International Financial Capital and the Brazilian Land Market

by

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International financial capital stimulated the production of industrial agricultural supplies in Brazil during the foreign debt crisis of the 1980s. In the mid-1990s new financial sources became available for debt rollovers, and this fueled a new cycle of industrialization in agriculture. This trend intensified in the years that followed, when commodity prices were high on the international markets. It led to an increase in the concentration of capital in agricultural assets such as machinery and land, which in turn generated a new cycle of indebtedness for agribusiness. This process of crisis accumulation was marked by the overexploitation of labor and predatory control over natural resources.

Capitais financeiros internacionais de empréstimo fomentaram a internalização da produção de insumos industriais agrícolas no Brasil, em um período que coincide com a crise da dívida externa brasileira na década de 1980. A partir da metade da década de 1990, a retomada dos financiamentos para a rolagem de dívidas promoveu um novo ciclo de industrialização da agricultura. Esta tendência se acentuou nos anos posteriores durante o período de alta dos preços das commodities no mercado internacional e fomentou o aumento da concentração de ativos financeiros na forma de maquinário e terras, gerando um novo ciclo de endividamento para o agronegócio. Este processo de crise-acumulação é marcado pela superexploração do trabalho e pelo controle predatório de recursos naturais.

Keywords: *Land market, Industrialization of agriculture, Financial capital, Debt crisis*

Examining the role of international financial capital in speculation in farmland in Brazil, this article analyzes the changes in the mechanisms of capital accumulation since the economic crisis of the 1970s that facilitated the mobility of financial capital internationally and led to the global economic crisis of 2008. One of the main players in farmland speculation in Brazil is the sugarcane agribusiness corporation Cosan. The largest sugarcane producer in Brazil, it laid the foundation for the current speculation in farmland. The expansion of land markets stimulated extensive monocropping of agricultural commodities such as sugar and soybeans, and this increased labor exploitation and environmental destruction.

The 2008 crisis increased the role of financial capital in the agricultural land market. At times of economic instability at the international level, land market

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speculation serves to facilitate the circulation of financial capital. This trend is stimulated by credit systems and transnational investment funds seeking to generate returns for their creditors. In the aftermath of the crisis, agribusiness's access to credit based on promises of future production was reduced significantly (Pitta, 2016). Several companies in the sugarcane industry with debt in U.S. dollars went bankrupt,[1] and commodity prices plunged (Delgado, 2012). This led Brazilian companies to diversify their operations and merge with international corporations to gain access to new lines of credit.

The Cosan Group, whose shares have been traded on the Bovespa stock exchange since 2005, provides a clear example of this trend. The influx of foreign capital, mainly from investment funds, led to an exponential increase in its assets with the creation of subsidiaries in the areas of logistics and transportation, chemical supplies, and rural land such as Rumo Logistics, Cosan Fuel and Lubricants, and Radar Agricultural Properties. As the first agribusiness corporation to create a holding company devoted specifically to farmland speculation and to go public, Cosan is an emblematic case for analyzing the industrialization and financialization of the sugarcane industry.

In addition to attracting investors from financial markets, the Brazilian sugar-energy sector engaged in a series of mergers with oil and commodity trading corporations. Royal Dutch Shell entered the ethanol market by establishing a joint venture with the Cosan Group in 2008. This association resulted in the creation of the Raizen Corporation, which has become the largest ethanol producer in Brazil, with an estimated market value of US$20 billion. This merger contributed to the concentration of ethanol production in Brazil, which is now largely controlled by the oil sector (Xavier, Pitta, and Mendonça, 2011).

The creation of Radar Agricultural Properties was announced in the same year. Its main source of financial capital is an international pension fund linked to the Teachers' Insurance and Annuity Association–College Retirement Equities Fund Corporation (TIAA-CREF). This company manages pension funds in the United States with an estimated valued of US$886 billion and owns TIAA-CREF Global Agriculture, which operates in the international land market. It receives investments from other sources, such as the Second Swedish National Pension Fund, the Caisse de Dépôts et Placement du Québec, the British Columbia Investment Management Corporation, the Stichting Pensionenfonds AEP, the Ärzteversorung Westfalen-Lippe, the Cummins UK Pension Plan Trustee Ltd., the Environment Agency Pension Fund, the Greater Manchester Pension Fund, and the New Mexico State Investment Council. In order to operate in Brazil, TIAA-CREF Global Agriculture created a Brazilian holding company, Mansilla. Together, Mansilla and Cosan are the main shareholders of Radar, owning 89.1 percent and 18.9 percent of the company, respectively.

