



CAPTURING THE GAINS



*economic and social upgrading
in global production networks*

**Social and economic up and downgrading in
Brazil's hortifruiticulture**

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Abstract

Within the framework of the Capturing the Gains research network, which adopts a global value chain (GVC) perspective, this article analyses developments in the hortifruiculture sector and Brazilian food retail with the aim of identifying processes of social and economic up and downgrading as a result of participation in GVCs. Recent literature on these questions in Latin America and Brazil, which has largely been conducted within the retail transnationalization perspective developed by Reardon and colleagues, is first reviewed. We then analyse recent data on the retail sector, highlighting the shift of the dominant actors to non-food sales and the growth of local and regional outlets in response to the increased purchasing capacity of low-income groups. Retail is recognized to have decreased the number of farm produce suppliers and increased quality demands. Our research, however, has identified substantial informal subcontracting, with positive effects on inclusion but raising doubts on the efficiency of standards. In revisiting Brazil's most important and most studied fruit export pole, Petrolina, we conclude that the agricultural sector has increased its bargaining power within the GVC given the opportunities opened up by an expanding domestic market. This has similarly led to farmworker economic upgrading via longer production periods. Even though working conditions are harsh, trade union negotiating strength in the current political conjuncture has been significantly improved, leading to important measures of social upgrading.

Keywords: Global value chains, modern retail, hortifruiculture, Brazil, Petrolina, economic and social upgrading

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Abbreviations

ABRAS	Associação Brasileira de Supermercados
CEASA	Centrais de Abastecimento de Campinas S.A
CPRC	Chronic Poverty Research Centre
DFID	Department for International Development
ESRC	Economic and Social Research Council
FAO	Food and Agricultural Organization
FDA	Food and Drug Administration
FDI	Foreign Direct Investment
FOB	Free On Board
GCC	Global Commodity Chain
GPN	Global Production Network
GVC	Global Value Chain
IP	International Producers
IT	Information Technology
NGO	Non-Governmental Organization
PIF	Fruit Integrated Production
RIMISP	Regoverning Markets
SCI	Sustainable Consumption Institute
SFV	São Francisco Valley
UK	United Kingdom
US	United States

1. Introduction

This study of recent developments in the hortifruticulture segment of the Brazilian agrifood system is conducted within the framework of the Capturing the Gains research network, which focuses on the social and economic impacts of the global restructuring of economic activities, captured in the analytical concepts of global value chains (GVCs) or global production networks (GPNs). The main concern is to understand to what extent and under what conditions the global reorganization of agricultural, industrial and service activities, which has followed the shifts to market liberalization, financial deregulation and the information revolution, is promoting economic and social up or downgrading in the segments of these activities located in developing countries. More than this, it is concerned to explore the interconnections, both negative and positive, between economic and social up/downgrading. An understanding of these processes is clearly central both to strategies/policies for economic development and to issues of global governance/regulation.

In this paper, we bring this view into dialogue with the literature on the transnationalization of the agrifood system under the aegis of large-scale retail associated with the research programme conducted by Reardon and colleagues (see Reardon and Farina 2002; Reardon et al. 2003; Reardon et al. 2004). This latter is more concerned with the waves of foreign direct investment (FDI) directed at the domestic markets of developing countries, which, it is argued, are reproducing the market structures prevailing in Europe and the US. GVC approaches, for their part, have traditionally seen developing country involvement as predominantly that of exporters based on resource or labour advantages. Despite these different orientations, both research programmes analyse the effects of the imposition of global standards, whether of scale, logistics or quality, on the perspectives for participation by local actors in these value chains dominated by demand-driven global players

In Section 2, we present the analytical framework elaborated by the Capturing the Gains research network, incorporating some of the empirical findings from this research. In particular, we focus on the typology of forms of economic upgrading and the corresponding contexts that may favour social up or downgrading. In the GVC, perspective economic up and downgrading are therefore identified primarily with the opportunities opened up by the nature of the activities. In our analysis of the Brazilian case, we combine this perspective with an analysis of the impact created by the dynamism of the domestic market on the ability of local actors to arbitrate between the conditions of access to global and domestic markets. We argue that this provides an important additional factor explaining opportunities for both economic and social upgrading and which, at times, may be more important than the technology or knowledge resources, which can be mobilized based on the position of a particular actor in the GVC.

Section 3 presents in greater detail the basic lines of the argument developed by Reardon and colleagues. This is complemented with a consideration of associated research carried out on the hortifruticulture sector in Brazil and neighbouring Latin American countries, which analysed the transnationalization of retail and the influence of national and regional markets on this process, and the impact this has had on producers' organization and rural workers' labour conditions. Most of this research was carried out in the first half of the past decade when, as is discussed in Section 4, these changes were still underway.

In Section 4, we analyse the principal transformations in the Brazilian agrifood retail sector, focusing in particular on its hortifruticulture sector. We describe the influences of GVCs on Brazilian producers and examine current processes of transnationalization and concentration,

discussing at the same time the spaces opened up for small and medium enterprises and regional players in light of the recent growth of the domestic market, particularly with the broadening of this market through the massive inclusion of new low-income consumers. This analysis is completed with a consideration of the regional and global trade flows in the hortifruiculture sector.

Section 5 provides the results of fieldwork conducted in one of Brazil's principal fruit export zones in Petrolina, in the Brazilian northeast, a region much analysed and one we discuss in our literature review of Brazilian research and debates in Section 3. Moreover, this region is the largest fresh food producer in Brazil, with production of over 1 million tonnes of fruits and vegetables (Wilkinson 2009), where the influence of GVCs is present, in both the export and the domestic market. A range of different types of firms was interviewed; farmworkers were also interviewed and discussions were held with rural union officials. Here, we identified processes of economic and social upgrading, which can be associated both with conditions of participation in GVCs and with the changing dynamic of the domestic market, which in its turn has improved conditions of negotiation in the GVC. Our conclusions also point to the importance of embedded features related to the political regime, which has received more explicit expression in the interrelated GPN research programme. The current strength and recognition of rural unions in the region is certainly influenced by the position of the Workers' Party at the head of the federal government, and present also at state and municipal levels.

In the concluding section, we resume the overall argument of the paper, which emphasizes the need to combine GVC/GPN approaches with those that take into account the increasingly strategic role of the domestic market of developing countries, particularly so in the case of the large emerging markets.

As a research method, we first contextualized GVC influences through gathering secondary data in order to measure production, international trade flows, internal market evolution and the transnationalization of domestic supermarkets. We then interviewed supermarkets, wholesalers and large farmers to understand how GVCs influence producers' organization. Finally, we selected the Petrolina/Juazeiro production area to carry out field research on up and downgrading processes, conducting interviews with local actors.

2. GVCs and economic and social up/downgrading

The Global Commodity Chain (GCC), which then became the GVC approach, has developed in tandem with the GPN research programme, which focuses on the need to include a wider set of actors than those directly involved in the economic activities of a value chain. It developed as an alternative to the traditional separation of production categories relating to firms and trade, where the unit of analysis was generally the firm and the nation. It draws attention to a process where previously vertically integrated activities were broken down and located in different geographical regions dependent on a variety of perceived advantages – fiscal, regulatory, resources or labour. Market liberalization combined with financial deregulation and the diffusion of information technology led to the formation of globally organized production systems to which a substantial part of trade was subordinated. Initially, the focus privileged the capital- and technology-intensive production sectors, where relocation of production activities was seen to obey a supply-driven dynamic. Increasingly, however, patterns of outsourcing and relocation were identified in sectors geared to rapid turnover of final consumer goods – clothing, footwear, foodstuffs – where the dynamic behind global restructuring was understood to obey demand-driven strategies. Within the context of this shift, GVCs began to make an important contribution to agrifood studies, particularly

retail-driven food exports from developing countries. More recently, the same trends have been identified in a range of service activities, transforming the GVC approach into a framework for analysing global economic dynamics.

One of the central concerns of this research programme has been to understand the conditions in which participation in GVCs represents a strategy opening up the potential for continuous economic improvement in the case of developing countries and regions. The focus here has been that of economic opportunities, and a nuanced typology was developed to identify different possibilities for upgrading on the part of developing country actors. Given the existence of interdependent but formally independent economic activities, which together compose the GVC, the issue of global coordination has become a central concern. A particular focus of attention has been the extent to which the technology and knowledge demands at different levels of the GVC open up possibilities for actors to improve their economic situation. Such possibilities include advancing along the GVC to include downstream activities – from fresh product production, to packaging, to marketing, to branding. Alternatively, with the same knowledge and technology, actors may diversify to other similar products; or, actors may apply the knowledge gained to enter completely different activities. In all this, there is a complex trade-off between knowledge/technology sharing and transfer, quality/cost goals and control or coordination of the GVC as a whole. Gereffi et al. (2005) systematized these different situations in a typology with market and hierarchy as the two extreme forms of coordination, with intermediary possibilities ranging from captive, to modular, to relational. Upgrading opportunities were identified primarily in the modular and relational modes of coordination, the former of these facilitating lateral diversification and the latter progression along the value chain.

The development of this and related typologies has permitted analysis to advance beyond the dual options of supply- or demand-driven GVCs, making it possible to analyse the potential for economic upgrading and the risks of economic downgrading across the whole range of economic activities spanning agriculture, industry and services. The supposition, however, has been that economic upgrading implies social upgrading. A questioning of this supposition is at the centre of the Capturing the Gains research programme, and its implications are spelled out by Barrientos et al. (2011). In this latter perspective, economic upgrading may be neutral with regard to social upgrading or even negative, as in the case of improved technology leading to more difficult working conditions or to unemployment.

Social up/downgrading may accompany economic up/downgrading, but this is not necessarily so since the issue is not limited to question of improvements in technical skills and productivity but extends to the quality of existing work, to the degree of recognition of the rights and entitlements of workers and to the possibilities that present employment opens up for improving job options. Social up/downgrading on this view refers both to measurable standards (wages, working hours etc.) and to 'enabling rights' (union rights, collective bargaining, non-discrimination etc.).

