers.

5 | SMALL-SCALE SOY CULTIVATION IN PARAGUAY

Microeconomic theory claims that 'the optimal size for soybean production is located in large areas, in which, due to gains in scale, the efficiency in the use of resources and the productivity per unit area reach their maximum' (Bazotti et al., 2017, p. 122). Among the main reasons that limit competitiveness of smallholders in soy production, literature points out: The crop demands intensive and continuous investments, in which increase in scale of production reduces the cost per area; technological issues, associated with agricultural machines and implements with higher yield per unit of work, lead the farmer to expand cultivated area, seeking greater investment efficiency; it is a standardized product, with an internationally defined price, based on global trade and controlled by transnational companies (Fernández, 2007; Setrini et al., 2014; Wesz Jr., 2014).

In short, soy production is intensive in both land (to gain scale) and capital (to fund technology) and less intensive in labour (due to the increasing role of machines), that is, just the opposite of the resources available to smallholders. As for farmers with larger areas, by handling large volumes they can bargain prices, paying less for inputs, obtain financing at lower interest rates and sell their soybeans at a higher value. The interest in farmers with larger areas also became explicit during interviews with company representatives, since 'the harvest of a large farm is worth for 30, 40 small ones'.

In fact, in Brazil, Argentina, Uruguay, Bolivia and Paraguay, there are large soy farmers who, despite being few, control large tracts of land (Arbeletche & Guibert, 2018; Bühler et al., 2016; Frederico & Gras, 2017; Gras & Hernández, 2013; Wesz Jr., 2014). In Paraguay, soy farmers who hold more than 1,000 ha of land, although representing less than 3% of farmers, account for virtually half of the total cultivated area (MAG—Ministry of Agriculture and Livestock, 2009). And, between the last two Agricultural Censuses (1991 and 2008), the increase of their share in this crop is noticeable, jumping from 17% to 48% (Table 1), indicating a process of concentration of soy production in large farms, what will be discussed further on.

Despite this, small-scale soy production is still present in different countries of the Southern Cone (Bazotti et al., 2017; Castañon, 2016; Desconsi, 2017; Gras, 2009; McKay & Colque, 2016; Vennet et al., 2015; Wesz Jr., 2014). In Paraguay, according to Table 1, in 2008, half of soy growers had up to 20 ha; considering a planted area of up to 50 ha, the figure reaches 70%.[13] However, in terms of total cultivated area, these strata have no significance (represent less than 7% in 2008), besides having lost growers in the interval between Censuses (MAG—Ministry of Agriculture and Livestock, 1993, 2009). It is an instance of the duality of modern agricultural production, with few farmers controlling large tracts of land, and many smallholders cultivating small plots.

It is precisely in the smaller strata that Paraguayan farmers predominate (Figure 5). Galeano (2012) points out that 64% of all soybean surface was cultivated by foreign farmers in 2008, 50% of whom were Brazilians and 14% from other South American countries (especially Argentines), Europe (mainly Germans and Spaniards) and Asia (predominantly Japanese).[14] When correlating nationality and size of the property (Figure 5), it becomes clear that

[13] A caveat is due regarding these data: the definition of 'agricultural holding' (*explotación agropecuaria* in the 1991 Census) or 'farm' (*finca agropecuaria*, in the 2008 Census) is not sufficiently explicit in the publications of the Agricultural Census (MAG—Ministry of Agriculture and Livestock, 1993, 2009) to make clear if small areas owned or leased by large farmers in different locations are counted separately. Despite this limitation, during the field research several smallholder soy farmers were identified in different regions of the country, some of whom were interviewed, as we will detail below.

[14] Although the Agricultural Census already indicates the high incidence of foreigners in soy production, it is believed that these figures are even higher, as the Census does not allow for identifying the nationality or the origin of the capital of legally constituted associations, companies or societies.