As of June 30, 2012, TIAA-CREF reported the negotiation of 257,877 acres of "farmland holdings" in Brazil (TIAA-CREF, 2012). The value of its portfolio rose 93 percent over the figure for 2011, while land prices increased 56 percent on average (Moreira, 2013: 58–59). A 2013 report indicated that it held 588,878 acres of farmland in Brazil, and in 2015 it reported 633,392 acres (TIAA-CREF, 2013; 2015). In addition to sugar and ethanol production and land market speculation, Cosan has been using other financial mechanisms to generate profit since it went public in 2005. New strategies for inflating the value of its financial assets have allowed its shares to be traded independently from its production of commodities. A company's entrance into the financial market serves as a form of capitalization or a promise to produce commodities in the future, which fuels increases in its share prices, encourages it to make promises to expand production, and broadens its access to credit.

Farmland speculation can be seen as a new round in idle capital's search for profit at the end of a 2003–2008 cycle of high commodity prices that caused the price of arable land to increase exponentially. The increase in prices of Brazil's main agricultural commodities for export—soybean, sugar, cotton, corn, and oranges—also contributed to the inflation of land prices. According to Delgado (2012: 96), whereas land prices had declined 11.2 percent between 1994 and 1997, between 2000 and 2006 they rose 10.16 percent, and they continue to rise. This trend has allowed the commercialization of land to emerge as a major financial activity with the participation of international pension funds in rural Brazil. Speculation in agricultural land consists of generating revenue from the sale of land by raising its price prior to the sale. The large amounts invested, especially since 2008, have fueled further hikes in land prices. Even with the most recent decline in commodity prices,[2] the increase in the price of land as a financial asset has been fueled by the establishment of companies dedicated exclusively to the commercialization of farmland.

SLC Agrícola (Schneider Logemann & Cia.), for example, made its initial public offering in 2007. Brazil's largest grain producer, it manages the SLC Land Company (created in 2012) and has received investments from international funds to purchase, sell, and lease rural land. Oliveira (2010) demonstrates that these companies' main objective is not to gain direct control over land but rather to earn income from speculating on land prices. This process can be characterized as generating revenue through the circulation of fictitious capital (Marx, 1983) while using land as a material asset.[3] Financial capital is promoting a kind of "outsourcing" of land operations analogous to the outsourcing of labor that is prevalent in sugarcane harvesting. International investment funds are exempt from responsibility for the economic, social, and environmental impacts of speculation in farmland in rural Brazil because they are not considered direct owners of the land.[4]

The territorial expansion of agribusiness in Brazil occurs mainly in regions that are rich in water sources, biodiversity, and infrastructure. Agribusiness corporations increase their control over natural resources in order to generate returns on capital that has been immobilized in the form of investments in mechanization and chemical inputs. The expansion of the monocropping of agriculture commodities for export has negative effects on food production for the domestic market. Agribusiness corporations engaging in farmland speculation intensify the impact on local rural communities in their struggle for land. Agricultural policy in Brazil provides state support and subsidized credit to agribusiness corporations in much larger amounts than those available to the small farmers who produce the majority of food for local consumption.[5] Various studies demonstrate that increases in food prices are related to speculation in commodity markets, which is stimulated by special governmental loans at subsidized interest rates used by agribusiness corporations to speculate in financial markets. Oliveira (2014: 8) suggests that "in globalized, monopolistic capitalism, agriculture came to be structured around three pillars: the production of commodities, commodity exchanges and future markets. . . . Therefore, food production ceased to be a strategic policy dealt with on a national level."

