

Between law and voluntary sustainability standards: a case study of the labor conditions in Brazilian coffee production

Entre a lei e padrões voluntários de sustentabilidade: um estudo de caso das condições de trabalho na produção de café no Brasil

Bruno Benzaquen Perosa¹ , Maria Sylvia Macchione Saes² , Clesio Marcelino de Jesus¹ 

¹Instituto de Economia e Relações Internacionais (IERI), Programa de Pós-graduação em Economia (PPGE), Universidade Federal de Uberlândia (UFU), Uberlândia (MG), Brasil. E-mails: brperosa@ufu.br; clesiomj@ufu.br

²Faculdade de Administração, Economia e Contabilidade (FEA), Programa de Pós-graduação em Administração, Universidade de São Paulo (USP), São Paulo (SP), Brasil. E-mail: msaes@usp.br

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Abstract: The rise of private governance mechanisms has been highlighted as a critical instrument to avoid labor rights flexibilization and defend decent work conditions in agricultural chains. This paper analyzes the impact of Voluntary Sustainability Standards (VSSs) on labor rights in the coffee production sector of Cerrado Mineiro, a traditional region in Brazil. In 2017, Brazil underwent a comprehensive reform of its labor laws and legal institutions. Based on qualitative research using primary and secondary data, this research investigates whether VSSs were effective in preserving labor rights for rural workers in a more deregulated institutional environment following the 2017 labor reform. Results indicate that VSSs do not guarantee labor rights, and that labor law relaxation may endanger rural coffee workers.

Keywords: coffee production, labor rights, labor reform, private governance.

Resumo: O surgimento de mecanismos de governança privada tem sido destacado como um instrumento fundamental para evitar a flexibilização dos direitos trabalhistas e defender condições de trabalho decentes nas cadeias agrícolas. Este artigo analisa o impacto dos Padrões de Sustentabilidade Voluntária (VSSs, da sigla em inglês) nos direitos trabalhistas no setor de produção de café no Cerrado Mineiro, uma importante região produtora no Brasil. Em 2017, o Brasil passou por uma reforma abrangente de suas leis trabalhistas e instituições legais que regulam tais relações. Com base em pesquisa qualitativa utilizando dados primários e secundários, esta pesquisa investiga se os VSSs foram eficazes em preservar os direitos trabalhistas dos trabalhadores rurais em um ambiente institucional mais desregulamentado após a reforma trabalhista de 2017. Os resultados indicam que os VSSs não garantem os direitos trabalhistas e que a flexibilização das leis trabalhistas pode ameaçar os trabalhadores rurais do setor de café.

Palavras-chave: produção de café, direitos trabalhistas, reforma trabalhista, governança privada.

INTRODUCTION

The prominence of Voluntary Sustainability Standards (VSSs) has expanded rapidly over the past two decades. VSSs have long been associated with social justice, income equality, and worker rights, particularly in the initial stages of the value chain (Bennett, 2018; Shrivastava et al., 2013). These principles are in contrast with the current labor market trends in many countries, where labor rights have been reduced and governments have implemented more flexible regulations (Anner & Caraway, 2010). Given the lack of state protection, particularly in societies, such as Latin America, this phenomenon, associated with reduced social benefits, leads to precarious work and social insecurity (Cuevas-Valenzuela, 2015).



Political Science literature has analyzed the interplay between private governance mechanisms (e.g., VSSs) and public regulations, considering complementarities and competition between these governance modes (Bartley, 2010; Cashore, 2002). Scholars are uncertain as to whether VSSs can uphold labor rights under flexible labor regulatory regimes. Recent studies that analyzed the impact of VSSs on agricultural chains found ambiguous effects on the ability of VSSs to improve social standards, depending on the public regulation and monitoring capacity of the final markets (Chi et al., 2021).

This study analyzes the Brazilian coffee market for three reasons. First, Brazilian labor laws play a critical role in ensuring basic working conditions in the rural sector, requiring farmers to officially hire all workers, even for seasonal activities, such as land preparation and harvesting (Rezende, 2006). In 2017, a change in labor laws that modified numerous labor rights raised questions about the effects of this labor reform on agricultural working conditions in Brazil (Valadares et al., 2017). This institutional change (labor reform) has occurred at a time when technological advances are significantly affecting the working conditions in Brazilian agriculture, particularly harvesting operations. These changes have reduced the demand for temporary manual laborers and increased the demand for professionals with advanced degrees (Ortega & Jesus, 2011; Perosa & Azevedo, 2019). Second, coffee was among the first commodities to receive global certifications for sustainability (Pião et al., 2020). Certified coffee has significantly higher average annual sales growth than conventional coffee. From 2008 to 2015, conventional coffee production increased by 4% per year, whereas VSSs coffee production increased by 26% (Pião et al., 2020). Since the 2000s, approximately 40% of Brazilian coffee production has been directed to international markets with one or multiple VSSs, such as Fairtrade, Organic, 4C, Utz, and Rainforest Alliance (Conselho dos Exportadores de Café do Brasil, 2019). Third, Brazil is the worldwide leader in coffee production and exporting. Coffee production in Brazil encompasses 2 million hectares with approximately 265 thousand farms (Instituto Brasileiro de Geografia e Estatística, 2019). Even though family farmers account for nearly half of all production (42.8%, according to IBGE data from 2017), this activity employs approximately 540 thousand temporary and permanent workers.

More specifically, we investigate two related phenomena: a) how changes in labor legislation affected labor rights and access to justice among Brazilian coffee production workers and b) how the presence of VSSs could protect labor rights and ensure workers' access to justice after the labor reform. Our research strategy was based on a literature review and in-depth interviews with key stakeholders operating in coffee production (workers, farmers, union leaders, and contractors).

The paper is organized as follows: Section 1 presents the theoretical background about private governance, labor laws, and VSSs in the coffee sector; Section 2 discusses coffee production in Brazil, considering institutional and production aspects; Section 3 explains the research methodology; Section 4 presents the main results of the regional study on the Cerrado Mineiro region, one of the main production regions in Brazil; and Section 5 presents the conclusions and main findings of this research.

1. THEORETICAL BACKGROUND

1.1. Private and Public Standards: Complementarity and substitution

Research on Political Science has explored how social-environmental governance instruments developed in recent decades. In the last 20–30 years, there has been a trend toward more decentralized mechanisms, such as VSSs and private certification schemes, of transferring regulatory functions from public to private actors (Tröster & Hiete, 2018; Henson & Humphrey, 2010).