To capture the potential for social upgrading as regards technical skills, the Capturing the Gains research elaborated a typology of five different GVCs/GPNs – agriculture, apparel, automotive, information technology (IT) hardware and business services – with workforce composition also divided into five categories – small-scale/household-based, low-skilled labour-intensive, medium-skilled mixed production technologies, high-skilled technology-intensive and knowledge-intensive. The relative mix of these different categories of worker in each of the five GVCs/GPNs provides a first approximation for a more precise definition of social upgrading. On this understanding, the potential for significant social upgrading in the agriculture sector is shown to be the most limited.

On the basis of case studies developed within this framework, a more complex set of drivers for both economic and social upgrading and downgrading has been elaborated (Gereffi and Guler 2008; 2010). In the case of insertion into agricultural GVCs, the high quantity of jobs in labour-intensive activities may represent an important avenue for social upgrading, especially for women. Women may be further favoured by the opportunities for balancing productive and reproductive work. In the case of access to niche markets, there may be important skill benefits and broader knowledge gains. The risks of social and economic downgrading, on the other hand, are proportionately higher, ranging from outright exclusion, to unpaid family labour, poor and insecure working conditions and lack of social protection and rights.

In the analysis that follows of the Brazilian hortifruitculture sector, we draw on these considerations, both in our discussions of research and secondary data related to the transnationalization and concentration of retail and in the presentation of the results of our field investigations in Brazil's most important fruit export zone, Petrolina, in the Brazilian northeast.

3. Role of retail in developing countries

3.1. Transnationalization of retail

Reardon and colleagues' contributions on the dynamics and impacts of the leading players in food retail have defined the agenda for this area of agrifood studies during the past decade, particularly as regards transformations in developing country agrifood systems. Broadly speaking, their arguments are as follows. Beginning with a focus on the global middle classes in the better-off sectors of metropolitan cities, modern, largely transnational, retail has advanced to include more popular sectors in these cities and has then moved on to occupy similar terrain in medium and even small-sized cities. In doing so, it has progressively developed a new supply system, bypassing traditional wholesale structures. In addition, its logistical and quality demands have provoked a selection process among primary product suppliers, generally to the detriment of small farmers. To survive in this new competitive climate, traditional wholesale and retail has been forced to adopt adaptive measures incorporating the new standards imposed by the leading, largely transnational retailers. Small-scale retailers go to the same suppliers as the big supermarkets but are also open to associations of small producers.

Reardon and colleagues' analysis focuses on the transnationalization of the domestic markets of developing countries rather than on the impact of South–North trade, typically involving the imposition of new quality and safety criteria as conditions for access to Northern markets. As they note, a domestic market such as that of Brazil, and more particularly fruit and vegetables, dwarfs the export market for these products. At the same time, their restructuring by transnational retail is leading to a convergence of standards, which tend to diminish the distinction between domestic and export markets, opening the way, in principle, for a transition to GVCs.

Important research within the framework of Reardon's analysis has been carried out by Mainville et al. (2003) on the way in which new quality and logistical standards affect the ability of small farmers to participate in the retail-dominated horticulture supply chains. This problematic has been taken up by international institutions such as the Food and Agricultural Organization (FAO) and has been the basis for a global network research programme: Regoverning Markets (RIMISP). To the extent that this research programme focuses on agriculture, it gives priority to the impact of new quality and logistical demands on the perspective for inclusion of the small farmer and pays little attention to rural workers on larger commercial farms. More generally, this line of research has also focused on the way small-scale retail and the traditional wholesale/retails circuits are reacting

to the new levels of competition imposed by the supermarkets (see Dirvine and Faiguenbaum 2003; Farina 2002). This theme has also been explored in the international literature, particularly in the contribution by Humphrey (2007), which challenges the thesis of the advance of supermarket transnationalization, pointing to the reaction and re-accommodation of traditional actors, a tendency that finds support, particularly in the case of Chile, in the regional expansion of national supermarkets such as Ceconsud.

Following the tendency of supermarket globalization and the rise of fast-food chains, Ghezán et al. (2002) found that in Argentina there was a trend favouring medium and large hortifruitculture producers to the detriment of small farmers, who are gradually being excluded from these channels. The authors show the increase in the participation of large-scale retail in Argentina has occurred much faster than in developed countries. In this context, multinationals have several advantages over smaller or national enterprises, given their financial capacity, experience in procurement systems and selection of suppliers and logistics. Among the impacts owing to the operation of these large-scale enterprises are the following: reduction in the role of the traditional wholesale market, emergence of specialized wholesalers generally working with supermarkets and the tendency to exclude small farmers because of marketing and technological requirements. This has led small farmers to seek alternative markets, but often with little chance of keeping themselves in this activity, with the result that they abandon their farms. In addition to market factors, several other constraints contribute to aggravate the situation of small producers. Low levels of association and lack of financial and technical assistance, as well as a lack of government targeted policies and programmes, operate as forces for the exclusion of small producers.

3.2. Influence of national and regional markets

Some authors, as we have mentioned, have challenged the interpretation of Reardon and colleagues, notably John Humphrey (2007), who focuses on the resilience of traditional distribution systems. Perhaps the most detailed critique has come from Elizabeth Farina's research into the persistence and growth of small and medium retail in Brazil. Indeed, in a 2002 publication, Reardon joins forces with Farina in highlighting this exceptionality in the Brazilian case. It may be, however, that similar findings would emerge if other Latin American countries were subjected to the lens of Farina's research.

According to Belik and Santos (2000), there is evidence that a new dynamic of production and distribution of foods is underway in the Mercosur region of South America, characterized by an extension in the scale of operations by actors who are beginning to expand their business in line with the emergence of a larger and more integrated market, especially after the creation of Mercosur in 1991. From a strategic point of view, this suggests moves towards the construction of a single market composed of the Mercosur countries. As a signal of this new configuration, the authors point to the emergence of regional enterprises, which, in partnership with transnationals, seek to promote a regional coordination of production, warehouse logistics and food distribution. Consequently, a series of mergers and acquisitions have occurred aimed at winning and/or maintaining market share. The presence of large transnational enterprises operating in the agrifood sector, in partnership or not with local enterprises, indicates that global sourcing strategies are in course. The group Carrefour, for instance, had already developed global sourcing in the fruit sector in Brazil.

As we see in following sections, these findings are the beginning of a much larger market rearrangement led by transnational supermarkets and followed by local companies. These strategies in the South Cone have been developed on the basis of institutional and scale

considerations, and have led enterprises to become organized within the logic of the regional space. These movements have been facilitated by the reduction of transaction costs, such as regulation, sanitary rules and food legislation convergent with the consolidation of structures such as distribution centres. In Brazil, the distribution of fruit and vegetables evolved from a system of mass distribution until the 1980s in the direction of a gradual but steady process of segmentation aiming to offer differentiated products for an increasingly more demanding consumer (Belik 2004).

This new productive paradigm brought with it challenges for the fresh food sector. On the demand side, segmentation caused great fluctuations, creating difficulties for producer planning and bringing with it additional costs owing to product perishability. It has, in this way, contributed to an increase in transaction costs as a result of the need to attend to a varied demand profile and to conduct continuous bargaining. The advances in IT have primarily benefited the distribution sector, which has gained additional advantages as a result of its increased capacity to predict demand through greater contact with the consumer, which allows for costs to be adjusted in function of desired product attributes. Among the new facilities incorporated by these actors into their trading and marketing process are online information, which allows transactions without direct contact between buyer and seller, standardized contracts and improvements in operational logistics through outsourcing of transport, packaging, classification and the use of buyer centres. Although such a business environment is more favourable for large-scale retailers, the author points out that there is still space for the functioning of wet markets and specialized horticulture stores, since product perishability favours distribution outlets closer to consumers. Additionally, these smaller structures generally work with lower costs, and so can offer reduced prices and more personalized services. These findings are partially confirmed by Dirven and Faiguenbaum (2003) studying the backward and forward impacts of fresh products markets in Chile. While in the upper-middle class neighbourhoods the street market offered higher-quality and more expensive products than the supermarket, this was not the case in more popular areas, where the products were cheaper and of better quality, offering a good price–quality relation.

3.3. Impacts on farmers and rural workers

Cavalcanti, Bendini and colleagues (see Bendini and Steimbregger 2007; Cavalcanti et al. 2006) focused on issues regarding the impacts on agrarian structure, labour markets and urban centres of strategies for the valorization of new productive spaces through technologically intensive agriculture, especially the irrigated areas in Brazil's north-eastern region (Petrolina/Juazeiro) and the Valle Medio region in the Argentine (Plato). These strategies in the agrifood sector seek to promote the development of rural areas through the supply of high-value products as opposed to commodities, producing fresh fruits and vegetables for domestic and international markets. According to the authors, in these new agricultural poles, the state has an important role via investment in productive infrastructure (irrigation, energy, roads), in policies directed to economic promotion (credit) and in the creation of conditions for capital mobility.

Analysing the above-mentioned regions, the authors identify a coexistence of activities and producers with different levels of insertion in both product and labour markets, owing to the characteristics of the policies implemented, which have led to differentiated access to markets, natural resources and other economic goods. The authors analyse several issues relating to land use and appropriation, the territorial configuration of agricultural production and labour organization. In the Petrolina and Plato cases, they found a similarity in the processes whereby distinct regions undergoing similar kinds of intervention (land appropriation) resulted in the speculative revalorization of the territory owing to public policies privileging certain groups, products and regions. In the Argentine Valle Medio region, findings indicated that the modernization of agriculture in response to the requirements of the modern agrifood sector

(domestic and international) had involved local, local-transnational and transnational firms. To increase productive efficiency and reduce risk, some firms seek to build economies of scope and diversification through mechanisms of horizontal and vertical integration. Examples here would be the combination of horticulture with fruit and cattle production, and the linking of traditional with new areas of production. This is the case of the Argentine Valle Medio region. In the Plato region, strategies were directed at increasing scale and the degree of specialization, through concentrating production on a small group of products (coconut and citrus). In both cases, the expansion in scale of production aims to negotiate and respond to rapid changes in world demand, and generates at the same time negative externalities owing to the strength of capital concentration, favouring oligopolistic forms of production and distribution.

As regards the organization of the labour process, the authors found changes were related not only to globalization and restructuring policies but also to sectoral and local specificities. The location of large fruit enterprises in these regions introduced new forms of organization of agricultural activity, owing largely to the intensive use of capital, with positive effects on population growth and leading to new demands for services and social infrastructure. Among the characteristics configuring the labour market in these regions, the authors found an increase in employment, a diversification of labour practices, an intensification of worker migration, important demands for worker qualification (capacity building), both insertion and exclusion of female labour and a deterioration in wages and working conditions. From the workers' point of view, the authors argued that the legal environment favouring flexibility in labour regimes (contracts) had led to the increase in seasonal and temporary labour, greater control over the workforce and an increase in worker vulnerability. The findings from our research suggest that these conclusions need to be revised.