THE INDUSTRIALIZATION OF AGRICULTURE AND THE DEBT CRISIS

To provide lines of subsidized credit to agribusiness corporations, the Brazilian state expands its debt by selling national treasury bonds in the financial market. According to its 2013–2014 agriculture and livestock plan (Ministry of Agriculture, Livestock, and Food Supply, 2013–2014), the amount of public funds allocated to agribusiness through the rural credit mechanism increased more than fivefold over the past decade, jumping from R$27 billion in 2003–2004 to R$136 billion for the 2013–2014 harvest year. Agribusiness corporations use their access to credit to operate in the financial market. Several sugarcane and ethanol companies took advantage of governmental loans at subsidized interest rates to speculate on the appreciation of the Brazilian currency in relation to the U.S. dollar during the years prior to the 2008 economic crisis. When the dollar rose again, many companies went bankrupt. In 2011 the sector accumulated more than R$4 billion in losses in foreign exchange transactions (Pitta, 2016). Coincidentally, in January 2012 the government freed up R$4 billion for the sugarcane industry, to be used specifically for plantation renewal (Mendonça, Pitta, and Xavier, 2014). Most subsidized credit for agribusiness is made available through the Banco Nacional de Desenvolvimento Econômico e Social (Brazilian Development Bank—BNDES) at interest rates that are lower than those the state pays when it offers public debt in the form of government bonds to attract investment (Mendonça, Pitta, and Xavier, 2014). This state policy is used to promote agricultural exports and gain access to foreign currencies, which allows national actors (private and public) to obtain new loans and roll over their debts (Pitta, 2016).

Since 2003 the Brazilian government has provided special incentives, such as credit, market security,and infrastructure, to the sugarcane industry by attempting to turn ethanol into a commodity traded in international financial markets (Ramos, 2011). The sugarcane industry grew exponentially between 2003 and 2008, when the number of sugar and ethanol companies increased from 338 to 495 (Thomaz Jr., 2002: 79). However, after 2008 the sector had difficulty accessing credit to invest in production and to pay for previous debts, and this led many companies to declare bankruptcy (Pitta, 2011). Between 2008 and 2014, the number of sugar and ethanol companies decreased to 375 (*O Estado de São Paulo*, October 27, 2014).

The global economic crisis of 2008 altered the profile of agribusiness in Brazil. Several companies in economic insolvency were acquired by or negotiated joint ventures with foreign corporations from various fields (finance, automotive, and oil). This process led to a greater market concentration in the ethanol industry. Companies negotiated joint ventures with the intention of increasing assets in the form of machinery, land, and subsidiaries. As a result, their share prices have become a fundamental part of their market value and serve as a parameter for obtaining credit. A company's ability to acquire debt in order to increase investment is directly tied to its size or the value of its assets (Belluzzo, 2012). Investments in land and machinery, together with the tendency to speculate on financial markets to obtain higher-than-average profits, are driving the current expansion of agribusiness in Brazil. In this recent period of expansion, agribusiness companies have increased the mechanization of the production process, which has generated unemployment among rural workers. Higher costs of industrial inputs and machinery have stimulated speculation and the need of these corporations to acquire more debt.

The industrialization of agriculture falls within the scope of the contradictory relation between economic crises and capital accumulation. In capitalism's current phase, the relation between agricultural and industrial capital (or between rural and urban sectors) has become more apparent. The investment of more capital in industrial inputs has promoted the expansion of the agribusiness system and increased its debt. The state, for its part, serves as the mediator of bank loans for agribusiness, increasing national public debt for the benefit of corporations that provide industrial supplies for agriculture (Mendonça, 2013).

The concentration of the agricultural supplies market in the hands of transnational corporations and their monopoly over commodity trading were consolidated primarily at the time when the U.S. dollar was adopted as the international reserve currency. This policy increased the financial availability of international credit systems (Oliveira, 1998: 202). In Brazil this period was marked by the military dictatorship (1964–1985), during which an influx of foreign capital and industrial imports intensified the industrialization of agriculture. From 1975 to 1990, a national ethanol program (Proálcool) allocated more than US$7 billion (TCU, 1990) in public subsidies to the production of ethanol from sugarcane. The mechanization of sugarcane production occurred at the same time as the increase in Brazil's foreign debt (Pitta, 2011). Davidoff (1984: 7) observed that Brazil's foreign debt jumped from US$3.8 billion to US$12.6 billion between the end of 1968 and 1973 (during the so-called economic miracle): "Starting with a notable impulse at the beginning of the 1970s, there was an explosion of Brazil's foreign debt whose corollary was the crisis of the 1980s." The military government also offered large subsidies for soybean production through the Programa de Desenvolvimento do Cerrado (Savanna Development Program), launched in 1978.