VSSs are a specific category of standards that have emerged in recent decades to supplement or elevate public mandatory standards (Henson & Humphrey, 2010; Marx et al., 2022). Typically, VSSs are associated with a certification scheme that monitors and communicates which producers meet the criteria established by the VSS. VSSs are concerned with the process of developing standards, and certification aims to develop criteria and measures to monitor and verify whether producers are meeting the requirements.

According to Bartley (2010), VSSs can be considered a mode of governance with different attributes of legal instruments, such as the rule of law. Private governance mechanisms rely on different sources of authority outside of the state. Suchman (1995) discussed how VSSs and other private governance mechanisms must establish legitimacy through the use of science and relationships with consumer-representing NGOs and citizens.

Scholars have debated the complementary and substitutive aspects of this interaction between public and private governance mechanisms (Bartley, 2010). In some instances, public and private modes of governance may have a crowding-out effect (Raynolds, 2014). Public regulation is typically more likely to exclude private instruments; nevertheless, this is not always the case. Seidman (2007) presented an unusual substitution case in which the Indian government delegated monitoring of child labor conditions to a private standard (rugmark). However, the literature also reveals numerous instances of a complementary relationship between public and private governance mechanisms in the opposite direction. Perosa & Azevedo (2019) explored the central role played by public regulations in the expansion of private certifications in the biofuel market, given that they establish the basic standards that will be applied. Most private certifications attempt to enforce public standards when governmental agencies struggle with audits and monitoring. In addition, in the biofuels sector, a prolific case of complementarity was established by the European Union (EU), a meta-standard approach (Endres, 2010). In this governance arrangement, EU authorities approved some certification schemes to apply government-developed standards, allowing biofuel exporters access to the European market. This decreased the cost to the government of monitoring by outsourcing the responsibility to privately certified institutions.

The labor governance literature still addresses how private governance mechanisms can be used to support public standards (Amengual, 2010; Ménard, 2018), exploring complementarities and substitutional aspects of these mechanisms. On the one hand, a private governance instrument may enforce and elevate law standards; on the other hand, it may supplant the role of public authority because private companies and certifications are performing regulatory duties. Furthermore, scholars may seek ways to direct private governance toward a complementary relationship, considering the strengths and weaknesses of each mode of governance (Amengual, 2010).

Despite this virtuous complementary aspect of public and private governance, some scholars question whether private certification can sustain labor standards in reduced public regulation environments. For instance, Bennett (2018) examined the content of 25 VSSs and found that only 32% of VSSs mandated a living wage, and only 16% rigorously supported collective bargaining. She concluded that VSSs should address income inequality by requiring employers to pay living wages and actively support collective bargaining, but she also argued that supporting national minimum wages remains sufficient. Private governance faces challenges in enforcing costly standards, such as wages and registered labor. In this sense, private certification benefits from legal standards and may help enforce mechanisms already in place by law (Perosa & Azevedo, 2019; Bennett, 2018).

The impact of public and private governance on business practices depends on enforcement and players' access to the legal system. In accordance with the institutionalist thesis of legal impermeability (Hodgson, 2015), rules always necessitate the use of interpretation and decision-making authority to resolve conflicts and inconsistencies. When the expected costs of using the legal system exceed the expected benefits, a zone of legal impermeability is always present. Therefore, any institutional change influences the zone of legal impermeability as it affects the cost of legal transactions involving lawyers, contracts, and courts. The size of a person's zone of legal impermeability varies depending on factors, such as access to the legal system, attorney fees, and procedural expenses.

When the costs of court access outweigh the potential benefits, individuals avoid using the legal system (Hodgson, 2015). On the one hand, the 2017 labor law change adopted in Brazil (Law no. 13.467) created a more flexible framework with a superior degree of discretion to allow more customized contracts in the labor market. On the other hand, this brings more uncertainty about labor laws, their interpretation, and enforcement.

As a result, we propose that changes in labor legislation have resulted in an expansion of the zone of legal impermeability for workers, as it has become more expensive for this social stratum to access the legal system by creating the possibility of opportunistic actions on the part of contractors, as will be discussed in greater detail below.

1.2 Rural Work and Labor Reform in Brazil

Historically, the rural sector in Brazil has lower standards of labor relations than urban activities, such as commerce and industry (Rezende, 2006). The precarious practices found in agriculture include informal work (not registered), non-secure transport and housing facilities, problematic payment conditions, and even forced labor situations (Welch, 2006).

Labor law was only extended to rural activities in 1963 (Law No. 4.214), bringing changes and challenges to agricultural labor formalization. Most of the agricultural production by then was done under informal agreements between landowners and migrants, the so-called "colonato." In this arrangement, which was central to the development of coffee production in Brazil, farmers allowed "workers" to produce subsistence products on the property, but workers were obliged to share part of their production with landlords. This system was incompatible with the new labor legislation derived from urban activities (Rezende, 2006).

Rezende (2006) also highlighted the effects of labor laws, known in Brazil as CLT (from the Portuguese acronym *Consolidação das Leis do Trabalho*—Labor Law Consolidation), which have increased the costs of rural labor, particularly for small and medium-sized farmers. Formalization of work has introduced numerous bureaucratic procedures to register workers, collect labor taxes (*Fundo de Garantia por Tempo de Serviço*—FGTS, a government-managed locked-in retirement income plan), maintain records, and transport employees to nearby cities for medical examinations.

Given that most of the rural labor demand is concentrated during planting and harvesting seasons, the seasonal nature of agricultural work poses a challenge for labor laws. This characteristic necessitated the adaptation of CLT for rural use, allowing three-month contracts that are not available in urban activities. This intermittent work necessitated changes to retirement accounting, which previously treated a three-month period as a full year to calculate rural workers' contributions to the federal pension system.

Ultimately, CLT regulations have always had a limited impact on rural activities relative to urban sectors. Numerous distortions have been caused by the CLT system in the agricultural sector, leading to an increase in labor costs for farmers and a decrease in job availability and worker income (Rezende, 2006).

Despite these limitations and distortions, CLT has improved working conditions and included rural workers in the public pension system. Prior to the establishment of certification standards in the 2000s, CLT was the only public standard for working conditions in Brazil’s agriculture for decades.