As regards more recent changes in labour markets, Cavalcanti et al. (2006) identify a tendency towards a reduction in the workforce owing to the incorporation of modern technology and a worsening of labour conditions through the growth of temporary work, subcontracting and part-time labour. In the Plato irrigation project, differently from the other regions studied, there was a strengthening of the salaried workforce, with priority given to regional workers belonging to local social networks. In this context, they observed a reduction of family labour and an increase in wage labour owing to the requirements of modern and intensive agriculture incorporating new lands and implanting new cultivations. However, the intensification of salaried labour occurred with different levels of duration of the labour contract. In the Valle Medio, the existence of periods with low productive activity caused fluctuations in labour demand, with a growth in the importance of contracts for seasonal workers. This situation was different in the Plato region, since here there was greater availability of workers whose small farms had been expropriated. In both cases, social networks of workers contributed to and facilitated workforce contracting schemes. Similarly, networks formed by firms also facilitated the location and contracting of workers. The various labour needs of this type of modern agriculture have promoted migratory flows of workers, primarily on a seasonal basis. Once a worker has served as temporary labour, he/she is on the books for future hiring as a legal or permanent worker.

The new labour qualifications required to cope with new technologies in the modernized agriculture of these regions have led firms to invest in capacity building, creating a new type of polyvalent worker geared to productivity. Two quite distinct groups of workers have emerged: a reduced group with higher qualifications, higher salaries and occupational stability, linked to tasks of management, control and administration; and another group formed of temporary workers, with low training demands, who perform routine tasks involving heavy physical effort, based on traditional knowledge and related primarily to work in the field and packing activities. As regards gender, the

work of women is more concentrated in activities demanding manual tasks with a higher level of skill and dexterity, such as in the handling of fruit and other tasks requiring care. This kind of skill, however, is more linked to informal than to formal training. The authors conclude that labour conditions are characterized by deterioration in the social rights of the workforce, with negative effects on permanency, qualification, contract rules and worker's rights, owing to the conjugation of ancient and new 'flexibilities' that have led to precariousness, labour risks and social vulnerability of the workers.

Analysing studies regarding rural labour in Brazil, Cavalcanti and Da Mota (2002) found that the most critical aspect had been the reduction of the workforce in agriculture owing to modernization. This is because of the profile of modern agriculture, which privileges the reduction of rural labour, leading to a migration of workers to urban centres and their subsequent hiring in schemes regimented by professional contractors or intermediaries, foremen, etc. These rural workers live on the periphery of urban centres without any relationships with the environment and the people with whom they work. For instance, in fruit production for export, both workers and employers experience dissociation between the space of work and home, generally working in the field and living by preference or by need in the cities. As regards the constitution of the rural workforce, the authors identified a more systematic insertion of men in formal employment. The preference for men is explained by economies in social charges, such as the case of maternity leave, and by the greater involvement of women in domestic tasks. As regards child labour, analysis of data from the Demographic Census of 1991¹ indicated that the presence of child labour was a constant in all types of rural occupations. Such a situation is traditional in family agriculture, where child labour can be understood within the perspective of learning and apprenticeship. Children also make up part of the labour force contracted for particular short-term tasks. Child labour is more directed to activities such as harvesting or the processing of fruits and vegetables. The presence of child labour, however, is rapidly diminishing owing to societal pressure and greater rigour in monitoring by civil society entities and non-governmental organizations (NGOs).

According to the authors, deregulation of labour is more frequent in the agriculture sector in Brazil, given the limitations of labour organization, which has been restricted to the protection of specific categories and to pressure on employers for greater profit, generating precariousness in work relations and a regression in workers' rights. Da Mota (2002) reached similar conclusions in her analysis of the trajectories of 10 families of rural workers. She found that, despite the multiplicity of occupational activities in the first and second generations of workers, the third generation was predominantly salaried workers in a context characterized by a reduction in employment and an intensification of precariousness in work relations. Generally, workers migrate from subsistence agriculture to salaried labour. With the reduction in access to land, families gradually migrate from their origins. The first generation encourages the departure of children to seek wages in the town. The second generation, for its part, remains salaried and tries to insert their children in the same condition. As this becomes more difficult, their activities are more diversified, being linked to agriculture, commerce, handicrafts, civil construction and similar activities.

In these three generations, the difficulties for social reproduction progressively deepen and the family suffers a process of disintegration and impoverishment. In this context, the women are excluded from salaried work owing to a sexual division of labour, which promotes their disqualification, particularly in modern irrigated agriculture. In addition to being avoided as a way to ensure a reduction in social charges (such as maternity leave), women are generally less preferred in rural work since men carry out the recruitment. With the aim of analysing the productive

¹ www.ibge.gov.br

strategies of men and women in fruit cultivation in the São Francisco Valley, Cavalcanti and Silva (1999) carried out research to evaluate the sexual division of labour and its influence on regional development. The study revealed that technological innovations in agriculture in the Valley contributed to a reduction in employment for both men and women, with the latter being more affected because of distinctions between the work of men and women, and because of the reduction in postharvest manual work. These findings showed, according to the authors, that state programmes for regional development need to consider the objectives of generating employment and income, poverty reduction and the improvement of living conditions. The study also concluded that the search for competitiveness could generate the opposite results to these objectives, if social outcomes are not explicitly considered.

Adopting the same concerns as Cavalcanti and colleagues, the work of Bendini and Steimbregger (2007) seeks to measure the impacts of agricultural modernization, specifically, new poles of fruit production, on the social and geographical environment. Analysing the value chain of apples and pears in Northern Patagonia, the authors argue that a process of modernization has occurred with the following phases: 1) consolidation of the productive infrastructure; 2) vertical integration by national and regional enterprises; and 3) productive concentration, territorial expansion and transnationalization of the enterprises. Among the results of this process, the authors singled out the following: speculative revalorization of the territory and consolidation of large-scale fruit production, together with social and territorial changes. The latter was characterized by the following dynamics of land use: from cattle exploration to farming and the use of irrigation, the introduction of technological innovations (allowing gains in productivity), the feminization of tasks such as packaging and more delicate activities, the concentration of labour demand in certain periods of the year, a lower demographic density in the region and the need for extra regional labour. In this region, the presence of big capital and the dual role of the state, as promoter/facilitator and as mitigator of asymmetries, stimulated a movement of permanent territorialization involving processes of appropriation, subordination and flexibilization.

Analysing the participation of producers in supermarket channels in Brazil, Mainville and Reardon (2007) found that human capital, farm size and degree of technology adoption influenced the way producers access these channels. Among the results, they found producers who sell to supermarkets had higher levels of human capital than those not participating. Farm size was important only for producers who sold large quantities directly to supermarkets, such as those producing lettuce. In the case of tomatoes, which are more demanding in terms of product grading owing to supermarket stipulations, the role of specialized wholesalers was more important. Third, the use of technology was more capital-intensive in the case of lettuce growers selling directly to supermarket channels than in the case of tomatoes sold to specialized intermediaries who already had an infrastructure of postharvest packaging and classification.

In the new poles where horticulture adopts models of modernization, research has focused on worker training and the conditions of insertion into the labour market. Analysing the labour market for rural workers in Northern Patagonia, Trpin (2008) found that Chilean migrants were hired for jobs that demanded a higher level of qualification and reputation, while those with lack of training or women were hired for more precarious jobs. The author concluded that ethnicity and level of capacity building were important factors in defining labour conditions, and that there is, therefore, no homogenous category of rural workers. In the same direction, Alvaro (2008) argues that the reproduction schemes of families and rural workers in modern agriculture vary with the heterogeneity of the sector, characterized by the differential industrialization of agriculture, increased interactions with the urban sector and the coexistence of different strategies and

modalities of organization of production, even for the same product. Some initiatives and social rural movements have the maintenance of indigenous culture as their banner in the fight against exogenous values brought about or imposed by capitalism. Such was the case of the Movement of Rio Negro and Neuquén Women in Struggle, in Argentina. In this study, González (2009) found that, in response to a crisis, the women of that region began to fight against the erosion of their cultures, forging a new collective identity, with new practices and a growth in solidarity. While maintaining their ancient models that express a specific settler worldview, the women began to adopt a new social and political paradigm, reflecting a departure from a domestic environment and the incursion into a public space, involving a process of cultural transformation.

According to Selwyn (2007), in the São Francisco Valley, in the northeast of Brazil, price and market incentives practised in the grape-exporting industry have stimulated the formation of several producer and worker organizations aimed at coping with increasing demands for grape quality by European retailers. At the level of production, these organizations seek to help their members meet growing export standards. Rising buyer requirements have also increased farm demand for more skilled labour owing to the nature of the tasks in modern grape production, generally demanding specialized knowledge and dexterity. In addition, given the level of unionization, workers have acquired good bargaining power reflected in higher remuneration and better labour conditions (i.e. legal standards) than in other fruit industries in the same region. However, despite these benefits, workers have been submitted to a high degree of scientific management, whereby managers seek to extract growing levels of productivity, making the labour process extenuating.

From Selwyn's perspective, the economic and GVC literature fails to consider the role of workers in defining (influencing) and following (reacting to) new standards in the horticulture sector (Selwyn 2012). In this sense, given a high level of specialization, rural workers in technological agro chains (as in the pole of Petrolina/Juazeiro) have developed good bargaining power, resulting in better wages and other social advantages. For the author, this process has also stimulated a good level of association, which in turn acts as a virtuous circle strengthening workers' power and well-being. In production, where time is a constraint for performing each task in line with the quality and speed required by the market, eventual paralyzation of work owing to strikes represents a great prejudice and threatens the loss of important markets, transforming this capacity into an important asset.