The global economic crisis of the 1970s caused exchange rate fluctuations and an increase in interest rates of foreign loans to peripheral countries, which faced the so-called lost decade of the 1980s. The Latin American debt crisis led to the Mexican moratorium in 1983 and the need for Brazil, for the first time ever, to take out loans from the International Monetary Fund (IMF) in order to avoid bankruptcy. In 1986 debt service payments reached nearly 96 percent of Brazil's export revenue (Oliveira, 1998: 302–303), and it was forced to declare a moratorium. During that period, the government justified establishing extensive and mechanized agriculture as a priority for state support by arguing that it was necessary to pay off the country's foreign debt and to ensure a positive balance of trade. Dependency on imports of industrial supplies for agriculture, however, increased deficits in the trade balance.

Analyzing the role of financial capital, Chesnais (2005) looks back at policies introduced in the 1950s to deregulate the international credit system. The economic hegemony of the United States and the project of "rebuilding" Europe during the post–World War II period caused the accumulation in the banking system of capital derived from workers' savings, salaries, and retirement plans. In addition to the concentration of financial capital by multinational banks there was an increase in operations involving interest-bearing capital on the part of pension funds and insurance companies. This process resulted in the transfer of an enormous amount of social surplus value to the private sector.

The industrialization of agriculture demanded that the technical basis of peasant farming be replaced by industrial supplies. To support this transition, the government adopted a policy based on subsidized credit for agribusinesses and incentives for international commodity trade, which included tax incentives and new sources of funding for infrastructure. The creation in 1965 of the Sistema Nacional de Crédito Rural (National Rural Credit System), which provided subsidies through state banks, was essential for the industrialization of agriculture. Between 1969 and 1976, rural credit increased on average 23.8 percent per year (Delgado, 1985: 46). At the same time, fluctuations in financial markets and in agricultural commodity markets generated economic instability and contributed to the foreign debt crisis of the 1980s. As agricultural commodities were turned into financial assets, speculation played a determining role in international market prices.

Chesnais (2005: 38) observes that "the influx of uninvested resources accelerated at the beginning of the 1970s, as the dynamism of the 'golden age' (1945–1970) dwindled. Governments were forced to prolong its duration by creating large amounts of credit." After the crisis of overaccumulation that marked the 1970s, new instruments to deregulate the international financial system emerged to facilitate the increase in capital flows toward peripheral countries, and this led to the debt crisis of the 1980s.

The continuity of credit systems in the 1990s was guaranteed through the creation of new financial mechanisms that allowed national states to renegotiate their foreign debts. In the following years, neoliberal policies were adopted as financial mechanisms for generating capital accumulation. The privatization of sectors that provided basic consumer goods and services with high profit potential, including energy, agriculture, mining, telecommunications, water, sanitation, health, and education, benefited transnational corporations. Furthermore, the privatization of pension and retirement funds, together with the establishment of foreign debt payments at floating interest rates, increased financial accumulation (Chesnais, 2005).

In addition, exporting capital by opening subsidiary companies in peripheral countries allowed multinational corporations to obtain cheaper labor and credit and tax benefits and to appropriate raw materials and natural resources. Multinational corporations also benefited from trade and investment liberalization policies adopted in the 1990s. This international trend toward greater capital mobility for multinational corporations is part of the logic of capital accumulation in its monopolist phase, manifested in the form of a crisis, via a contradictory process that combines "falling profit rates with phases of rapid financial accumulation" (Chesnais, 2005: 60). The international economic crisis of 2008, in which the expansion of financial capital's mobility was a determining factor that generated new cycles of debt, reaffirmed this tendency.

FINANCIAL CAPITAL AND LAND MARKETS

The financial mechanisms that allow agribusiness corporations to present land as collateral in exchange for access to credit vary depending on whether capital circulates more freely in financial markets or is restricted by the need to invest in industrial supplies such as chemical fertilizers, pesticides, and machinery. Speculation in land prices facilitates the circulation of financial capital as agribusiness companies operate in partnership with banking, insurance, real estate, and industrial firms that are also involved in the expansion of land markets.