TABLE 1 Number of soy growing farms and cultivated area by farm size in Paraguay (1991 and 2008)

	Number of soy farms				
	1991		2008		
Farm size in hectares (ha)	*N*	%	*N*	%	Variation 1991/2008
<20 ha	14,624	54.7	15,140	52.4	3.5
>20 < 50 ha	7,222	27.0	5,347	18.5	−26.0
>50 < 100 ha	2,424	9.1	2,562	8.9	5.7
>100 < 1,000 ha	2,309	8.6	5,040	17.4	118.3
>1,000 ha	141	0.5	828	2.8	487.2
Total	26,720	100.0	28,917	100.0	8.2
	Soy cultivated area				
	1991		2008		
Farm size in hectares (ha)	Ha	%	Ha	%	Variation 1991/2008
<20 ha	51,163	9.3	64,908	2.6	26.9
>20 < 50 ha	86,495	15.7	92,182	3.7	6.6
>50 < 100 ha	79,954	14.5	120,482	4.9	50.7
>100 < 1,000 ha	241,116	43.6	1,009,569	41.0	318.7
>1,000 ha	93,930	17.0	1,176,400	47.7	1,152.4
Total	552,658	100.0	2,463,541	100.0	345.8

Note: *Source:* Agricultural Census of 1991 and 2008; MAG—Ministry of Agriculture and Livestock (1993, 2009). Elaborated by the author.

'foreign farmers predominate in medium and large farms. Consequently, in the production of this agricultural commodity, the correlation between concentration and foreignization is confirmed' (Galeano, 2012, p. 415).

If, on the one hand, commercial and small-scale soy cultivation in Paraguay began with foreign growers in the 1970s and 1980s, reproducing the logic present in southern Brazil (Bazotti et al., 2017; Vennet et al., 2015), on the other hand, it has been incorporated by Paraguayan small farmers with the expansion of the agricultural frontier towards the interior of the country.[15] The entry of these farmers into soy cultivation was triggered by the cotton crisis in the 1990s, which was the main activity of Paraguayan peasant economy and lost space due to fall in international prices, and to losses from pests and drought (Rojas Villagra, 2016). The outbreak of foot-and-mouth disease at the end of that same decade, which resulted in the closing of markets, also favoured the expansion of soy among smallholders (Torres Figueredo, 2008).

In fact, the lack of a 'commercial crop' for small farmers was pointed out during the field research as one of the reasons for joining soy cultivation. In addition, an idea prevails in the social imaginary that 'soy makes money'. They also comment on the ease of handling and marketing and availability of financing and technical assistance. Regarding this last point, it is worth noting that the resources offered by the private companies operating in the oilseed market (mainly traders, inputs resellers and cooperatives, as mentioned above) are destined exclusively for soy and corn (for corn–soybean rotation). As a farmer commented, 'If you want to farm soybeans, you get easy money and there are a lot of agronomists ready to support you. Now, to farm cassava, beans, sesame or anything else, there isn't.'

[15]Among the small Paraguayan soy producers who have been interviewed, most of them are historically connected with the colonization programmes created by the Rural Welfare Institute (*Instituto de Bienestar Rural*—IBR), implemented mainly between the 1960s and the 1980s. These programmes were targeted to re-locate the small Paraguayan farmers occupying the Central Zone (close to Asunción) into the northern and eastern areas of the country, because of the conflicts between them and landowners (Nickson, 1981; Rojas Villagra & Areco, 2017).

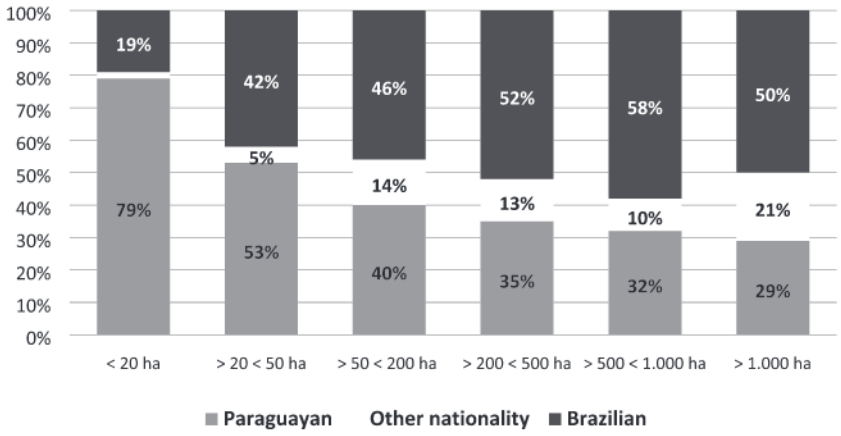

FIGURE 5 Soy cultivated area by farmer's nationality and farm size in hectares (ha) in 2008 (%)
Source: MAG—Ministry of Agriculture and Livestock (2009). Elaborated by Galeano (2012)

Therefore, this financial and technical support is rarely available for other activities, as companies have no interest and a structured and continuous agricultural policy is absent. The selection of soy also stems from the fact that many producers are unaware of the actual production costs, what makes it difficult for them to estimate the real gains from the activity.