4. Transformations in the Brazilian agrifood retail sector

4.1. Fresh fruit and vegetable production and international trade in Brazil

In the food sector, particularly for fresh products such as fruits and vegetables, Brazilian producers have been submitted to two kinds of influences regarding GVCs. One stems from the opportunities for supplying North American and European countries, which have led to a significant increase in fruit export volumes as from the second half of the 1990s. This value chain is led by import firms specialized in importing fresh products to supply retail in Northern countries. By joining GVCs in this situation, producers improve efficiency and intrinsic product characteristics, mostly through certifying to Eurep/GlobalGAP or Food and Drug Administration (FDA) standards, but this does not necessarily lead to added product value. There was a significant increase in producer incomes up to 2004 related to the devaluation of the Brazilian currency (the real), but these gains were diminished when exchange rates returned to lower levels. These influences were felt mainly in the irrigated perimeters in the northeast region.

During the past decade, the Brazilian domestic market has grown in size and organization. This movement has been accompanied by the main transnational supermarkets, which have become dominant through fusions and acquisitions and store network expansion inside Brazil. Along with this market expansion, supermarket chains have also implemented new food quality and safety standards regarding domestic and export markets, which have influenced producer organization in a broader way. A closer look at issues such as domestic market dimensions, import and export volumes, retail structure, the evolution of standards and producer organization is crucial to understanding the current dynamic of horticulture GVCs.

Dimensioning the fresh products market in Brazil involves analysing and harmonizing different sources of information, given the wide variety of products and the questionable reliability of the statistics. While the numbers on imports and exports are very accurate, handling the data on production requires a number of choices and assumptions. Of the available sources, the Municipal Agricultural Survey presents annual information on production volumes and values, although it is restricted to the main fruit crops and vegetables. More detailed information, especially regarding horticulture, plants and flowers, is available from the Agricultural Census carried out in 2006. Altogether, these sources offer information on some 75 products.

The estimated value for fresh products produced in Brazil was \$17.3 billion in 2009, considering farm-gate prices for fruits, vegetables, plants and flowers. The principal crops represent 88 percent of this production, including fruits such as bananas, melons, grapes, apples, citrus and vegetables such as beans, tomatoes, potatoes and onions. Greens and other horticulture products represent 10 percent of this value and plants and flowers only 2 percent. Almost half of this production is located in the southeast, which is explained by the concentration of citrus production together with the large production of vegetables, which tends to be consolidated close to the main urban centres, in this case, Rio de Janeiro and São Paulo.

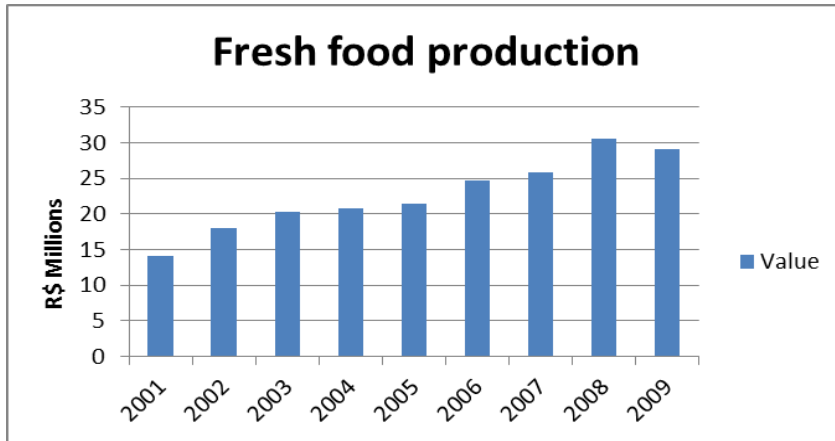
Table 1: Fresh products production in Brazil, 2009

	US\$ thousands	%
Main crops	15,280,057	88
Greens and vegetables	1,759,276	10
Plants and flowers	281,748	2
Total	17,321,081	100

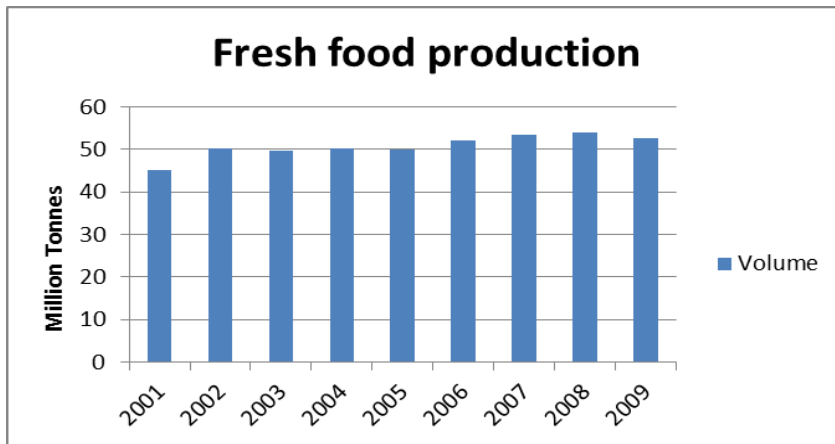
Source: Authors' elaboration using <http://www.ibge.gov.br/home/download/estatistica.shtml> and <http://www.ibge.gov.br/home/estatistica/economia/pam/2012/default.shtml>

Regarding the main crops, fresh food production doubled in value from 2001 to 2009, although the increase in volume was less than 20 percent. This picture points to a substantial increase in the prices of these products, which may be related to a new dynamic in fresh food standards for the internal market in Brazil.

Figure 1: Evolution of fresh food production in Brazil, 2001-2009



Source: <http://www.ibge.gov.br/home/download/estatistica.shtm>



Source: <http://www.ibge.gov.br/home/download/estatistica.shtm>

Table 2 shows imports and exports of fresh products have become an important segment of agribusiness in Brazil and have increased considerably in the past 10 years. In 2007, international trade reached its peak with amounts close to \$1 billion in value and about the same number in tonnes for exports, with Northern countries in Europe and America the main destination. Imports are almost as significant as exports, but with different origins. While some trade comes from Northern countries and Asia, the largest volumes come from South American countries such as Argentina and Chile.

Table 2: Influence of imports and exports on Brazilian fresh product production

Brazilian Production, Imports and Exports of Fresh Products (Ton)									
	2001	2002	2003	2004	2005	2006	2007	2008	2009
Production	45.217.327	50.192.632	49.624.970	50.336.619	49.866.306	52.116.331	53.505.732	53.986.272	52.792.613
Imports	464.312	425.614	653.546	693.726	771.321	789.754	865.154	959.419	899.426
Exports	719.536	789.246	928.220	970.424	942.458	913.208	1.140.028	991.911	912.685
% Import/Prod	1,0%	0,8%	1,3%	1,4%	1,5%	1,5%	1,6%	1,8%	1,7%
% Export/Prod	1,6%	1,6%	1,9%	1,9%	1,9%	1,8%	2,1%	1,8%	1,7%

Brazilian Production, Imports and Exports of Fresh Products (US\$)									
	2001	2002	2003	2004	2005	2006	2007	2008	2009
Produção	6.019.101	6.129.551	6.631.611	7.096.041	8.797.610	11.358.118	13.246.841	16.646.255	14.559.272
Importação	248.414	178.486	273.478	339.405	421.669	484.529	597.189	876.157	748.871
Exportação	384.268	410.855	542.943	637.796	724.458	749.967	1.002.687	1.023.818	896.580
% Import/Prod	4,1%	2,9%	4,1%	4,8%	4,8%	4,3%	4,5%	5,3%	5,1%
% Export/Prod	6,4%	6,7%	8,2%	9,0%	8,2%	6,6%	7,6%	6,2%	6,2%

Source: <http://www.ibge.gov.br/home/download/estatistica.shtm>

However, in comparison with the domestic market, international trade still represents a very small portion of Brazil's fresh products. By volume, imports and exports represent less than 2 percent of Brazilian production, and in value they represent 5-6 percent of the total market.

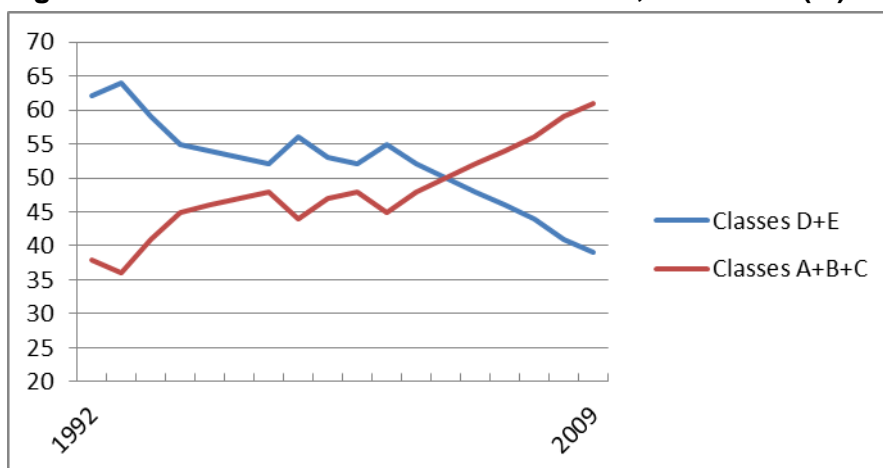
Considering the role of the GVC/GPN drivers discussed above, the influence of Northern country supermarkets on supply is unquestionable, since they were the first to present international fresh product standards to local producers in the late 1990s and early 2000s. Given, however, that the development of the domestic market involves much bigger volumes when compared with international trade, the restructuring of transnational supermarkets in Brazil has the potential for a much broader influence over producer organization. We therefore take a closer look at this issue in the next part of this paper.

4.2. New dynamics of retail

Although the theses of Reardon and colleagues summarized above have established the terms of the debate over the past decade, we have seen that a number of authors, notably John Humphrey and Elizabeth Farina, have focused on the resilience of traditional distribution systems. Our own research into current developments in the fresh fruit and vegetable supply chains in the city of Rio de Janeiro reinforces the more complex picture that emerges from Farina's research and suggests to us that a more sociologically and geographically embedded analysis is required to tease out the complex transformations in this sector.

The most significant development in the first decade of the new millennium was the explosive growth of the domestic markets of many developing countries, and in particular the emergence of a new middle class, as millions of the poor assumed the status of modern consumers. In Brazil, social classes as measured in annual family income are divided into Classes A to E, where A and B are the upper classes, C represents the middle class and D and E are the lower classes. As Figure 2 shows, as from 2003, over 20 million people in Brazil moved from the lower to the middle and upper classes, which now represent more than 60 percent of Brazilian population, almost 120 million people with improved purchasing power.