In the agribusiness system, in addition to the immobility of constant capital due to dependency on industrial supplies, land as the productive base also constitutes a limitation to the circulation of capital. The relation between financial markets and land markets stimulates speculation in commodities and land because it serves as the material basis for increasing the circulation of capital. The land market, characterized by financial operations involving land titles, plays the role of "thawing and financing fixed capital investments" (Delgado, 1985: 194). In this sense, landownership becomes "a natural, non-reproducible resource" that may take the form of "monopolizable equity securities (shares, real estate bonds, and government bonds)" in addition to being used to guarantee transactions in financial markets. In periods of economic crisis land markets and financial markets are intertwined.

The increasing industrialization of agriculture demands increasing amounts of credit that are monopolized by agribusiness corporations. Monopoly of the so-called production chain means that some multinational corporations control different phases of agribusiness, from the production of inputs to trading. The growing concentration of capital in agriculture can be characterized as a crisis of overproduction—a disproportionality between constant and variable capital that is different from underconsumption or an imbalance between supply and demand (Mendonça, 2013). Increasing industrialization and mechanization of agriculture increase the organic composition of capital and labor productivity to the point that it is no longer possible to generate value through the exploitation of labor.[6]

The development of the productive forces in agriculture replaces labor with machinery, but this does not diminish the importance of the capital-labor relation. The contradiction generated here is not between workers and machines but between constant and variable capital. Competition between corporations is both a determining factor in the development of the productive forces and an element of "rationality" or "coercion" in a predominantly "irrational" move toward greater concentration of capital and market monopoly. As a key factor in the capitalist mode of production, competition promotes higher levels of industrialization, which eliminates competition by excluding less productive companies from the market (Mendonça, 2013).

This process can be characterized as part of a crisis of overaccumulation that is related to deregulation in financial and land markets internationally. The role of pension funds in land market speculation has generated a form of private property that Chesnais (2005: 48) has called "patrimonial." This financial mechanism explains the role of fictitious capital, which appears to be a source of profit even though it is disconnected from the production of commodities. The notion of money's generating value outside the production process is what Marx (1983: 279) calls fetishism—the naturalization of an illusion. Thus, what causes capital crises is prolonged rounds of the creation of fictitious capital and its detachment from the real basis of producing value through the exploitation of labor (Kurz, 1995).

FINANCIAL CAPITAL IN THE SUGARCANE INDUSTRY IN BRAZIL: A CASE STUDY

Increasing industrialization of the sugarcane sector coincided with the availability of state incentives and credit during the military dictatorship of the 1970s. It accompanied the expansion of Brazil's foreign debt that was generated by offers of "idle" international capital seeking appreciation in value by providing credit to peripheral countries. Launched in 1975, the Proálcool program, which included subsidized loans with negative interest rates to sugar and ethanol companies, was the sugarcane industry's main source of credit (Pitta, 2011).

When the debt crisis hit Latin America in 1983, the Brazilian state's borrowing capacity reached its limit. Reduced availability of credit forced several ethanol plants to declare bankruptcy (Pitta, 2011). After 1986, when Brazil declared a moratorium, the methods used to roll over foreign debt changed. The debt crisis encouraged creditor countries to build new mechanisms to facilitate the circulation of financial capital, especially the negotiation of national state bonds on international markets. This policy allowed for a new round of credit in the early 1990s, shortly before Brazil renegotiated its foreign debt moratorium in 1994 via the Brady Plan (Pitta, 2016). The creation of secondary bond markets and securitization mechanisms increased the supply of money on the financial markets during the 1990s. Brazil's debt underwent changes in the 2000s, when it was internalized and increased exponentially.