Among the 26 interviewed soy growers who own up to 20 ha, it was common to find those who started by allocating 1 or 2 ha in the first years, though expanding the area with soy in the following years, as it becomes clearer to them that 'you need more land to keep in the sector, because the margin is small'. As another farmer said, 'we're having difficulties to maintain [soy cultivation] due to costs that are rising worldwide and everything is getting very expensive; so for the small grower it's getting hard'. This group allocates, on average, 76% of the farm's area to soy. In doing so, they become even more exposed to external variables, as they abandon other agricultural activities that could contribute income in the 'bad crops' of the oilseed—serving as a buffer for the risks generated by soybeans.

Although in the past there have been cases of smallholder farmers—especially foreigners—who, by growing soybeans, managed to succeed and accumulate enough savings to expand their area and acquire the necessary machinery, in recent years this has not occurred due to the current dynamics of this market (as seen in the previous section). The interviews with soy growers (who cultivated from 2 ha to 22,000 ha) made it clear that the smaller the cultivated area, the smaller the farmer's net margin with soy per hectare.[16]

Although this results primarily from the scale of production, it is clear that, in general, smallholders, especially Paraguayans, have lands that are less suitable for cultivation, are more distant from the logistics channels, have limited infrastructure in the farm, outsource most of the production processes, have been for a shorter time in the activity and are unaware of both their production costs and the profitability of the activity. Added to this is the fact that, for being seen by corporations as 'high risk' and 'less interest'[17] growers, contractual conditions are even less favourable for this group.

It is worth presenting here the case of a Paraguayan farmer, from the district of Yrybucua—Department of San Pedro, who holds 8 ha, from which he derives the whole household income. He started planting 4 ha of soybeans in 2014, extending the cultivation to 8 ha in 2015. And to further expand the area, 'I made an alliance with my neighbor to plant soybeans in partnership on our lands. Now we have 12 hectares of soy planted together, but the

[16]To deepen this debate, see Wesz Jr. (2020a).
[17]A company's salesman comments that 'the small grower is generally a much less disputed customer, so, it influences the price of his products … so the price for him is a little higher'. Another one comments that 'the small [farmers] do not demand as much volume [when buying products], but the margin [that they leave to the firm] is greater'.

contract with the company that finances is in my name'. They negotiate exclusively with a single company, as he explains:

> We work with company X, which provides us with all the inputs we need, including seed, fertilizer, pesticide. If diseases appear or when pests attack, the agronomist brings all the inputs to be used in farming. Mr. Y is who does the work for us, sows, fumigates and reaps. He has all the machines. And all costs are financed by company X, which pays everything, including the owner of the machines that sows the soybeans for us. They finance all costs during the harvest, from planting to harvesting and the sale of grain and the freight that will transport the grain as well. When the date or deadline stipulated in the contract with the company arrives, it takes stock of the production costs and the profit that remains for us. Soy always generates a bit of profit, except for this year [2019] that the yield was poor, practically no profit per hectare, due to the drought that affected soy production.

As Ploeg (2019, p. 20) well portrays, 'what originally was organizationally tied to the labor process on the farm becomes divorced from it in the externalization process'. Many situations like this have been observed and reported among smallholder Paraguayan farmers, especially in the most recent soy expansion regions. These are cases of extremely high exposure to the different risks detailed so far, and the company only advances these products and resources if it has a guarantee, which in the case of smallholder farmers tends to be their land, as they do not hold other assets in value equivalent to that of the loan.