The 2017 labor reform (Law No. 13.467) altered certain labor law principles in Brazil. Historically, Brazilian labor laws have regarded workers as the “weaker” party in the employment relationship, a concept known as the “hypo-sufficiency principle.” Consequently, the majority of legal interpretations were made in favor of workers, with any uncertainty being resolved in their favor. The reform has established a new principle of “minimal intervention on the collective will” that considers both sides of the employment relationship to be equally powerful and equipped to negotiate and litigate if necessary (Farias & Silva, 2020).

Although the labor reform has not changed the basic rights of rural workers, considering working conditions and safety, it has introduced new interpretations of the employer–employee relationship, as well as of the legal process in case of disputes (Farias & Silva, 2020; Carbonai, 2019). One significant shift concerns change in the interpretation of outsourced workers. The previous law stipulated that the farmer was legally responsible for workers, regardless of whether or not they were hired (mostly contractors).

The first change to the legal process for resolving disputes introduces a new interpretation of who is responsible for the costs of legal disputes. According to the prior interpretation, workers were only responsible for their legal expenses, regardless of whether they prevailed or not. Under the new law, workers who lose their claims may also be required to pay the respondent’s costs (Molina, 2022; Fernandes, 2017).

As a result of this new rule, the number of cases received by Brazilian Labor Justice presented a significant reduction after 2017, as illustrated on Figure 1:

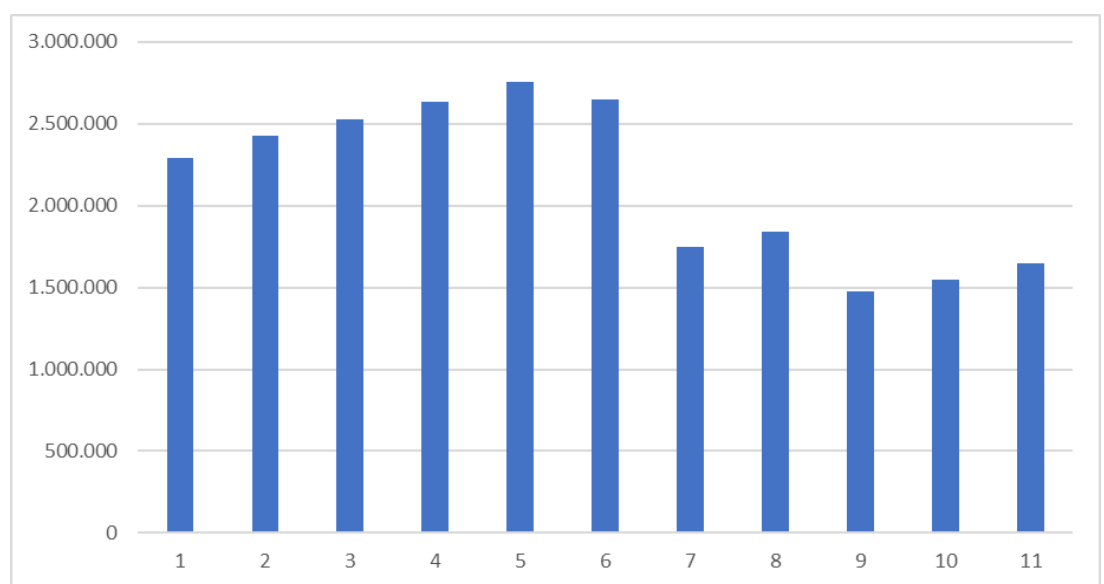


Figure 1. Number of Labor Disputes - Brazilian Labor Justice. Source – Brazilian Labor Justice

A possible explanation for this reduction is that this new guideline increases transaction costs for workers who fear incurring costs (suffering fees) if their claims are unsuccessful and therefore avoid court access. Therefore, this potential cost creates uncertainty for employees who may be unable to sue their employers even when the law has been broken.

The second important interpretation after the 2017 reform relates to the definition of the “main activity in the firms’ social contract” (*atividade fim*). Based on the previous interpretation, farmers cannot outsource rural workers through third parties, such as contractors. In the new law, the “end activity” was redefined, making labor outsourcing easier. Although the new law makes it clear the responsibility belongs to the ultimate employer, the change has created some noise and a false sense that employers would not be directly responsible.

2. METHODOLOGY

To substantiate our investigation, we selected a unique empirical context in the Cerrado Mineiro Region, employing a qualitative approach that delves into concepts and their meanings within specific research contexts, thus aligned with the aim of interpretation. This study, aimed at contributing to theory-building rather than testing it, follows a theoretical sampling approach (Eisenhardt et al., 2016) with potential for generalization, as emphasized by Eisenhardt (1989).

Empirically, the selection of this region can be justified by 3 main factors: i. the Cerrado Mineiro region is a significant coffee exporter (around 80% of its production); ii. Coffee farms in this region follow various VSSs by acquiring private certifications (more than 50% of this coffee production area has a seal of origin, one of the most important certificates in the region); iii. Despite the increase in harvest mechanization, farms continue to employ a large number of permanent and temporary workers.

This study established a research protocol to perform these analyses. We relied on triangulation, combining a standard research protocol that congregates the extensive use of publicly available data for in-depth interviews. Therefore, this research uses a collection of bibliographic sources, official documents from institutions representing the coffee sector, and primary statistical data obtained through questionnaires and interviews with a representative universe comprising companies, technicians linked to the sector, farms, private associations, and labor unions. Furthermore, we obtained secondary data from official sources of the Brazilian Government, such as data from the Brazilian Statistics and Geography Institute (IBGE – *Instituto Brasileiro de Geografia e Estatística*), which annually publishes the Municipal Agricultural Survey (PAM), and the Agricultural Censuses of 2006 and 2018. We also used data from the RAIS-CAGED data system of the Ministry of Labor and Social Security, which publishes data on employment in Brazil.

From March to June 2018, we conducted 30 in-person interviews, recording statements by business owners of different segments of Cerrado Mineiro (farmers, machinery and equipment distributors, and service providers to the coffee industry). In addition, we interviewed representatives, farm association members, cooperatives, labor unions, and rural and family farming workers. We focus on the segment of family farming by interviewing small-scale coffee farmers, especially segment leaders. Meanwhile, we also interviewed representatives of workers from different segments of the production chain, with special emphasis on the rural workers of the harvest. Finally, we interviewed specialists in rural technical assistance (e.g., agricultural technicians, engineers, and rural managers). We used different models of structured questionnaires as scripts to conduct interviews.