During the period marked by neoliberal policies (1990–2002), regulations on foreign investors' profit remittances were relaxed. This process began with the deregulation of financial markets nationally and internationally, and it facilitated investment in government bonds and the transfer of revenues out of Brazil. This procedure was known as "the securitization of debt" (Belluzzo, 2012) and allowed various shareholders to trade the same financial asset. Among these assets were the debts and shares of sugarcane and ethanol companies and government bonds traded on secondary markets. The possibility of rolling over the domestic debt (which exceeded the foreign debt in the 2000s) led the BNDES to offer new lines of credit for agribusiness, especially after the increase in agricultural commodities prices in 2003, which stimulated trading on the futures market. The international cycle of increase in commodity prices began after the crash of share prices on the Nasdaq stock exchange (Delgado, 2012). The stimulus for commodity exports fostered an increase in interest rates on Brazilian government bonds: "These efforts by the government were stimulated

TABLE 1
Evolution and Composition of Foreign Current Accounts (in US$ billions) in the 2000s

Period	*Average Balance of Trade*	*Average Balance of the Services Account*	*Current Account Balance*
1995–1999	(–) 4.75	(–) 23.71	(–) 26.22
2000–2002	(+) 5.01	(–) 25.26	(–) 18.36
2003–2005	(+) 34.07	(–) 27.86	(+) 9.92
2006–2007	(+) 43.06	(–) 39.83	(–) 7.59
2008	(+) 27.78	(–) 57.23	(–) 28.19
2009	(+) 25.30	(–) 52.90	(–) 24.30
2010	(+) 20.28	(–) 70.63	(–) 47.52

Source: Delgado (2012: 96, reprinted by permission)

by the exchange rate markets in 1999, which favored higher prices of agricultural commodities in the 2000 decade, including grains, sugar, ethanol, and mining products that dominated the Brazilian export marketfrom 2000 until 2010" (Delgado, 2012: 95).

Governmental support for agricultural commodities aimed at achieving a positive balance of trade and attracting foreign investment that would stimulate an increase in the value of financial assets, including government bonds. While agricultural commodity prices were rising between 2003 and 2008, the value of financial assets was also increasing, so financial capital's intermediation appeared as if it were generating profit from production. In the recessive phase, since the 2008 crisis, asset values and commodity prices began to decline, and the negative impacts of this phase can be observed in the decline of the trade surplus in column 1 of Table 1. As Delgado (2012: 95) explains, "The success of the trade balance due to the export of agricultural commodities took place mainly during Lula's government from 2003 until 2007, when trade surpluses were larger than the deficits in the balance of services. After 2008 this tendency changed, and this made it difficult for the government to argue in favor of such a policy as a structural solution for the trade deficit."

In the past decade, sugarcane companies have increased their offering of shares on international markets, and this has served to inflate their assets and help them obtain credit.[7] After 2004 international pension funds became a key source of capital for agribusiness, allowing these companies to expand production based on new debt rollovers (Mendonça, Pitta, and Xavier, 2012). With the global financial crisis of 2008, restrictions on access to credit forced several plants into bankruptcy. The crisis exposed agribusiness's dependency on debt rollovers to maintain productivity levels.

In the early 2000s, an upsurge in commodity prices allowed sugarcane companies to take on higher levels of debt. These companies acquired debt in U.S. dollars with trading corporations with the expectation of earning returns from trading sugar as a commodity on the New York Stock Exchange and on the futures market. They used future production to justify their territorial expansion and mechanization, which stimulated an increase in land prices. Financing existing debt with new funds based on futures markets led to a dialectical

TABLE 2
Sugarcane Production in Brazil, 2004–2012

Harvest Year	*Production Area (ha)*	*Sugarcane Produced (tons)*	*Productivity (tons/ha)*	*Sugar Produced (tons)*	*Ethanol Produced (thousand liters)*
2004–2005	5,625,300	415,694,500	73.89	26,621,221	15,416,668
2005–2006	5,840,300	431,413,400	73.86	26,713,539	16,997,433
2006–2007	6,163,200	474,800,400	77.03	30,223,600	17,471,138
2007–2008	6,963,600	495,723,279	71.18	31,279,800	22,526,824
2008–2009	7,057,800	571,434,300	80.96	31,049,206	27,512,962
2009–2010	7,409,600	604,513,600	81.58	34,636,900	25,866,061
2010–2011	8,056,000	623,905,100	77.44	38,675,500	27,699,554
2011–2012	8,368,400	571,471,000	68.28	36,882,600	22,857,589

Source: Companhia Nacional de Abastecimento harvest monitoring documents from the third period of each harvest year (Mendonça, Pitta, and Xavier, 2012: 3).

process of accumulation and crisis that intensified the exploitation of labor and natural resources.