Figure 2: Evolution of social classes in Brazil, 1992-2009 (%)



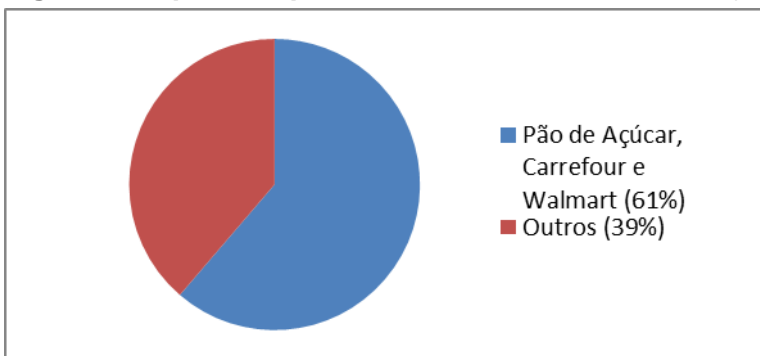
Source: Neri (2010).

The leading firms' response to the rise of the new middle class has been to engage in a strong movement of fusions and acquisition in addition to investments in the opening of new stores. They also invested in internet sales and there was a strong movement to expand into the non-food sector, particularly electro-domestic products. Increased income, reinforced by new credit facilities, means large sections of the population are now able to spend more of their income on both food

and non-food items. While Walmart has traditionally operated with non-food items, Carrefour and Pão-de-Açúcar have until recently limited themselves to personal hygiene products. Pão-de-Açúcar has been the most aggressive in the adoption of this new strategy, acquiring Casa Bahia and Ponto Frio, the principal retail chains for electro-domestic products. Nevertheless, Carrefour has invested over \$30 million in building a website for electronic sales and similar products.

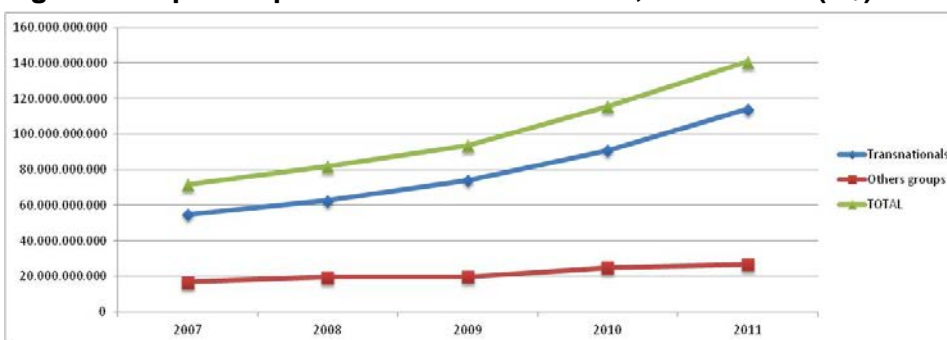
The Brazilian Association of Supermarkets provides a ranking of retail that clearly demonstrates the leading role of the three largest firms – Walmart and Carrefour, wholly transnational, and Pão-de-Açúcar in a 50/50 partnership with Cassino, which took over management in 2012. Fourth place is now occupied by the Chilean Ceconsud, which, although a long way behind the three leaders, has adopted an aggressive acquisitions strategy. The remaining firms, with a local and regional focus, are dwarfed in terms of turnover. This picture, therefore, very much supports the Reardon analysis. In numbers, the top 500 supermarkets in Brazil had a total income close to \$100 billion in 2011, of which 61 percent corresponds to the three major transnationals Pão-de-Açúcar (Cassino), Carrefour and Walmart. Figure 4 shows clearly the change in market share over the past five years when sales of the three leaders grew much faster than the remaining top 20 supermarkets in Brazil.

Figure 3: Top 500 supermarkets market share, 2011 (%)



Source: ABRAS (2012).

Figure 4: Top 20 supermarket sales evolution, 20007-2011 (R\$)



Source: ABRAS (2012).

On the other hand, local and regional supermarkets have tended to be situated in popular districts and, therefore, have been the first to benefit from this broadening of the market. This favourable position has led some smaller firms to adopt more ambitious strategies, investing in middle-class districts in more direct competition with the three leaders.

In the fruit, vegetable and horticulture sector, the three leaders have adopted new quality standards along the lines indicated by Reardon and colleagues. On the basis of our research, it would be more accurate to say this quality benchmark was created by one of the leading firms to

which the other two have adapted via imitation. The consumer reference for fruits and vegetables would seem to remain the A and B classes. Differently from other major capitals, the leading retail firms in Rio still depend very much on the public Centrais de Abastecimento de Campinas S.A (CEASA) wholesale structure set up in the 1970s as part of a national initiative by the federal government to create a modern distribution network.

The fresh food quality standards of the three leaders each have their particularities. Their basic thrust, however, is very similar, and increasingly closer to international food quality standards such as GlobalGAP, including issues such as traceability, food safety, good agricultural practices, workers' rights and quality compliance.

The adoption of new quality and logistical standards has been associated with a decrease in the number of suppliers, here understood as either wholesalers or producers. This would appear also to be the case in Rio de Janeiro, with a reported halving of suppliers by one of the three leading firms interviewed in 2010, which reported that,

'In 2001 we had 1,100 registered suppliers. Now this number has been reduced to 600. Since 2002/03, we have established a number of objectives in our fresh product quality standard programme, such as buying directly from producers, inspecting production methods, stimulating the use of technology improving packaging and training workers. Some producers thought this involved too much work and decided not to supply supermarkets anymore, directing their products to less demanding markets. Other saw the benefits of the improved routines such as lower losses, training and quality improvement and joined the quality standards.'

Another important change promoted by quality standards programmes is that they provided conditions for the supermarket to access producers more directly than they did 10 years ago. The person responsible for the quality standards for fresh food in one of the three leading firms stated,

'When we started to implement new standards, about 80 percent of the fresh food was bought through wholesalers and only 20 percent directly from the producers. Today, this relation is the reverse and we buy 80 percent of the fresh food directly from producers.'

This clearly demonstrates that commercial relations between supermarkets and farmers are now much closer than they used to be.

Even though the number of fresh food suppliers has been reduced to almost a half in the past 10 years, product demand has increased and must be met somehow. Since producers have come to be directly accessed by supermarkets, they need to increase their product availability very quickly. This has led them to outsource a significant part of their production to smaller local farmers. They then centralize the whole supply to supermarkets and increasingly play the role of intermediaries as well as producers. An agronomist who gives technical support to producers who want to adopt supermarket quality standard programmes states that,

'Nowadays, for every producer accredited to our Quality Standards, there is an average of 12 smaller farmers who are actually part of the supply chain as outsourced producers for these bigger farmers. There is a case of one supplier who integrates the production of almost 800 smaller farmers. He practically plays the role of a wholesaler.'

This situation creates a new dynamic to the organization of farmers in the supply chain involving processes of social and economic upgrading/downgrading that are addressed more fully in the next section, which discusses the dynamic of producer organization more extensively. As regards the impact of new quality standards on producers from the supermarket perspective, another supermarket employee says that,

'The company doesn't make any distinction between small, big or medium producers when selecting its suppliers, but traceability and the meeting of quality standards means acquiring competences and new working methods that are understood by the producers to involve two components. The first relates to the need for investments in order to meet standards, and the second is related to the effort needed to increase skills. Many producers reported that these two conditions are not sufficiently compensated to justify maintaining the commercial relationship. These aspects, combined with deductions and losses for non-compliance, generate a selection process which in practice tends to hinder the continuity of the smaller producers as suppliers to the supermarkets.'

Our research suggests, therefore, that the quality standards adopted by transnational supermarkets in the Brazilian internal market have increased contractual relationships and imposed on producers a choice of whether or not to continue supplying supermarkets that require accreditation to quality programmes. This situation favours the permanence of large producers rather than small farmers in GVC/GPN supply chains, at least in terms of their formal participation.

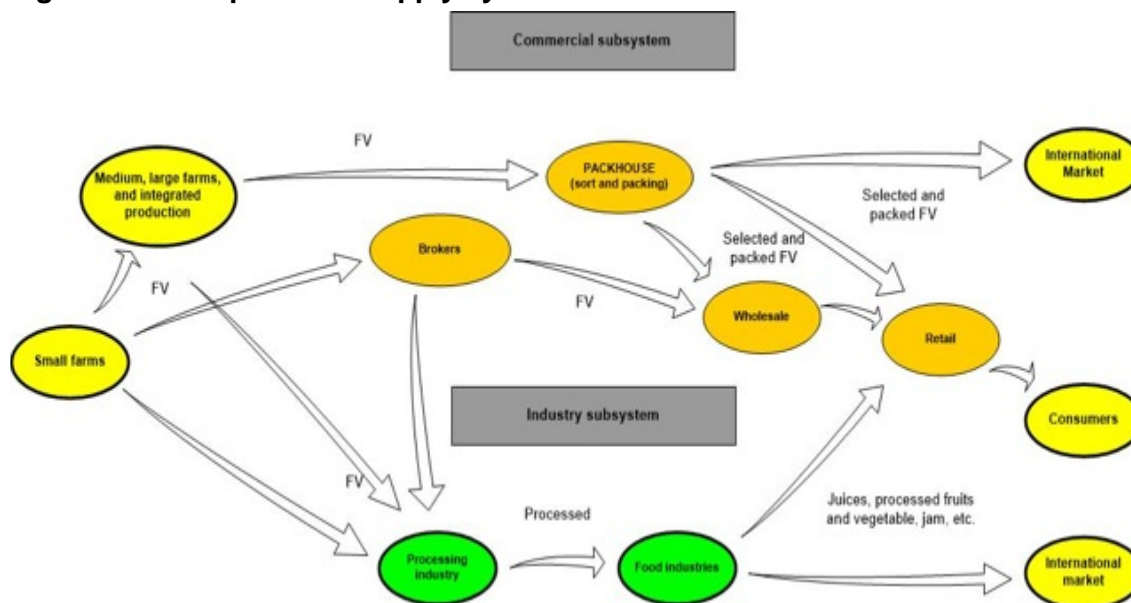
On the other hand, interviews with some wholesalers revealed that they in turn relied on many farmers whose participation would not be evident if we based our estimates only on the number of suppliers accredited by retail. This confirms our identification of informal outsourcing as one response to the demand for new standards. It may be, therefore, that we are witnessing here an outsourcing of responsibility for supplies rather than a drastic reduction in the overall number of suppliers. It is clear, though, that, from whatever angle we look at this question, the influence of GVCs/GPNs is much more pervasive than the establishment of formal commercial relationships between producers and transnational retail.