We mainly conducted these interviews by visiting different workplaces of the interviewees, particularly in Patrocínio City, Minas Gerais, Brazil. On average, each interview lasted for an hour and approached issues related to each segment.

We also distributed 40 close-ended questionnaires to coffee farms selected from a representative sample in 2018. Some of these respondents, usually sector leaders, were chosen and subjected to in-person interviews to assess their sector knowledge (see Figure 1). Thus, we also considered the significant municipality of Patrocínio, which accounts for 20% of Cerrado Mineiro coffee production, is home to major representative entities and leads coffee production in the region¹. Table 1 presents the sample of interviews for each profile of the informant.

Table 1. Interview protocol (number, profile, duration, and protocol)

Interviews	Number	Duration of interview	Protocol of the interviewees and questionnaires
Farms and workers			
Coffee Farmers		Around 40 min	Identify the farmer's profile (education, age, gender, and so on.);
Small scale	8		Identify the economic activities conducted on the property, considering other crops; Obtain information of the coffee production process, considering the use of machinery and labor hiring procedures; Understand the participation in local organizations and access to technical support and representation resources; Information about the certification process.
Medium and large scale	5		
Rural works of the harvest	6	Around 1h	Labor conditions and salaries; Origin and profile of workers in the coffee sector; Impact of law and certification on labor conditions and rights.
Service providers			
Machinery and equipment distributors	3	Around 1h	Identify the growth in the use of machines in the coffee harvest and the perception of the impact of its use for the sector
Service providers to coffee farmers (specially labor outsource on the harvest)	2	Around 1h	Labor conditions and salaries; Hiring strategies and workers registration; Public inspections and certification.
Contractors (<i>gatos</i>)	2	Around 1h	Labor conditions and salaries; Hiring strategies and workers registration; Public inspections and certification.
Organizations support			
Associations/Cooperatives/Labor Union	3	Around 1h	Profile of the associated members; Main resources offered to associates, including technical support and mechanization; Regional certification process and other certifications used by associated members;
Rural technical assistance	1	Around 1h	Identify the growth of machine use in coffee harvesting and the perception of its impact on farms.
Questionnaires			
Coffee farms	40	-	Questionnaires considered six main categories on information: <ul style="list-style-type: none"> • Farmer profile (age, sex, education) • Agriculture activities (crop, area) • Coffee production (planting, harvesting, irrigation) • Participation on representative organization (union, cooperative) and certification • Employees demand and profile

Source: elaborated by authors

¹ This research was also based on previous interviews conducted by researchers in the same region. In 2010, a total of 290 questionnaires were distributed to producers in 20 municipalities in Cerrado Mineiro. Thus, when analyzing the data, we compared the two research phases.

3. CASE STUDY – CAFÉ DO CERRADO

3.1 Coffee production in Cerrado Mineiro: Technology and labor

As the world’s largest coffee producer, Brazil is a traditional raw coffee exporter, ranking first in global exports at the end of 19th century. It accounts for approximately one-third of the global production (around 60 million sacks) and represents over 30% of the total world coffee bean exports (Brasil, 2019).

Cerrado Mineiro is one of the most important coffee-producing regions in Brazil, especially in terms of certified and specialty coffee. The region comprises 55 municipalities in western Minas Gerais. A total of 197,499 hectares of coffee were harvested in 2018, resulting in over 7.2 million 60 kg sacks (Instituto Brasileiro de Geografia e Estatística, 2019); this represents approximately 10,5% of the country’s total coffee production area and 12,2% of its total coffee volume.

The intensification of coffee production in the Cerrado Mineiro region during the 1990s was the result of significant technological advancements that enabled the adaptation of coffee production to the savanna biome (*Cerrado*, in Portuguese). The development of coffee production in the Cerrado Mineiro was significantly aided by technological innovation, savanna-adapted plants, the region’s suitability for producing high-quality coffee, and mechanization-friendly flat land.

These attributes bring great economic advantage because a mechanical harvester can harvest 60 sacks of coffee per hour over a period of 18–22 hours a day, replacing more than 100 workers on a service day (Ortega & Jesus, 2011). However, if mechanization leads to a reduction in the number of workers, particularly in the coffee harvest, the production boom in the region leads to the growth of permanent workers. According with Brazilian Ministry of Labor, the number of workers with a permanent job increased from 9,487 in 2007 to 13,296 in 2018, a 40% increase within nearly 10 years. Conversely, considering annual admissions, the number of temporary employees decreased by 49.7% from 2007 to 2018 (see Figure 2). These temporary workers are the ones responsible for harvesting coffee. The reason why the growth of planting machines was not more rapid is because, despite the development of a specialized machine, manual labor remains the primary method in coffee culture.

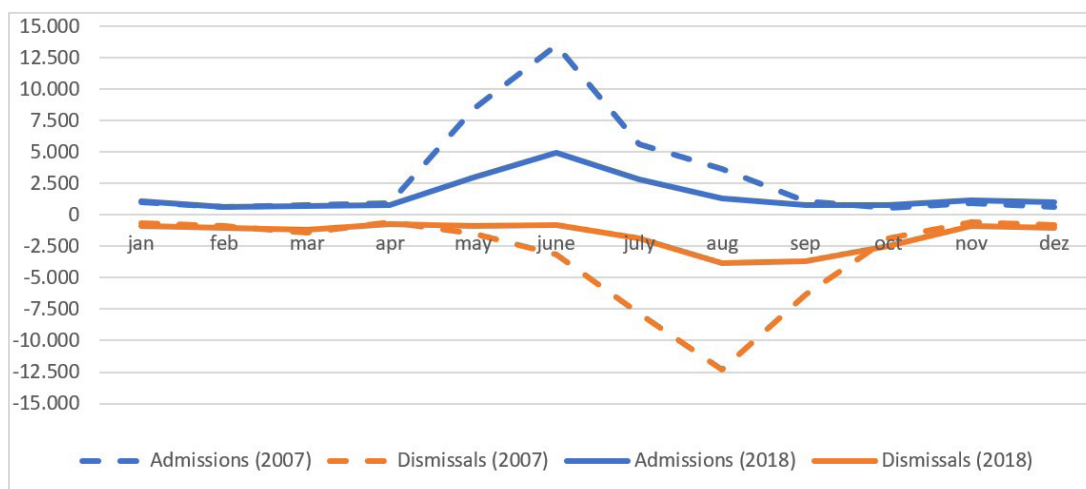


Figure 2. Formal employment in Coffee Production of Cerrado Mineiro. Source: Elaborated by the authors using data from CAGED-MTE

3.2 Unions and Labor Rights

The Rural Workers Labor Union of Patrocínio represents between 8,000 and 10,000 manual laborers from the city and surrounding municipalities. According to the union, approximately 80% of manual workers in the region are employed in formal employment.