Further industrialization of agriculture has led to increasing unemployment in the sugarcane sector. The national rate of mechanization in sugarcane harvesting rose from 18 percent in 1989 to 80 percent in 2014 (Pitta, 2016). Machinery replaced workers by the thousands. In the state of São Paulo, the largest sugarcane producer in the country,[8] the number of rural workers in 1986 was estimated at 440,000 (Pitta, 2011), and by 2014 this number had decreased to approximately 94,000 (Baccarin, 2014). Competition among workers for the remaining jobs compelled them to accept less favorable working conditions.

The labor system employed historically by sugarcane companies is based on the remuneration of sugarcane cutters according to their yields instead of the number of hours worked. The overexploitation of workers is therefore systematic and was intensified by the increase in mechanization. Ramos (2008: 16) links mechanization to demands for greater productivity, which went from 4 tons of sugarcane cut per worker per day in 1980 to approximately 9 tons in 2006. During the same period, workers' pay for each ton of sugarcane cut manually decreased from R$2.29 to R$0.85 and the average daily wage declined from R$9.10 to R$7.20, adjusted for inflation (Ramos, 2008: 16). It was nearly impossible for sugarcane cutters to compensate for this decline in earnings by increasing productivity. During the "ethanol boom" of the 2000s, the Public Prosecutor's Office registered the deaths of dozens of sugarcane workers from exhaustion in the fields (Ramos, 2008).

Even after the economic crisis of 2008, the sugarcane industry continued its territorial expansion. Despite the decline in productivity of sugarcane plantations since 2010 (Table 2), the concentration of landownership increased (Mendonça, Pitta, and Xavier, 2012). There was an increase in territorial expansion and production of sugarcane between 2004 and 2010, but in 2011–2012 only the territorial expansion increased. Productivity began to decline in 2010–2011, when only the larger sugarcane companies had access to new sources of credit, and several ethanol plants went into bankruptcy (Pitta, 2011). In this context, landownership is being used as a means to obtain new investment. This process intensifies the social impacts of the financial intermediation and industrialization of agriculture, which stimulate further concentration of landownership, environmental destruction, and displacement of peasants.[9]

The tendency of large corporations to acquire land through the leasing of smaller rural properties in order to increase monocropping causes the replacement of food production with ethanol production. This process is linked to the flow of financial capital into the Brazilian rural land market, which generates speculative "bubbles" causing sharp escalations in land and food prices. The sugar-energy industry justifies the territorial expansion of monocropping by alluding to the possibility of growth in the global demand for ethanol, but since the 2008 international economic crisis forecasts of this demand have changed. The instability of financial and commodity markets prevents ethanol from providing energy security in Brazil or internationally. The economic viability of ethanol on a large scale depends on the market for two major international commodities—sugar and oil—and this makes it not a leading but a supporting actor in this context.[10]

CONCLUSION

The pursuit of competitiveness on the world market has led the sugarcane industry and other agribusiness corporations in Brazil to acquire increasing amounts of debt in order to maintain productivity at acceptable levels. In capitalism's current phase, corporations rely on financial interventions to inflate asset values. This process intensifies economic vulnerability, as well as speculation in food and land. In a context in which financial capital shapes economic policy, the adoption of a floating interest rate system is a key factor for capital accumulation. Financial speculation stimulates an increase in agro-industrial monopolies with privileged access to state credit and subsidized interest rates. This type of governmental credit system, commonly considered as an "investment" that is supposed to involve risk, actually constitutes a transfer of public funds to the private sector.

The formation of monopolies ensures that major corporations are able to obtain special lines of credit and subsidies from governmental and private sources. The international credit system fuels financial markets and escalates the "detachment" of capital-money from the productive process, which stimulates the export of capital to the global South in pursuit of valorization. Especially after the 2008 global financial crisis, international pension funds became major players in land market speculation in Brazil. National sugarcane agribusiness corporations such as Cosan and its real estate subsidiary Radar Agricultural Properties played a pioneering role in this process by creating partnerships with pension funds in the United States, Canada, and Europe. This process has created a kind of "outsourcing" of land operations analogous to the international outsourcing of labor. The main "products" of agribusiness today are not, for example, sugarcane, soybean, cattle, oranges, and eucalyptus trees but capital, either in its financial form or through the expansion of monocropping via the appropriation of land, water, and biodiversity. The pursuit of valorization determines the role of foreign corporations in agriculture, which motivates the expansion of monocropping on the Brazilian agricultural "frontier" and an increase in land prices in rural areas that generates environmental destruction and the displacement of peasant communities.