4.3. Producer organizations

Fresh food production in Brazil involves a wide variety of products influenced by factors such as diversity of climate, continental size, availability of natural resources and the research that allows cultivating fruits and vegetables in production areas previously unimaginable. From exotic fruits to those characteristic of temperate climates, flowers, ornamental plants and vegetables, a wide range of varieties can be found that represent opportunities to supply both domestic and international markets.

In a study prepared for the Brazilian Development Bank, to identify production and investment dynamics in the Brazilian fruit sector, Wilkinson (2009) elaborated the diagram shown in Figure 5, which represents the fresh fruit supply chain. Although initially focused only on the fruit segment, the structure below represents quite accurately the fresh products sector as a whole, which shares the same distribution system for fruits, vegetables and flowers.

Figure 5: Fresh products supply system in Brazil



Source: Wilkinson (2009).

Regarding GVC/GPN influences, producer forms of organization have evolved over the past decade integrating functions previously assigned separately between internal and external markets or to large and small retail and wholesale. As we have suggested, the fresh fruit and vegetable production system in Brazil is extremely complex, including diverse products, climates and regions. Of the various locations where we have carried out research, the region of Petrolina/Juazeiro was seen to be the most representative, since it combines a wide variety of products, commercial relations, destination markets and sizes of properties. The producers are distributed among irrigated perimeters called districts, which can be exemplified by the Nilo Coelho perimeter, which comprises over 22,000 hectares distributed between large commercial farms and small family producers, as shown in Table 3.

Table 3: Land distribution in the Nilo Coelho irrigated district

Producer type	No. of producers	Area (ha)	Average land size
Large commercial farms	43	5,647	131
Medium commercial farms	309	5,331	17
Small farms	1,936	11,590	6
Total	2,288	22,568	10

Source: <http://www.codevasf.gov.br/principal/perimetros-irrigados/polos-de-desenvolvimento-1>

On the basis of our research we have identified five basic categories of producers:

1. Small individual producers whose product is usually restricted to local and regional markets, without the quality standards demanded by GVCs. Control of pesticide residues and quality is variable and usually determined by individual buyers. These producers rarely have access to international market or supply directly to retail. Labour is generally undertaken by family or informal workers, and production is sold through middlemen, who buy at the farm-gate or from large farmers who outsource part of their production.
2. Small producers organized in cooperatives and associations with access to the domestic market through small retailers and distributors for major centres and local markets. Access to the international market is restricted to cases of fruit production with higher added value. There is a greater concern with quality in line with standards demanded by buyers or with the object of obtaining certifications corresponding to the standards of the GVCs. These

producers use both formal and informal labour and production is usually sold to wholesalers and retailers. There is generally control over residue levels and the adoption of a higher level of technology associated with information exchanges between producers. The main source of funding is still the government, but there is also funding associated with infrastructure and certification through projects that promote regional development or cooperative actions. Despite the higher quality requirements involved, price is still the main coordination mechanism for these actors.

3. Small producers integrated into large processing industries or large-scale producers that represent their main buyer. They adopt higher quality standards and use both formal and informal workers.
4. Small and large producers organized in cooperatives to supply the international market with high quality standards such as GlobalGAP and high levels of production. This kind of cooperative has lately developed a strong presence in the domestic market by supplying to wholesalers and retailers, including large retailers. Workers tend to be highly trained and intensive labour formal and informal is employed.
5. Large individual producers whose main focus is on the international market, using modern production technologies. Quality standards are well defined, there are clear market rules and certification is often required. There is strict control of residue levels and use of technology in order to seek higher yields. They draw on credit and also supply credit to farmers. In addition to using their own capital they resort to regional development banks (such as the Bank of the Northeast), traditional banking sources or international buyers. The supply chain is governed through contracts with well-defined quality standards. Despite being subject to pricing by selling on consignment, these producers generally obtain better incomes from production owing to the range of available alternative markets. They employ formal workers that can be temporary or permanent. Nevertheless, they may integrate smaller producers providing technology, financial support or supplies. As in the case of the large cooperatives, large individual producers have access to less demanding buyers where they can offload lower-quality products.

As we mentioned above, over the past 10 years, producers all over Brazil have had to adapt their processes to comply with supermarket demand. This has led to a drastic reduction in the number of supermarket-accredited suppliers and to a more direct relationship between supermarkets and producers, even though this adds no extra value added to their products. During this same period, fresh fruit exporters experienced a similar situation. When the new European law on food safety was enforced in 2003, implementing traceability and leading to the adoption of private quality standard certifications, particularly what was at that time called EurepGAP, producers in Brazil had to decide whether to invest to continue to supply European retail or to direct their production to less demanding markets. In both internal and export markets, therefore, increases in quality demands by supermarkets imposed the choice on producers as to whether or not to continue supplying the supermarkets. This is very much the same situation as that referred to by Ponte and Ewert (2009), when they comment that 'reaching a better deal' involves a careful assessment of the balance between rewards and risks.

However, in both exports and production for the domestic market, producers who chose to invest reported increases in the efficiency of production processes, either by adapting to international standards such as GlobalGAP or by complying with local large retail quality standard programmes. In spite of the higher costs and investments necessary to meet food security standards, acquire better production techniques and train workers, producers reported gains that were mainly related

to product selection, allowing them to reduce losses and therefore obtain better overall sales. As one producer stated,

'Besides the investments needed to adjust production to new quality standards, we are now having fewer losses and therefore fewer deductions in our payments because of better product quality, which compensates for the hard work. Initially, there was resistance to the changes we were being asked to adopt but these changes improved our quality. The reduction of losses and a clearer relationship compensates the investment.'

Producers originally oriented to export markets now have a strong participation in domestic market supply, and producers who before had big losses owing to deductions regarding lack of quality when supplying supermarkets now use modern product classification methods directing sales according to distribution channels with different quality demands. Since deductions owing to product defects have been reduced, producers can sell the products once lost to less demanding markets. In this way, the influence of GVCs/GPNs on producer organization can be seen to represent an economic upgrading.

As a result of compliance with national supermarket demands, therefore, the conditions of producers accredited to retail quality demands have presented an overall improvement. This conclusion is consistent with the findings of a World Bank/Public Commission for the Development of the São Francisco Valley report, which concludes that municipalities with irrigated perimeters are in a better position than adjacent municipalities with no perimeters. Gross domestic product growth, poverty levels and Human Development Index education indicators in the former were 6.43 percent per year, 36.7 percent and 0.802, respectively, as against 2.53 percent, 44.6 percent and 0.734 in non-irrigated municipalities (Wilkinson, 2009).

5. Results of field investigation in Petrolina

In the previous section, we analysed how GVC influences developed in Brazil, regarding domestic and export markets, and assessed their influence on producer organization through interviews with supermarkets, wholesalers and large producers. In this section, we present the results of detailed research carried out in the Petrolina/Juazeiro pole, where we interviewed large, medium and small producers, producer cooperatives, rural workers, unions and local government organizations, with a view to gaining an understanding of up and downgrading processes as a result of GVC influence.

Our field research indicated there was considerable economic upgrading related to local production in Petrolina/Juazeiro, particularly as a result of the dynamism of the domestic market. We also identified an important process of social upgrading related to union bargaining power, to social protection and to concrete improvements in living and working conditions, such as more continuous work throughout the year, transport, toilets and child care. It is important to note that social upgrading also depends on factors related to the political conjuncture that strengthens the hands of the union and to the initiatives of the local government complementing income. Even though there are significant advances, social downgrading associated with difficult working conditions and gender were also identified. The next sections are dedicated to discussing the dynamics associated with social and economic up/downgrading.

5.1. Economic upgrading as a result of the dynamism of the domestic market

Traditionally, GVC influence on local production organization comes from export markets, but in the past decade the Brazilian domestic market has grown in size and organization and

transnational supermarkets, aware of this opportunity, have responded through mergers and acquisition, seizing over 60 percent of the retail market in Brazil.

One of the consequences of Brazilian domestic market development addressed in Section 4.2 was the increase of family spending on food, and particularly fresh fruits and vegetables. This development has been modifying the dynamic of fruit production in the Petrolina/Juazeiro region, particularly over the past five years. As Table 4 shows, the volume of grapes exported² from the São Francisco Valley (SFV)³ reached a peak of over 80,000 tons in 2008, representing 32 percent of the valley's production. In 2012, the situation was very different: only 19 percent of the grapes were exported, representing only 52,000 tons. On the other hand, the domestic market that absorbed 171,000 tons in 2008 increased its volume to 218,000 in 2012, representing a 27 percent growth. Furthermore, this growth was represented primarily by the top-end of the domestic market, with the three big supermarket chains representing the main clients. Farmers who traditionally focused mainly on fruit exports to Europe and the US, therefore, currently devote an increasing part of their production to domestic sales.

Table 4: São Francisco Valley's grapes market destination, 2002-2012 (tons)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
SFV production	176,206	180,601	229,408	252,150	262,902	280,054	253,848	243,848	268,196	269,377	270,000
Export	25,913	36,933	28,385	50,968	62,110	78,824	81,595	54,476	60,774	59,339	51,964
	15%	20%	12%	20%	24%	28%	32%	22%	23%	22%	19%
Domestic market	150,293	143,668	201,023	201,182	200,792	201,230	171,983	189,372	207,422	210,038	218,036
	85%	80%	88%	80%	76%	72%	68%	78%	77%	78%	81%

Source: <http://www.ibge.gov.br/home/estatistica/economia/pam/2012/default.shtm> and <http://www.alicewebmercopolis.mdic.gov.br/>

Table 5: Brazilian grape exports, 2002-2012

Year	US\$ FOB/kg	Volume (kg)	
		Brazil	SFV
2012	2.34	52,015,627	51,964,616
2011	2.29	59,391,482	59,339,162
2010	2.25	60,805,185	60,774,858
2009	2.03	54,559,684	54,476,276
2008	2.08	82,242,151	81,595,028
2007	2.15	79,081,307	78,824,793
2006	1.90	62,296,720	62,110,751
2005	2.09	51,219,094	50,968,971
2004	1.83	28,851,531	28,385,718
2003	1.59	37,650,488	36,933,818
2002	1.28	26,398,481	25,913,961

Source: <http://www.alicewebmercopolis.mdic.gov.br/>

To support the argument that the growth in production and job opportunities is now driven mostly by the high-end domestic market, two points should be borne in mind. First of all, even though there are two export windows for grapes (one in May/June and the other in October/November), an average of 90 percent of yearly exports occur in the second semester, owing to better international

² As noted in Table 5, 99 percent of the grapes exported from Brazil are grown in São Francisco Valley.