Since the 1990s, this Union has been a part of the Núcleo Intersindical de Conciliação Trabalhista (NINTER) [Inter-Union Labor Conciliation Center], comprising representatives from Brazilian Labor Justice, coffee farmers, and workers. The number of conciliation cases handled by NINTER (Figure 3) serves as a proxy for the level of conflict within this sector and underscores the significance of dialogue between employers and employees. Throughout the 1990s, NINTER handled over 10,000 cases yearly, a figure that saw a decline in subsequent years. The decrease in cases can be attributed to the reduction in the number of workers mentioned in the previous section, as well as a decline in temporary employment, which, in turn, led to fewer conflicts.

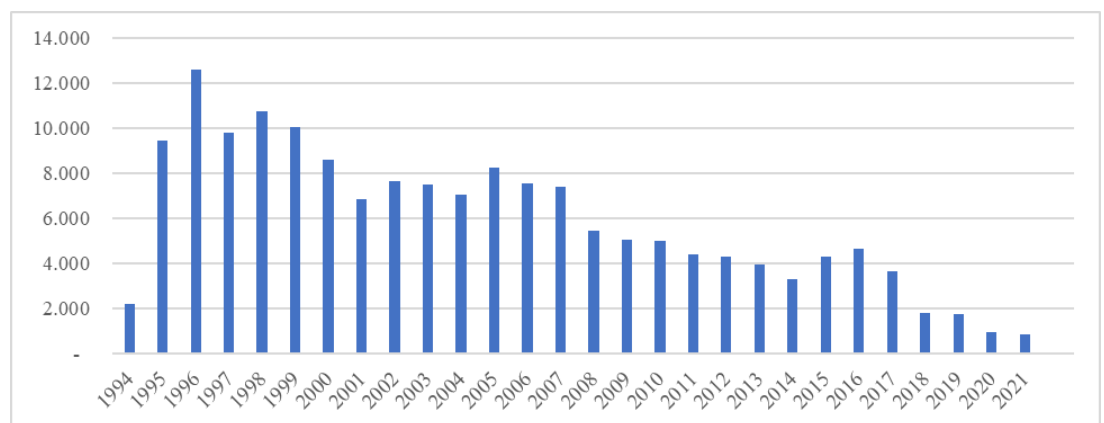


Figure 3. Number of labor negotiations on NINTER-PATROCINIO.

Source: Elaborated by the authors using data from Núcleo Intersindical de Conciliação Trabalhista (NINTER)

After 2017, these numbers saw further reduction due to changes in labor law, which made possible to employers and employees to directly negotiate, with no involvement of the Union or NINTER's mediation. These negotiations often took place within the accounting offices hired by the employers, offering a simpler route for conflict resolutions. However, this approach lacks a guarantee that all labor rights are being upheld in deals moderated by one of the involved parties.

As previously mentioned, the obligation to cover legal costs in the event of losing a lawsuit has contributed to a decrease in the number of cases across the entire labor justice system; this factor may have also played a row in the decline of NINTER mediated cases number.

3.3 Cerrado Coffee organization and VSSs

The Cerrado Coffee Growers Associations Council (CACCER) was founded in 1992 and aimed to add value to the region's coffee production. CACCER played a central role in coffee production expansion in this region through technical advice to its affiliates, and by representing the region, farms, and products.

CACCERS's function is the result of coffee farmers' high degree of organization. According to 2018 interviews, roughly 80% of these farms were affiliated with a labor union or cooperative.

As a result of this organization's efforts, it was possible to demarcate its production area geographically under the Cerrado Coffee trademark. Since then, the Cerrado Federation of Coffee Growers, the first delineated coffee-producing region in the country, has controlled the coffee's origin and ensured that the quality of its affiliates' production meets the requirements of other VSSs.

The "Região do Cerrado Mineiro" incentivized farms to obtain other VSSs to increase export income, as coffee buyers also encourage multi-certification because it can open new opportunities in the foreign market. The EXPOCACCER cooperative, which manages most Cerrado Mineiro coffee production, also allows the separation of grains produced under different VSSs, following the requirements to assure the chain of custody required by certification bodies. The main certifications applying VSSs on coffee farms in Cerrado Mineiro are: Global Coffee Platform (formerly 4c), BSCA, Região do Cerrado Mineiro, Fairtrade, International, GlobalGap, Organic, Rainforest Alliance, UTZ, Nespresso-AAA, and Starbucks.

According to Conselho de Associações de Cafeicultores e Cooperativas do Cerrado (2023) around 28% of Cerrado Mineiro farms hold some type of certification (albeit this number is higher within the medium and large farms group).

3.4 Labor standards on coffee VSS certifications

Compliance with labor laws, according to the International Labour Organization (ILO), includes adhering to the following conventions and recommendations: i) freedom of association and effective recognition of the right to collective bargaining; ii) elimination of all forms of forced or compulsory labor; and iii) abolition of child labor; iv) elimination of discrimination with respect to employment and occupation; v) adoption of a national or legal minimum wage; and vi) employers' recognition of the right of their employees to join a union association.

The majority of certification schemes applied to coffee production mandate compliance with labor laws without conducting direct inspections. Farmers are accountable for following the rules and signing an agreement regarding their practices. Fair trade, rainforest, UTZ, and Starbucks are the only VSSs that verify the working registers of each worker (see Annex A). In this sense, we can assume that changes in labor laws may also necessitate a readjustment of coffee workers' labor rights.

4. RESULTS

This section analyzes the impact of technological and institutional changes, such as the labor reform, on labor standards on the basis of the survey data. The capacity of VSSs to uphold labor rights in light of these alterations is central to this discussion.

The majority of coffee production is performed by employees. During the harvest period, family farmers also employ temporary hired labor.

4.1 Impact of Technological Changes on Jobs

The transformations that have occurred in agriculture modernization, particularly in coffee production, have impacted all stages of the culture: production, workplace relations, institutions, and so on. The modernization process significantly reduced the demand for labor in various coffee production activities, particularly harvest manual laborers. Meanwhile, although skilled labor is produced, it does not compensate for the jobs lost due to automation.