The above-described arrangements refer to what has been called in the literature 'contract farming', that is, a form of vertical integration between farmers and buyers (exporters, agro-processing companies or retailers at the end of the value chain) (Oya, 2012). Although there are many types of contract farming (Clapp, 1988; Little & Watts, 1994; Oya, 2012; Scoones et al., 2018; Vicol, 2019) and the featured case presents many characteristics of barter (described in Section 4), its organizational and institutional characteristics are quite specific because the farmer remains distant from the activity, having no direct involvement with the productive processes and decision making, since, as smallholders repeatedly mentioned in the interviews, 'the company does everything!'. Farmers do not work in soy farming (productive activities are carried out by the company or by whom it hires) and do not participate in decisions about when to sow or sell the soy, what inputs to use, who will sow or harvest it, to whom sell it, and so forth. They are also unaware of productive and market information (production costs, quantity produced, sales price and buyers). This fragility increases with the absence of mediation of this relationship by the State or by social and union organizations representing small farmers.

Although at first sight this arrangement may appear a kind of leasing, in the sense that all productive, economic and commercial decisions are made by the company with which the farmer signs the contract, it is not. The fundamental difference is that in the lease the owner of the area has a guaranteed remuneration (by leasing the area at a fixed price per year) or at least a variable one (when the lease rent is a percentage of the yield), and the risks involved in production are taken by who rents the area, what is not the case in such contracts. This arrangement is advantageous for companies because, in addition to benefiting from the profits of the sold products and services, contrary to leasing, the entire risk is taken by the small farmer who owns the area. By leasing the land, the company would have to bear the losses of a 'crop failure' due to climatic problems, the price drops due to international market, the increase in production costs due to the exchange rate and so forth (and, in the current arrangement, such risks remain with farmers).

This model of contract applied in Paraguay to small soy farmers is much more stringent in controlling land, production, net margin and producers than other types of contract farming used in other regions and to other crops (Adams et al., 2019; Aquino, 2013; Miele & Waquil, 2007; Oya, 2012; Pérez Niño, 2016; Scoones et al., 2018; Vicol, 2019; Zhang, 2012). In the Southern Cone, even for soy farming there are arrangements ranging from *siembra* pools, leasing and partnerships to financing and barter contracts between producer and company (Arbeletche & Guibert, 2018; Bühler et al., 2016; Frederico & Gras, 2017; Gras & Hernández, 2013; Wesz Jr., 2014). What we

observed in Paraguay is a new model in which companies can overwhelmingly, as compared to other modalities, impose their logic of reproduction and seize the value of agricultural production.

In her study on Paraguay, Pereira (2019) identifies two forms of control of the territory by corporations: direct control, when they own the land, and indirect control, when they do not own the land but appropriate the produce of the land. In the kind of relationship between company and farmer described above, control has also occurred through a third way (or a combination of the two already described), because corporations have been able to directly control the territory even without land ownership (although, as the land is a guarantee in the contract, in case of indebtedness it can pass to the company's property, as we will see below).

Based on Ploeg's (2019) debate on externalization of agricultural production, it can be said that this is an extreme example. It is about the almost complete outsourcing of the production process, except for the risk, which remains exclusively with the small farmer. Besides the fact that farmers often are not aware of this dynamic, it is quite difficult for them to break this kind of relationship for the bonds of dependency and indebtedness involved. The way this interaction between farmers and companies has occurred makes the effects on agrarian dynamics even more extensive and perverse.

6 | THE EFFECTS OF SOY CULTIVATION IN PARAGUAY: INDEBTEDNESS, EXCLUSION AND CONCENTRATION

So far we presented how transformations in the modern agricultural production and the presence of domestic, regional and global corporations, with their different strategies and policies, have, on the one hand, attracted small farmers into soybean cultivation and, on the other, engaged them in a circle of dependency and debt. In soybean growing regions in Paraguay, it was common to hear: 'so and so went into debt and broke'. Although the accounts allude to farmers of different strata, cases of smallholder farmers predominate, given their already mentioned productive, economic and commercial characteristics and the kind of contract farming established. A yield below expectations, a sharp reduction in the price of grain or a sudden increase in costs generally mean a debt that, if not paid off or renegotiated, can result in total or partial loss of land (proportional to the size of the debt).

According to interviews with companies' representatives, indebtedness resulting from soybean farming is constant. The manager of a trading company comments that 'when a drought affects the region or the price of soy falls, we already know that some farmers won't be able to pay their debts. The company, in these cases, refinances the farmer, but if he still doesn't pay, he hands over the assets to pay the debt'. From a farmer's perspective, the companies 'sell inputs and if there is a difficulty and frustration in the harvest, they want to take the person's property. They do not help to refinance. They charge abusive interest rates when the farmer is unable to pay because of a poor harvest. They charge up to 22% per year in dollars'.