NOTES

1. A report on the 2012–2013 harvest confirms that "[using] a sample of 68 groups whose total milling amounted to 390 million tons, Itaú Bank estimated the operating profitability (EBITDA) of the sector at R$14.4 billion, its financial expenses at R$5.5 billion, and investments (Capex) at R$13.4 billion, which means that its debt can potentially increase to R$4.5 billion. Therefore, the R$56 billion in net debt it had accumulated by the end of the 2012–2013 cycle already equaled the sector's gross sales, which the Brazilian Sugarcane Industry Association (União da Indústria de Cana-de-Açúcar - Unica) estimated at R$56 billion." *Valor Econômico*, May 24, 2013 (http://www.novacana.com/n/industria/usinas/usinas-centro-sul-dividas-56bi-240513/).

2. "Due to the economic crisis in core countries, namely the United States and European Union countries, from August to December 2008—that is, in only five months—commodity prices fell an average of 30 percent, reaching the levels observed in early 2006. . . . As the solvency of some countries on the periphery of the euro zone continued to deteriorate, commodity prices registered yet again a sharp downturn and only resumed growth between December 2010 and April 2011. This period coincided with the two rounds of loans at 'from father to son' interest rates that the European Central Bank promoted in the banks in the region. Once the euphoria of the loans passed, commodity prices began to fall again" (Serigati, 2012).

3. The Marxist concept of fictitious capital refers to profit generated outside the production process, which can consist, for example, of governmental subsidies to private corporations, inflation of assets in financial and land markets, and other activities that do not require productive labor forces. Therefore, fictitious capital can simulate profit when the price of a certain asset is inflated, as in the case of farmland in Brazil. This is a contradictory process, since these waves of price inflation tend to be cyclical (Harvey, 1982: 266).

4. The increase of land prices linked to the growth of commodity prices over the past decade promoted a similar process in other commodity-producing countries with the participation of transnational investment funds in farmland speculation (Mendonça, Pitta, and Xavier, 2014).

5. The amount of governmental loans at subsidized interest rates available for agribusiness for the 2014–2015 period was R$156.1 billion, according to the Ministry of Agriculture (http://www.agricultura.gov.br/pap). For the same period, the amount available for family farmers was R$24.1 billion, according to the Ministry of Agricultural Development (http://www.mda.gov.br/portalmda/sites/default/files/user_arquivos_278/Plano%20Safra%2014-15_04jun2014_noite.pdf). The Instituto Brasileiro de Geografia e Estatística estimates that small and medium-sized farmers produce approximately 70 percent of the food in local markets.

6. The organic composition of capital (Marx, 1983) is the proportional relation between the cost of machinery, raw materials, and infrastructure (constant capital) and the labor force (variable capital). Investments in constant capital increase the productivity level while decreasing the average labor time required in a certain activity (Harvey, 1982: 125). This process can lead to a structural crisis in capitalist accumulation (Kliman, 2012).

7. Separate numbers about sugar exports in the Brazilian trade balance are not available, so this analysis is based on Delgado (2012) and confirms qualitatively the role of commodities such as sugar in the trade balance. The analysis relates the export of commodities to price inflation in future financial markets.

8. Since the 1950s the state of São Paulo has been the largest sugarcane producer in Brazil (Pitta, 2011).

9. The expansion of sugarcane monocropping in recent years is due to investments in land as an asset to facilitate access to loans, as well as speculation on land prices by corporations specializing in farmland purchases and sales, such as Radar.

10. Ethanol production is commercially viable only if the price of sugar is lower (since most companies can choose to produce larger amounts of sugar instead of ethanol) and the price of oil is higher (since consumers will not choose to buy ethanol if its cost is more than 70 percent of gasoline prices because of the difference in productivity between the two fuels).

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