Analyzing data from Brazilian Agricultural Census over time, it is evident that there has been a significant increase in the number of agricultural machines used in the Cerrado coffee region: the number of tractors surged from 1,691 in 1970 to 23,400 in 2006, and by 2017, it had reached 41,059. The number of combine harvesters jumped from 1,246 in 1980 to 3,369 according to the Agricultural Census of 2006; by 2017, it had risen to 5,717. It is important to note that a single combine harvester can replace more than 100 workers in daily coffee harvesting (Ortega & Jesus, 2011).

Confirming previous research (Ortega & Jesus, 2011; Perosa et al., 2017), interviews revealed that new technologies have fragmented manual labor in coffee production. Rural laborers and union leaders emphasized that mechanization is decreasing employment opportunities. In addition, the work period is shorter and more fragmented, with workers performing specific tasks, such as land preparation and harvesting in regions where machines cannot go.

The remaining manual labor consisted of manually stripping plants after the harvester passed through new crop areas, as the machine's swing caused damage to younger trees. In addition, manual labor is employed on properties with a low production volume, where mechanical harvesting is deemed unsuitable, or where machine access is limited.

Meanwhile, the use of manual weeding with herbicides and other cultural treatments of the crop, such as fertilizers, fungicides, foliar treatments, and coffee tree pruning, have been nearly eliminated and are now carried out mechanically. The "*arruação*" (cleaning of the soil beneath coffee trees) and the preparation of the land for the current year's harvest and the planting of new seedlings are also performed with equipment attached to tractors.

In addition to harvesting, planting also requires manual labor (to form seedlings and the process of planting, unloading, and placing the coffee seedlings in the pits); however, this is a short-term activity, carried out in a few days of the rainy season, especially in December and January. In turn, seedling production still requires a significant amount of manual labor (to fill sachets, plant seeds, and care for seedlings), despite representing sporadic demand.

Reducing the number of jobs, particularly those of migrant workers from other regions of Brazil and retaining primarily the region's workers in the coffee industry led to an increase in unionization. According to the Rural Workers Labor Union of Patrocínio, 8,000–10,000 manual workers from the city and surrounding municipalities are associated. According to the union, manual workers from the region have higher rates of formal employment, representing approximately 80% of manual workers.

Generally, the demand for labor retains its seasonal, fragmented nature on the basis of short-term contracts, despite the reduction caused by the adoption of technological advances. Due to the use of machinery throughout production, many farmers can perform the majority of their duties with a small workforce. Thus, producers may require a reasonable number of workers per year, but the harvest period is now approximately two months, as opposed to four or five months in the past. This shortened time frame had an effect on the working conditions, as described in the following section.

4.2 Labor and Social Security Rights

a) Labor formalization

Despite technological modernization and the resulting decline in labor demand, and despite increased oversight, the precariousness of the working conditions of those who still perform manual labor persists. In addition to employers' biased interpretations of labor law, the brittleness of temporary work is maintained by the required shorter duration of employment.

Many producers argue that they can employ workers for up to 14 days without having them sign employment record cards. Some, including large and medium-sized producers, are at risk of being fined despite having workers on-site for over 15 days.

The interviewees reported that some major producers collected workers' employment record cards and signed them only if they were to be inspected. The situation is worse in low-production years when producers use such strategies to reduce production costs.

The "*gato*" (contractor) is an important character in this temporary workforce hiring process. Employers utilize this individual, who has easy access to temporary workers who recruit them. Hiring workers through *gatos* impedes the signing of employment cards because, without formal ties to the farm, these workers can easily be transferred to a better-paying location. During harvest season, a *gato* typically works for more than a dozen farmers, revolving his "team" of unregistered laborers among various properties.

Several workers reported that they worked at a property for one or two weeks to harvest and at another farm in related activities. They also reported that *gatos* divide the harvest into stages that are always shorter than 14 days, which justifies the absence of contract signatures on their employment record cards. Therefore, workers lose rights, such as the 13-month salary (annual bonus), paid vacation, and labor adjustment in the event of dismissal. In short, several employers do not make their employment bond official because of a skewed interpretation of the law that exempts the employer from signing the card for periods shorter than 15 days. It is worth mentioning that this possibility is not in the law after the Labor Reform, but the change itself and the absence of jurisprudence on the new rules led to these erroneous "interpretations".

In the case of family farmers, we also observed illegalities in hiring for various reasons. For the Rural Workers Labor Union, many of the family farmers contract informally to prevent losing "rights" reserved to them, such as social security and access to subsidized financing of PRONAF². In addition to income, this classification considers the number of hired workers and the length of their contracts, reducing the incentive for family farmers to make temporary workers official.

Even though this outsourcing strategy is prohibited by the new labor regulation (specifically, not signing employment cards), the legal impermeability zone has expanded due to the relaxation of certain outsourcing standards in the new law. This may encourage illegal strategies and reduce the access of workers to formalization and other rights.

b) Workload and work safety

Working hours in coffee production, particularly during harvest, are legally the same as in other activities, and overtime is uncommon. According to one of the interviewees, an agreement has been reached for travel from Monday to Friday, from 7 AM to 5 PM. However, it becomes longer for properties located outside the city, as travel time must be considered. In such cases, the travel can begin before 6 AM and continue until after 6 PM. Some farms that use Patrocínio City as a reference are located more than 70 km from the city center, and a large part of this route is unpaved.

Meanwhile, tractor drivers, machine operators, dryer operators, operators on paved yards, and coffee-lifting machine operators pose a high risk, ranking among the highest workplace safety hazards. This is the reason why those under 18 cannot work in coffee production. Some of the tasks performed by these employees, such as coffee shaking (tractor drivers) and pesticide application, are extremely hazardous.

² The national credit for family farmers (PRONAF) is a federal program that provides loans with lower rates of interest. To qualify for these loans, farmers must meet certain requirements, including a limited annual income and the number of workers without family ties, among others.

The labor law reform has not promoted major changes in these work safety requirements. Additionally, the agents interviewed described great improvements in recent years, especially in certified farms. Personal protective equipment usage requirements, in addition to workers undergoing more training, have reduced the risks to crops. According to specialists, the use of Personal Protective Equipment (PPE) is more regular in larger farms (part of economic groups with many certified farms); on smaller farms, the use is more intense during inspection periods (this would come from both farmers who are not so concerned, as well as workers who do not take the risk of accidents seriously).