When soybeans farming results in debt, the debt will be refinanced, and thus, the farmer will have to plant soybeans again the following year to try to pay it off. This creates a vicious circle, as the farmer is forced to keep the contract with the same company (due to the debt) and remains with this crop in search of a good yield to pay the debt. This situation explains why small producers are often conditioned to continue cultivating even when profit margins are limited or non-existent.

As Castañon (2016) and McKay (2018) summarize, the companies control the value chain via debt and dependency relationships, what means, for some farmers, the loss of their control over the land. In the fieldwork, cases were found of farmers who lost their land, and all respondents knew someone who had gone into debt and had to hand over some area to the company. 'I had 20 hectares, planted 12 [hectares] with soybeans and lost 5 [hectares] to the company that sold me the products [inputs]. Two bad harvests resulted in that!.' And the risk of indebtedness increases when the farmer, seeking to expand the scale of production, chooses to rent additional areas, which considerably increases the cost of production. Among the 107 soy growers interviewed, 41 leased complementary areas and 11 had partnerships with neighbouring farmers (as in the case mentioned above).

During the field research, it was possible to identify a set of companies responsible for these productive, commercial and economic dynamics that cause total or partial loss of land among rural producers. In the case of small soy producers, despite some reports involving the main transnational soy exporting companies mentioned in Item 3, in recent years, this has occurred through local companies, mostly importers/resellers of inputs controlled by Brazilians. These companies have deepened the dynamics of contract farming with small producers because of the lack of interest of large transnational corporations to work with them—due to their reduced volume of production (ABCCD prefer to buy soy directly from local companies, cooperatives and farmers with higher production).

Some companies, when receiving land from indebted producers, keep the property of the land and offer it to other farmers for cultivating, as a way to expand its operating portfolio and to maintain, based on contractual relationship, the risks of soy production with farmers. One of the interviewees used to buy inputs and rent the land from the same company until he got into debt. He declined to elaborate on the subject during the interview. Later, in conversation with his daughter, she explains the case.

> My father lost a piece of land of about 50 hectares. The company used to finance him, financed him for 7 years. And dad planted some 120 hectares of their land, the income was 1,0 ton of soybeans per year of the summer harvest. During this 7-year period, 3 years of drought occurred. Dad harvested very poorly and was unable to pay the financing. And the debt has increased. They refinanced dad's debt for about three more years, but their interest rates are very high and when dad harvested well, the grain had bad prices, so dad was unable to pay the debt of the drought years. Then the company decided to charge dad. And the financing mortgage was a piece of land. When they decided to charge, there was nothing that dad could do, he had to comply with the contract and pass the deeds to their name. And in the region where dad lives, there are families who have lost everything. That is how the firm owner got rich! And the person who has land to plant, but has no money to buy agricultural inputs, ends up having no other option. This was the only financing option.

As a result, many farmers have left the activity, leasing their areas, following the significant increase in land value in recent years and breaking with the risks and the logic of dependency of soy cultivation. They ended up choosing this way—not only smallholder farmers who are unable to reach greater scale for soy production but also owners of larger areas who want to avert the risk of facing negative margins and run into debt.

> After my grandfather died there was a division of land among the siblings, and each child inherited 10 *alqueires* [25 hectares]. We had no machinery, so, hiring labor to plant, apply inputs and harvest did not pay off. It would not provide the expected return and we decided to rent it.

> In Paraguay, today, a farmer cannot subsist on 10 hectares of soy. Production costs are very high. And a small plot of land does not allow for scale. That's why a lot of people started to rent their land; they could not make a living by farming soy in a small area. On average, here in the region, renting equates to between 2.7 and 3.6 tons per *alqueire*. It is an amazing price! If I had 200 hectares, I would rent it to another farmer. At this lease price, it is a very good fixed income, without risks of not reaping and of running into debt.

The reduced margin of soybeans for smallholder farmers has also led to their migration in search of cheaper land, to obtain more area for cultivation. In the case of the interviewees, they are smallholder farmers from regions where soy is more consolidated (Departments of Alto Paraná, Itapúa and Canindeyú, in the east of the country) and land value is appreciated, who see the search for cheaper areas in regions of expansion of the agricultural frontier (Departments of San Pedro, Amanbay, Caazapá, Guaira and Misiones, towards the west of the country) as an option. Thus, they can acquire a larger area that allows for larger scale production so that to expand their margin in

production. This initiative, however, was observed almost only among children of Brazilian immigrants, who were smallholder farmers in the traditional regions for soy cultivation (Avalos Vera et al., 2017).