³ The São Francisco Valley production comes mainly from the municipalities of Petrolina and Juazeiro; however, four other neighbouring municipalities contribute to Valley production: Lagoa Grande – PE, Santa Maria da Boa Vista – PE, Curaçá – BA and Casa Nova – BA.

prices.⁴ The second point is that the increasing demand of the domestic supermarkets in terms of both volume and quality associated with prices equivalent to exports have made the domestic market equally interesting to producers.⁵

In order to illustrate how producers are reacting to these changes, we mention examples of three different producer groups interviewed in our field research. The first one is COANA, a small producer cooperative cultivating 250 ha of grapes. Until 2009, it used to concentrate 95 percent of its sales to export markets (one-third to the US, one-third to Great Britain and one-third to Continental Europe), but in 2011 25 percent was destined for the domestic market, after refusing orders from foreign buyers. In addition, there were plans to increase this percentage for the next cropping season. The second example is Copexvale, a medium-size cooperative, which stated that 35 percent of its sales were sold on the domestic market and that in 2013 this share was planned to increase by up to 50 percent. The third example is Timbaúba Farm, the biggest individual producer in the region, with over 450 ha cultivated with grapes and an even larger area cultivated with mangos. Although it did not provide information on the domestic/export sales proportion, it stated that, as from 2010, it began to produce two crops a year to meet domestic market demand.

Producers claim the domestic market is becoming increasingly more interesting for several reasons. First, 'ex-works' sale prices in the domestic market are equivalent to those received from exported products, with the additional advantages that prices are fixed and payment terms are shorter so financial expenses are lower. Usually, fruits are exported from Brazil under consignment, so sales balance and payments are made up to 30 days after the sales are completed in destination. In practice, this means export prices vary according to demand and farmers receive the final payments up to 75 days after the crop has been dispatched. This is such an important change that leading supermarkets in Europe are attempting to establish direct contact with producers, tending to eliminate local brokers and sometimes even the European importer.

As for quality standards, GlobalGAP has become the dominant quality and traceability standard to export products, and its adoption represents an increase in control costs and no significant crop management advantages in relation to those obtained through the implementation of the Fruit Integrated Production (PIF). On the other hand, transnational supermarkets in Brazil have implemented quality systems on a very similar basis to GlobalGAP, but they do not require a third

⁴ An important point mentioned by producers is that the practice of two crops a year was broadly used in the São Francisco Valley broadly from 2008. Although Selwyn (2007) argues that there are two harvests per year, justified by windows export in May/June and November/December, our study shows that, since 2002, on average 90 percent of annual exports have been made in the second half of the year. Therefore, the practice of two crops per year was supported only by the buying interest of national supermarkets backed by consistent quality programmes able to recognize the value and pay for quality products.

⁵ The first year in which the São Francisco Valley completely dominated Brazilian grapes exports was 2002. In this year, its grape production reached 176,000 tons and export volume exceeded 25,000 tons and, from this moment on, it represented 98 percent of fresh grapes exported by Brazil. In the following 10 years, however, there were significant differences between the evolution of produced volumes and exported quantities. On the one hand, grapes production grew 53 percent between 2002 and 2012. Despite some distinct variations caused by the 2008 crisis, production of grapes in the Valley increased consistently from 176,000 tons in 2002 to 270,000 tons in 2012. On the other hand, exports also saw impressive growth, of 100 percent, from 26,000 tons in 2002 to 52,000 tons in 2012. However, the different path of export performance is evident as we look into how much it represents in the total grape production in the Valley. In 2002, exports accounted for 15 percent of total production. This share reached a peak of 32 percent (81,000 tons) in 2008 and declined steadily to 19 percent of total production in 2012. Regarding prices, it is worth noting that the FOB price per kg paid by exports increased from \$1.28 in 2002 to \$2.34 in 2012. This increase has been continuous over the past 10 years and reflects increases in product quality owing to the improvement of production techniques and crop varieties (see Table 5). The price decline in 2006 was the result of harsh weather conditions that were especially severe in the region that year.

part certification, since inspection is carried out directly by supermarkets. The immediate consequence is a lower crop production cost for fruits sold in the domestic market, since crop handling demands less operation control, resulting in lower labour costs. This also means less workers per hectare are needed to supply the domestic market.

The main consequence of the new market dynamic is that the development of the domestic market enables two crops per year, while export market producers could access international markets only during the October/November window. In these situations, farmers need a larger overall number of workers, and temporary contracts last longer than when selling only to export markets. In grape production, for example, the export window is in October and November. Producers focused only on export markets employ an average of four or five workers per hectare, with 80 percent of the workers on temporary contracts lasting three to six months per year. On the other hand, the domestic market window is in June and July, so producers who sell to both domestic and export markets employ an average of three to five workers per hectare, but up to 30 percent of the workers are on a fixed basis and those who are on temporary contracts work from six to nine months per year, implying more job positions that also last longer than previously. Therefore, both producer sales and job placements increase and are better distributed along the year.

5.2. Producers' economic upgrading and downgrading

According to Selwyn (2007), producers in the São Francisco Valley have transformed the production process, making it increasingly scientific, and have formulated and implemented a product and process upgrading strategy along a number of fronts, in response to external GVC influence on producers. However, these improvements have been mostly restricted to export farms or, on a much smaller scale, to high-end domestic market suppliers and represented 20-30 percent of production. Smallholders have not had access to the upgrading, mostly because they have been unable to invest in high-quality production that requires agronomists, soil analysis, fertilizers and high-skilled labour. This situation has not changed much, although some small producers have been able to organize themselves in producer associations or cooperatives.

5.2.1. Commercial farms and small producers organized in cooperatives

An important result of the change in market dynamics that has impacted equally on exports and on domestic markets has been the approximation of producers directly with supermarkets. Transnational retail operating in the Brazilian domestic market has adopted a policy of direct purchases in the wake of implementing quality programmes. This practice has shortened the supply chain and tended to push out the middleman, increasing farmers' negotiating power. In response, supermarkets in importing countries have also begun to make direct contact with producers to ensure supplies to the international markets, given this new competition from the Brazilian domestic market.

Traditional brokers such as BGMB and VDS, for their part, became very much exposed by these changes in the coordination of the supply chain as producers began to form cooperatives to access markets independently of the middlemen. European supermarkets, which had traditionally operated with specialized importer firms for their fruit supplies, now began to contact producers directly. Asda, which previously bought from the traditional importer International Producers (IP), and Tesco, which promoted direct sales through its site, are cases in point

The advantage to the producer of dealing directly with the supermarkets is that market relations become more transparent, whereas the importers operate on a commission basis and the results are not known in advance. On the other hand, the new quality requirements – brix, defects and

size – become increasingly demanding, since the supermarkets are unable to pass on lower-quality products to street markets or small-scale retail.

In relation to the domestic markets, the opportunity of supplying Brazilian supermarkets shortens the supply chains, which allows for greater shelf-life, less product loss, lower risks and quicker payments. In addition, as mentioned earlier, orientation to the domestic market allows most farmers to produce two harvests a year, supplying products with the same quality and prices as the international market.

In this respect, insertion into GVCs is currently leading to economic upgrading for those able to achieve the quality levels demanded.

5.2.2. *Smallholders*

Most small smallholders are excluded from the GVC whether for domestic or export markets owing to high quality standards and certification systems such as GlobalGAP. The only possibilities for small producers to access foreign markets are through cooperatives or integration with large commercial farms, in which case quality standards extend along the entire production chain and small farmers benefit from economic upgrading. Cooperatives can be a solution for accessing the domestic market in conditions that permit economic upgrading, even though they are rare in the cases studied. For the most part, family farmers face a critical situation, since they are entirely in the hands of local middlemen and experience clear tendencies towards downgrading. Some of these small producers supply GVC domestic markets by selling to large commercial farms that appropriate most of the profit, which can also be interpreted as a form of economic downgrading.

5.3. Social and economic up and downgrading

5.3.1. *Working conditions*

The two main crops in the region are mangos and grapes. In the case of mangos, the average labour demand is one worker for every 2 hectares, overwhelmingly male and supplemented by temporary labour at harvest time. Grapes, on the other hand, require 3.5 workers per hectare, 70 percent of whom are women, since the harvest process is considered to be more selective and delicate, mostly on a temporary basis.

On this basis and taking into account the total area planted in the region, some 65,000 workers are employed in the region, over 50 percent of whom are women, and some 60 percent (of both sexes) are temporary.

Working conditions are quite hard, principally in the case of grapes, which is the biggest employer of women. The organization of trellises in a 'Y' layout, which provides a more comfortable environment for working, has not been adopted in the São Francisco Valley. The dominant method is for trellises arranged in a straight line some 2 metres above the soil, which means the workers' arms must be permanently stretched upwards. If we add to this the very hot weather that prevails for most of the year, the difficulty of this work can be readily appreciated. The women balance themselves on the raised soil between the trees to reach the branches, which leads to frequent accidents. On our visit, we observed that a large number of the women were pregnant, which makes their situation even more risky.

The fact that women are in greater demand because they are seen to be more efficient for work that requires greater care represents an economic upgrading for them in terms of employment

opportunities. On the other hand, the fact that work is overwhelmingly temporary and carried out in the difficult conditions indicated above can be considered a form of social downgrading.

Productivity is rarely rewarded, and once the workers have achieved their target they sit down and wait for the end of the shift. Although the demand for specific skills is on the increase, specialized training is not supplied and has to be acquired 'on the job'.