Generally, VSSs certification improves working conditions for producers and workers. For example, many certified farms (particularly large ones) offer courses to their workers, particularly tractor drivers and operators. In addition to requiring the installation of warning signs and the improvement of hygiene conditions and work organization, certifications also mandate the installation of warning signs and the improvement of hygiene conditions and work organization. Suppliers of inputs and fertilizers also offer employee training.

The use of protective equipment, another certification requirement, also contributes to the improvement of working conditions in coffee plantations. According to a study by certifier Imaflora (Palmieri, 2008), farms certified with Rainforest Alliance (RAS) have superior performance to that of their uncertified counterparts. Analyzing the reality of properties in the regions of Southern Minas Gerais and Cerrado Mineiro, Lima et al. (2008) presented positive results, especially regarding the safety of workers and the greater formalization of their activities.

However, the interviews revealed that certifications alone cannot guarantee adherence to the legal rights. In this regard, the loosening of regulations as a result of labor reform, coupled with inadequate inspection, has contributed to the precarious nature of coffee production work. According to a study conducted by the NGO Repórter Brasil (Repórter Brasil, 2016), certified properties in Cerrado Mineiro and Mantiqueira de Minas violate labor law. According to the report, some farms with RAS, UTZ, and Fairtrade certifications violate several aspects of the law: informal employment, unjustified deductions from wages, payment below the minimum wage, non-payment of statutorily mandated benefits, and adherence to pesticide use standards.

There have also been reports of large producers with multiple properties who are not all certified. These producers combine uncertified properties, making it challenging for certifiers to detect this practice.

Upon arrival at the property, *gatos* and workers frequently reported that the owner had applied an herbicide to the crop the previous evening or days prior (especially desiccants to prepare the soil for the grains that fall from trees). The strong odor left by such products causes headaches, forcing many workers to return to the city because they cannot continue working for the rest of the workday.

Access to certifications and, consequently, the benefits they provide are a further factor to consider when evaluating their impact. Family farmers, for instance, have a more difficult time obtaining certification and adhering to certain practices, particularly due to the expense of meeting certifiers' requirements. Numerous individuals interviewed acknowledge that certification improves the production process, but the certified population in this sector remains small. According to the Cerrado Coffee Growers Federation, in 2023 there were 1,286 certified producers, or 28.58% of the 4,500 coffee producers in the Cerrado Mineiro Region. There are 102,000 certified out of 234,000 total hectares, or 43.58% of the area.

c) Public inspections

Although public inspections were not affected by the labor reform, the existing literature and the agents interviewed describe the low level of monitoring as a key variable in determining the actual working conditions observed.

In an interview with a *gato*, he reported that in a recent harvest, he took a group of workers to a farm for three consecutive months of work without having their employment record cards signed. Several workers interviewed stated that they had never witnessed a Ministry of Labour inspection. Many tax officers have retired and not been replaced, leaving the Labor Court of Patrocínio with only four inspectors working in 29 municipalities. According to labor leaders, enforcement has become more restrictive. In this scenario, the Rural Worker Labor Union of Patrocínio contacts the Ministry of Labour in extreme cases, while less serious disputes are settled through informal conciliation.

d) Social Security

Informality also affects employees' access to social security, as many temporary workers are unable to document their time worked for retirement because they are not registered.

Regarding rural employees, social security presents several obstacles, as some rural occupations are classified as urban and do not qualify for rural social security (a difference exists in the period of contribution and the minimum age for retirement when compared to the urban system). According to rural retirement rules, women would retire at age 55 and men at age 60; a special retirement track exists that requires 15 years of activity with contribution. Jobs such as managers, tractor operators, machine operators, inspectors, and drivers are considered urban and require employment until age 65. In the case of the tractor driver, the situation is even more complicated due to harmful elements, such as the sun, rain, and dust, as well as the use of numerous pesticides; despite the risks, it is not considered a unique circumstance.

In terms of access to social security, family farmers have better conditions for retirement, either through a lease, land tenure, payment of the Rural Land Tax (*ITR - Imposto Territorial Rural*), or affiliation with the Rural Workers Labor Union. Concurrently, the federation representing family farmers (the National Confederation of Agricultural Workers (CONTAG)) has been strengthened nationally and has obtained many benefits for the sector. In terms of their legal rights, family farmers enjoy greater security than rural workers.

e) Wage of salaried employees

With the drop in the demand for workers, many producers shifted their hiring period from the production period to the workday, especially for manually stripping beans left in the trees by mechanical harvesting. Thus, we observed a drop in labor income. This remuneration varies from property to property, and during the 2016–2017 harvest, it ranged from approximately US\$13.00 to US\$18.00 per day, with a signed employment record card. In addition, many employers paid more for informally hired workers. In this case, daily remuneration varied between US\$18.00 and US\$20.00 in the 2016 and 2017 harvests, which encouraged workers to accept the informal situation. Several workers and *gatos* reported this difference between formal and informal work, which has occurred even in farms that have some type of certification, clearly violating the required labor criteria.

Using the Brazilian minimum wage as a metric, we can conclude that real wages for agricultural workers have been declining. Leaders of the Rural Workers Labor Union reinforced this observation, arguing that, historically, at harvest time, when more labor was required, many rural workers engaged in other activities shifted to coffee harvesting due to higher pay. However, as demand and earnings decreased, this process decelerated.

The decrease in earnings of harvest workers is also attributable to the increased organization and management of the employer sector, particularly the strengthening of coffee producer associations and other forms of management improvement. This situation helped the Rural Workers Labor Union standardize the per-worker compensation for the various properties in the region.

In the coffee industry, the opportunity to earn above average wages is rare. In recent years, the average harvest wage has decreased from 3 or 4 minimum wages per month to between 1.5 and 2 minimum wages per month, with only rare instances of skilled workers earning more than 2 minimum wages per month.

The major conclusions regarding the impact of labor reform on working conditions are summarized in Table 2.