One of the interviewees, son of Brazilians, migrated from Alto Paraná to San Pedro after marrying. 'I got married and my father's land was not enough for all siblings. Then dad gave me some money and I bought it here, where it is much cheaper than there'. Another interviewee comments that 'where I was, the land was very expensive, so I sold 20 hectares to buy 140 hectares in San Pedro'. There were also cases of selling one's area in Paraguay to return to Brazil, taking advantage of land appreciation in Paraguay and favourable exchange rates. 'At the time that it was 20 thousand [dollars, the price per hectare] here, and the exchange rate in Brazil was 4 to 1 [real x dollar], some sold their lands and returned to Brazil'.

Migration to new agricultural regions was not observed among smallholder Paraguayan soybean farmers. In this group, when migration did not result from involuntary loss of the area due to debts or from renting land to larger farmers, it was a choice of selling the land and migrating to the city. Given the difficulty in starting other commercial crop (either for being into debt and 'without access to credit' to invest in another activity, or for the lack of more comprehensive agricultural policies) and the very high price of land[18] besides pressure from larger farmers, many of these families quit their agricultural trajectory and start living in the outskirts of large cities under extreme socioeconomic vulnerability (Palau, 2019).

Although rural–urban migration has always occurred, involving some members of rural families who chose to leave, the novelty is that now the land is sold and the entire family heads towards the urban centre, what means the disappearance of that small farm. This occurs equally among peasants and indigenous people who are not part of commodities production, being 'surrounded and asphyxiated by large-scale agriculture, and who have little support from state institutions and local governments' (Riquelme & Vera, 2015, p. 84), and among smallholder soy farmers who lose or sell their land. As Riquelme and Vera (2015) point out, entire rural communities have disappeared, leaving only soy fields. As one interviewee tells, 'my uncle had some land, but now he has sold everything. The place where my uncle had it was beautiful, a lot of meadows [for raising cattle], a lot of fruit trees, but the guy who bought it pulled everything out and put soy'.

In short, farmers who have small areas, little capital, limited production scale and little bargaining power as buyers have been experiencing processes of exclusion and marginalization in soy cultivation. This has proven to be even more acute among Paraguayan farmers, who were unaware of the characteristics of the crop and its market and were persuaded to establish extremely unfavourable contractual relationships with companies in the sector, shifting their farming to dedicate most of their lands to soybeans, expecting to improve their living conditions. Nevertheless, a few years later, the results are opposite.

Among smallholder Brazilian farmers, despite a longer soy farming experience, it has also been difficult to remain in the activity in view of the current productive, commercial and economic context, what is reflected in their advance towards new regions in Paraguay or return to Brazil—including for settling in land reform settlements in Brazil (Aquino, 2016). In the soy market, as McMichael (2013, p. 671) points out, 'the producer enters a particular kind of value relation that has the potential to become an instrument of control, debt dependency and dispossession'.

Even though the Agricultural Census of 2021 will bring updated data, the previous surveys already reveal processes of exclusion and concentration among soy farmers (or of 'filtering' and 'natural selection', as some interviewees called). While in 1991, farms smaller than 100 ha represented 39.5% of the area planted with soybeans in Paraguay, in 2008, this figure reached only 11.2%. On the other hand, farms larger than a thousand hectares, which represented 17.0% in 1991, in 2008 nearly reached half of all soybean planted area in the country (Table 1). If we focus on Itapúa, the first department where the commercial cultivation of the oilseed has consolidated in Paraguay,

[18]Unfortunately, Paraguay does not have official data on land prices by region and by year. Even so, the perception of prices variation is observed in the narrative of interviewees, who acquired areas in different periods. 'Earlier, you could buy it on the cheap. There was land at a thousand dollars then. Now it is, on average, 20 thousand per hectare.' We should also note that such appreciation of land in Paraguay is embedded into a more general dynamics, driven by the 'global race for land', the appreciation of commodities and the transformation of land into a financial asset (Borras et al., 2011; Borras & Franco, 2012; Oliveira & Hecht, 2016; Pereira, 2019).