5.3.2. Trade union activity

Workers in Petrolina and Juazeiro are able to count on well-organized trade unions that are active in the defence of workers' conditions and have ready access to production sites. Union involvement has increased since the 1990s and is able to draw on the support of the Federation of State Trade Unions such as the FETAPE, together with the permanent support of the Ministry of Labour. These forms of support have become more systematic since the Workers' Party assumed the federal presidency in 2003.

The terms of employment in the sector follow the collective agreements negotiated annually and show progressive gains over the years. There are labour agreements in each of the municipalities covering minimum wages, hours worked, working conditions and safety equipment, among other issues – which point to a considerable process of social upgrading in relation to workers' rights and social protection. The agreement signed for 2012/13 includes the following:

- Minimum wage for horticulture workers 5 percent above the national minimum wage;
- Additional 50 percent for extra hour and 25 percent for night shifts;
- Prohibition of hiring employees through contractors;
- Guaranteed continuation of the working contract in case of accident.

There are important improvements in working conditions. such as:

- Shelters to protect from sun and rain close to production sites;
- Proper places to heat and eat meals, cold edible water and toilets close to production sites;
- First aid kits in case of accidents;
- Accident insurance.

Also women have the right to:

- Child day care when the farm has over 20 female employees;
- Time for breastfeeding during the workday.

The length of the working day is respected and the union's negotiations cover special work regimes such as workers who pack grapes at harvest time and have a 12-hour shift with 36 hours rest.

The relationship between Unions and employers is in general very positive, with only moderate conflicts usually concentrated around the negotiation period of the category in question.

The unions are, however, very weak when it comes to family farming. Labour legislation here is little respected, which limits access to social protection services. The use of regulation clothing is rare, and working hours are generally not adhered to. Although the family farming sector belongs to the same union as that of rural workers, it is not subject to effective union supervision, and

family farm labourers may therefore experience social downgrading. In practice, the union's activity is restricted to farms with at least 10 workers, which cover a large part of production in this region.

Labour unions in the region are much better organized than employer unions, which may partly be a consequence of the broader political context in which the Workers' Party has headed not only the federal government since 2003 but also a significant number of state and municipal governments.

5.4. Social upgrading and political embeddedness

In addition to the importance of the federal government's public policies in favour of family farming and workers' organizations, policies at state and municipal levels have also been important in promoting social upgrading.

A range of social gains originating in the actions of local government has significantly improved the quality of working conditions. Rural workers can now count on a bus service linking urban centres to rural production areas, which means workers no longer need to arrange makeshift sleeping arrangements close to farms. Women, who make up the majority of the labour force, particularly in the case of grape production, now have crèches close to their homes.

The conditions of temporary labour, which is the dominant reality for the majority of women workers, who make up 70 percent of the labour force for grape production, but also includes male workers involved in the mango harvest, have been improved with the introduction of the social protection law, 'Straw Hat'. This law provides four months unemployment benefit in addition to other forms of support for workers with temporary harvest contracts.

Our analysis of GVCs in the São Francisco Valley provides considerable evidence of processes of social upgrading. At the same time, key components of social upgrading have depended on the way these GVCs are embedded in broader institutional arrangements, showing the relevance of the approximation of GVC analysis to that of GPN, which more explicitly addresses the insertion of GVCs within local/regional/national regulatory and governance structures.

	Small-scale, family farmer-based	Low-skilled, labour-intensive	Medium-skilled, mixed production technologies
Economic upgrading/downgrading	(+/-) Producers are influenced by GPN standards	(+) Qualified products for the domestic and export markets	(+) A process of buyer-oriented upgrading
	(-) Producers suffer competition in a market they previously controlled unopposed	(+/-) High level of dependence on international markets creates opportunities for the development of new markets	(+) Integrated production and control in final production, key inputs, even in finance, logistics, product development
	(+/-) High dependence on intermediaries who can support or exploit	(-) High level of dependence on international standards even for the domestic market	(-) High level of dependence on international standards even for the domestic market
	(-) Difficulty meeting standards, hence exclusion from GPNs	(-) Large investments for each harvest	(+) Stronger forward and backward linkages
	(-) Often low value capture within chain	(-) Vulnerability to buyers' purchasing decisions	(+) Higher value added
	(+) Policies in support of production	(+) Agents who help gain new markets	(+) Qualified products for the domestic and export markets
	(+) Movements promote the creation of associations and benefit from organizational techniques	(-) Great logistical costs	(+/-) High level of dependence on international markets creates opportunities for the development of new markets
	(+) New markets explored exclusively by producers such as the PAA and PNAE (public policies)	(+) Strengthened movements to the creation of associations	(+) Strong influence on the definition of standards for the domestic market
Social upgrading/downgrading	(+) High quantity of jobs, especially for female workers (package)	(+) High quantity of jobs, especially for female workers (package)	(+) Layers of skills and jobs down the supply chain make it possible to retain core skills and outsource others to peripheral workers
	(-) Likelihood of unpaid family labour, including child labour	(+) Better job conditions	(+) Relatively higher wages than assembly jobs
	(-) Lack of contracts or security	(+) Increased job contracts and security	(+) Relatively high job security in vertically integrated firms
	(-) Long or insecure working hours and poor conditions	(+) Better wages	(+) Fair quantity of jobs
	(+) Social protection and rights	(+) Social protection and rights	(+) Pressure from the market to use individual protection equipment (EPI)
	(+) Pressure from the market to use individual protection equipment (EPI)	(+) Pressure from the market to use individual protection equipment (EPI)	(+) Strong union fighting for workers' rights
	(+) Strong union fighting for workers' rights	(+) Strong union fighting for workers' rights	(+) Strong union fighting for workers' rights

6. Conclusions

Reardon and colleagues imposed an important shift in research concerns by insisting on the centrality of transformations in the domestic market consequent on the transnationalization of large-scale, largely European and North American, retail. This was complemented by research on the importance of regional integration, the North American Free Trade Agreement for Mexico and Central America and the Conesur countries in the case of Mercosur. Studies by Belik (2004) and Belik and Santos (2004) in particular pointed to the emergence of regional supply systems by the leading retail firms. Reardon and colleagues' basic analysis emphasized the pervasive impact of modern retail extending beyond the global, metropolitan, middle classes to broader sections and regions of the population, the development of proprietary supply chains based on new quality and logistical standards and tendencies towards a squeezing-out of farmers unable or unwilling to make the grade. This framework of analysis was extensively developed for the Brazilian case by Mainville and Reardon (2007), for Chile by Dirven and Faiguenbaum (2003) and for Argentina by Ghezán and colleagues (2002). Humphrey (2007) and Farina (2002) in different contexts have questioned the extent to which transnational retail has imposed an entirely new logic on agrifood supply chains and have called attention to the resistance and capacity for re-adaptation of small and medium actors.

Van der Grijp et al. (2005) for Brazil, Bendini and Steimbregger (2007) for Argentina and Trpin (2008), also for Argentina, have focused on the impacts of modern retail and the new dynamic of export and domestic markets on farmer organization and labour relations, a central theme also of the research carried out by Selwyn (2007) on Brazil. In the Brazilian case, much of this research has focused on the irrigated perimeters in the north-eastern states, which were also the subject of research by the authors of this article. Before discussing responses in the primary sector, we presented an analysis of recent developments in the fruit and vegetable markets and in the retail sector, which qualify in important respects the dominant analysis presented by Reardon and colleagues.

Reworking municipal and federal data, we calculated the total value of the sector (\$17.3 billion in 2009) based on farm-gate prices, and analysed product composition, which showed an enormous concentration on a limited number of crop products. In addition, our calculations pointed to a sharp discrepancy between the evolution of value, which more than doubled from 2003 to 2009, and volume, which increased by only 20 percent in the same period. This substantial increase in prices may be related to a repositioning of the sector as a result of the adoption of new food standards. On the other hand, the slow growth in volume is consistent with the change in demand composition in the same period, which saw the entry of the 'new middle class' as a key consumer for whom the transition to animal protein and processed food was the dominant tendency. International trade, both exports and imports in broadly equal volumes and prices but involving different markets, sharply increased in this period, but represent only some 5-6 percent of total sector value.

Our data confirm the marked concentration in the retail sector, with the three leaders, all transnationals (Cassino now asserting its previously dormant control over Pão-de-Açúcar), responsible for over 60 percent of sales and growing much faster than the average for the sector. On the other hand, the emergence of a new lower middle class, as 29 million have distanced themselves from the poverty line, has changed the pattern of consumer demand in significant respects. The three leaders have moved aggressively into electrical and electronic goods to capture the availability of the non-food consumer income of the new lower-middle class. On the other hand, regional and local retail seems better positioned to capture the increased food

purchasing capacity of this sector, since this has focused on well-established processed foods rather than fresh foods and, in addition, these firms tend to be located in these lower-middle class districts. This new shift in the consumer profile is, therefore, likely to strengthen the position of small and medium, local or regional firms, to whose resilience other researchers have already drawn attention (Farina 2002; Humphrey 2007).

Our research into the impact of retail concentration/transnationalization and standards confirms earlier studies on the shift to direct producer supplies and also the sharp reduction in accredited suppliers. On the other hand, we identified a pervasive resort to informal outsourcing on the part of these accredited suppliers, which both questions the effectiveness of standards implementation in practice and points to lower levels of exclusion from the modern supply chain, although the conditions of such inclusion are now clearly precarious.

In the fieldwork we undertook in some of the leading irrigated perimeters in the Brazilian northeast, which have now become key poles for both the export and the domestic markets, we were able to map the supply chains, which revealed how producer organizations have increasingly integrated functions previously allocated separately to domestic and export markets, or to retail and wholesale. In addition, we developed a typology of producers whose complexity highlighted the variety of ways in which farmers participate in the supply chain. Here again the imposition of standards both for exports and for the domestic markets has led to a sharp reduction in accredited suppliers. On the other hand, our farm-level interviews identified that, for those farmers who have adapted to the new standards, the most important and unexpected impacts on income have been the gains from the possibilities of directing different quality products to different markets combined with the sharp reduction in rejected products.

Our research identified important features of social upgrading in the case of rural workers integrated into GVCs. A certain level of economic upgrading is the natural consequence of extending the harvesting season. Social upgrading, on the other hand, has largely been the result of successful union negotiations, with unions' bargaining position certainly having benefited from the broader institutional support of Workers' Party governance at local, state and federal levels.

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