Table 2. Impacts of Institutional and Technological Changes on Working Conditions (interviews)

Labor dimensions	Effects from Mechanization and Labor Reform	Statements	Stakeholder
Labor formalization	new interpretation that work can be outsourced to a contractor (move worker between many farms avoiding registration)	"In many times we do not know the farmer, since our relation is with the contractor who moves us after short periods of work in each farm."	statement by a rural worker
	shorter work periods (machine use) made informal work easier	"Mechanization reduced and broke (fragmented) the need for our work."	statement by a rural worker
	fragmentation of manual activities on temporary hiring with less labor formalization	"Technology advancements and outsource facilitation are reducing the number of jobs in these activities, which are being filled by temporary working contracts." "I know about the importance of formalized work (labor card registration), but if this condition is not available, I need to work and provide for my family."	statement by a union leader statement by a rural worker
Workload and work safety	manual work is available for younger workers	"Younger workers do not care about labor rights that demand formalization."	statement by a union lawyer
	qualified workers faced long work hours during harvest periods the reduced work offers have forced unqualified workers to face more degrading tasks	"In the harvest period, we have to work for long hours, increasing the risk of accidents." "We have to accept exhausting and risky work due to the scarcity of job offers."	statement by a rural worker statement by a rural worker
Public inspections	low degree of monitoring by government agencies, reducing enforcement of the rule of law	"The Ministry of Labor has very few agents to cover large rural areas." "The low monitoring capacity of Ministry of Work make harder to enforce the rule of law."	statement by a union leader statement by a union leader
	outsourcing facilitation increases the rotation of workers in different farms, making it harder to inspect irregularities	"We have different working teams which are rotated among many farms."	statement by a rural contractor (<i>gato</i>)
Social security	shorter labor contracts make it harder to achieve required contribution time to receive pension	"The new pension requirements of social security reform (180 months or 15 years of contribution) are hard to achieve considering the fragmented labor contracts."	statement by a union leader
	lower income makes it harder to contribute to social security	"My income is too low in order to make the contributions by myself."	autonomous coffee harvest worker
Wage of salaried employees	the reduced work offers have forced unqualified workers to accept lower salaries	"The few options available make us accept lower salaries and have to increase our hours of work to make a living."	statement by a rural worker
	fewer jobs paid according to productivity	"Remaining manual jobs for smarter workers provide better income paying according to productivity."	statement by a rural employers' representative

Source: elaborated by authors

5. CONCLUSIONS

The international coffee market is exemplary of differentiation and marketing in agricultural trade. This explains the proliferation of certifications and labels in this market, which cover a broad range of criteria, including agricultural practices, working conditions, and environmental impact, among others. These private governance instruments, referred to in this paper as VSSs, play a significant role in enhancing the production and labor standards of this production chain (Ramirez-Gomez et al., 2022; Lima et al., 2008; Pião et al., 2020).

The Brazilian Labor Law reform in 2017 brought flexibility to labor contracts, which gained judicial relevance over the basic standards. Despite the fact that this reform has not absolved employers of the obligation to register all workers and respect labor rights, some of the changes were perceived by employers as reducing the severity of penalties for noncompliance. The new law also made it more difficult for employees to sue their employers by requiring them to pay all legal fees in the event of forfeiture. Local and federal courts have recently reviewed this law and determined that workers demonstrating “poverty condition” are not required to pay legal fees (Aguiar, 2022). However, this uncertainty poses a threat to employees who may refrain from suing their employers even when their rights are violated. Therefore, legal impermeability has increased, and access to the legal system has become more difficult for workers.

As a result, many farmers hired workers through contractors (*gatos*), who rotated workers across farms to avoid the need to register them. This practice, according to unions and contractors, is common among certified farmers. Many farmers own multiple rural properties and use a “model” property to obtain certification, allowing them to be more flexible with the standards on other lands. Thus, the labor reform has facilitated work outsourcing, making it more difficult to enforce labor rights (even those guaranteed by new regulations). Nevertheless, recent initiatives among coffee farmers are looking at alternatives to hire workers using “condominiums”, in order to reduce costs to medium and small farmers. These initiatives are still preliminary, but may legalize practices which are informally carried, as previously mentioned. This is not necessarily unfavorable to workers, if these condominiums abide to law and respect labor rights.

This research confirms previous studies (Ramirez-Gomez et al., 2022; Pião et al., 2020) showing the importance of VSSs to upgrade working conditions and safety. Certified farms present better agricultural practices and labor standards than non-certified farms, based on the criteria verified by the inspections Lima et al., 2008). Nonetheless, the majority of labor standards considered for private certifications in the coffee sector only require farmers to follow labor laws. As a result, if the interpretation of labor laws changes, private certification may not have enough power to protect workers’ rights.

Based on the information collected on interviews and previous studies, it is possible to conclude that despite the improvements, certifications did not fully eliminate labor risks in coffee crops in Minas Gerais. Although private certifications are crucial market tools for improving environmental and social production practices, elimination depends heavily on local laws and their enforcement instruments.

These findings underscore the intricate interplay between public and private governance mechanisms in shaping social and environmental practices within agriculture. Existing Political Science literature (Cashore, 2002; Paavola, 2007) has examined both the complementary and substitution effects of these mechanisms, underscoring the significance of robust public regulations to enhance production practices in conjunction with private standards (as private standards alone yield limited results). The case study presented in this research reveals that labor reforms, while not necessarily lowering standards, have affected the interpretation of rules and access to justice for rural workers, thereby increasing legal impermeability.

Moreover, it appears that VSSs have not effectively mitigated these effects. One potential solution could involve the introduction of supplementary labor standards within certification processes that go beyond legal mandates, albeit at the expense of higher associated costs. Subsequent research endeavors should focus on assessing the impacts of expanding labor standards within certification systems, weighing costs and benefits.

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ANNEX A. Compliance, verification, and attributes of the main certification labels for coffee production

	Global Coffee Platform (formerly 4C)	BSCA	Cerrado Mineiro Region	Fairtrade International	GlobalGap	Organic	Rainforest Alliance	UTZ	Nespresso - AAA	Starbucks - C.A.F.E.
Mandatory compliance with labor laws (ILO).	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Requires the signature of the document of responsibility for good practices and labor law observance										
Responsibility for ensuring compliance with labor laws and providing incentives for the adoption of labor practices that go above and beyond national regulations				Yes			Yes	Yes		Yes
Main attribute of certification	Basic practices of sustainability	Standards of excellence	Proof of geographical origin	Social sustainability	Production in accordance with HACCP guidelines	Absence of pesticides and chemical fertilizers	Social, environmental, economic, and ethical sustainability	Economic, environmental, sustainability and worker health and safety.	Quality, sustainability, and productivity	Sustainability in agriculture and processing

HACCP: Hazard Analysis and Critical Control Point.