4 out of 10 soy farmers that had up to 50 ha have disappeared between 1991 and 2008, while those who hold more than 500 ha have more than doubled their share on the surface, from 19.0% to 41.0% (MAG—Ministry of Agriculture and Livestock, 1993, 2009).

7 | CONCLUSION

Paraguay is a typical case of contemporary agricultural commodities market, either because of the features that this market has assumed in the country or because of the impacts of the advance of monoculture on rural areas. Despite the centrality of soy for the economy of Paraguay, the number of its direct beneficiaries is increasingly lower, given the huge concentration across the whole production chain. Few transnational corporations have controlled large shares of the country's soy market—although some initiatives by local companies have emerged aimed to bypass the corporate oligopoly, as in the agrochemical sector. Furthermore, for being global actors connected with financial capital and with great economic and political power, these corporations dictate the pace, dynamics and ways this market operates, including the way farmers are integrated into soy production and their form of relationship with the firms.

A major characteristic is the farmers' heavy dependence on these corporations, what restricts their room for manoeuver, besides exposing them to both climatic conditions and the international price of soybeans, and making the gain of scale essential for getting returns from the activity. As this research has demonstrated, the productive, commercial and economic logics present in this market, which are defined by the transnational companies, inserts high risks into this activity. Despite affecting all farms, the intensity and impacts of such risks are felt differently according to the profile of the farmers. This study shows that smallholder farmers, who have little capital to invest, little bargaining power as buyers and limited production scale, have run into debt and have not been able to remain in farming, either leasing their areas or, in the most severe situations, losing their own land to the company that financed the cultivation.

In short, it can be said that soybeans cultivation in Paraguay, besides generating processes of exclusion and marginalization of peasants and indigenous people who are not part of the productive activity, has also a disastrous impact on a significant number of smallholder farmers who adopt this crop. This paper showed how this process has been taking place considering the corporations involved and the productive, commercial and economic dynamics present in this market. Although many characteristics and dynamics presented and discussed here can be seen in other places and types of production, the case studied has a peculiarity related to the form of relationship established between small farmers and companies. It is a type of contract farming that differs from the usual forms, because smallholders make their land available for companies to control and manage soybeans cultivation, while fully taking the risks of this production. This format expands the logic of dependency related to debt and further increases the danger of these farmers being expropriated from their activity and the territory.

Thus, the impacts of soy expansion on agrarian dynamics in Paraguay reveal to be even more complex and profound, as it has reinforced the differentiation among farmers, strengthening those who can produce at larger scales and with high productive, managerial and financial efficiency, mostly foreigners. Smallholder soy farmers, in turn, amid debt to and dependence on transnational companies, have been gradually eliminated from the activity and, in some cases, excluded from their own land and deprived of their farmer status.

ACKNOWLEDGEMENTS

I greatly appreciate the constructive comments and suggestions received from anonymous JAC reviewers. I would also like to thank the Universidade Federal da Integração Latino-Americana (UNILA) (Federal University of Latin American Integration) for its Researcher Support Program (Edital no. 109/2017/PRPPG and no. 80/2019/PRPPG) and the beginning undergraduate researchers (Gabriel Avalos Vera, Raimundo Christian Oliveira Soares, Maria Victoria Garayo Mereles, Wellington Luciano dos Santos, Caroline Bosio Grappegia and Jorge Morel); the Grupo de Estudo em Mudanças Sociais, Agronegócio e Políticas Públicas—GEMAP/CPDA/UFRRJ (research group on Social

Change, Agribusiness and Public Policies), especially in the scope of the research project 'Expansão do "agronegócio," mercado e estrangeirização de terras e ação do Estado: um olhar crítico sobre as transformações no meio rural brasileiro' (Agribusiness expansion, market and foreignization of lands and State action: a critical glance on the transformation in the Brazili-an rural), which counts on the support of FAPERJ and CNPq, and is supervised by Professor Sergio Pereira Leite. Finally, I thank Regina Vargas for translating the paper.

DATA AVAILABILITY STATEMENT

Data are available upon request from the author.

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How to cite this article: Wesz Junior, V. J. (2022). Soybean production in Paraguay: Agribusiness, economic change and agrarian transformations. *Journal of Agrarian Change*, *22*(2), 317–340. https://doi.org/10.1111/joac.12436