

AGRO-FOOD POLICIES AND PETTY COMMODITY PRODUCTION
IN BRAZIL: some implications of changes in the 1980s.

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ABSTRACT

The thesis discusses the changes in Brazilian rural social structures in the 1980s, and focuses on the conditions of adaptation of petty commodity producers to the dynamics of agro-industrial capital, underpinned by State policies.

Agro-food policies in the 1980s shifted from the collapsed subsidised rural credit incentive to price instruments of regulation, which appeared to be essentially interventionist and conflicting.

It is argued that these policy changes did not alter the historical trends of skewed growth, with a concentration of capitalised agriculture in the Centre-South and the poor and traditional Northeast lagging behind. Analysis, including the 1985 Agricultural Census, revealed the upsurge of *minifúndio* farms, and family and temporary labourers in the Northeast and North. It is argued that this resurgence of family labour in tiny *minifúndios* in poor regions and the restoration of precarious land tenures suggests more the effects of conjunctural economic crisis than a new process of structural change.

The analysis of technical changes in three commodity systems - soyabean, poultry and beans - pointed to the persistence of family labour and the consolidation of capitalised household producers. In the process of consolidation, the co-operatives emerged as a political force by gaining momentum from economic strength and their social basis constituted by capitalised household producers.

In the case of the poultry system, direct integration of petty commodity producers was a crucial factor contributing to

the overcoming of the economic crisis. Concentration of capital in this sector occurred with vertical integration and diversification in the processing segment of the system, without altering the small household structure of the farming segment. The relationship between agro-industrialists and petty commodity producers was essentially a relationship between kinds of capital, as opposed to the view that petty commodity producers are virtual household piece workers.

The case of the bean, long considered a traditional peasant crop, unveiled an internal social transformation, in spite of stagnant aggregate production and intractable technological shortcomings. A capitalised form of household production also emerged in the process of commoditisation, mostly relying on temporary wage labour, supplied by a labour market to which mostly *minifúndio* pluriactive farmers contributed.

The counterpart of these processes was the upsurge of expropriated family labourers, which constituted the most visible social basis for fuelling a renewed demand for agrarian reform, reviving in the 1980s an old and thorny issue.

In conclusion, agro-industrial capitals and State policies were determinant 'external' factors in the transformation of the labour process. However, this transformation was only partial, failing to overcome natural constraints, and generalising the industrial labour process.

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This thesis is about Brazilian petty commodity producers struggling for a place in the internationalised agro-food system. My interest in this subject arises from years of on-farm contact with family producers. However, the focus on internal organisation of family production, to address technological problems, appeared unsatisfactory. The farmers themselves were more interested in policy, and other matters which implied the understanding of external relations. To all these family producers, I am deeply indebted for how they taught and inspired me in the process of graduate research, which culminated in this thesis. The writing of this thesis was a secluded task, but its completion was not possible without many valuable contributions. My particular thanks go to Professor David Goodman, whose dedicated supervision, patience and encouragement, kept me going to achieve this work. I am indebted to Graziano da Silva, Ignez Paulilo, José Ely da Veiga and José Gasques, among many others who gave me their support and comments of extreme value at different moments of the research. My thanks to IAPAR and CNPq for their institutional and financial support. I also want to express my gratitude to Norah Gray for her patient help with my linguistic difficulties.

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INTRODUCTION

The 1980s in Brazil witnessed the vigorous reemergence of rural social movements as they attempted to come to grips with the 'industrialisation' of agriculture and its implications for small producers. Rural social movements have a long history, marked by innumerable struggles for land, better wages and working conditions (Medeiros, 1989). Growing pressures for agrarian reform were suppressed by the military regime from 1964, which dismantled peasant organisations, ushering in a period of passive resistance by rural social movements. In the 1980s, along with the intensification of land and labour conflicts, new forms of struggle emerged - the Landless Movements in the modernised South - revitalising rural social movements. Also, for the first time, masses of small farmers mobilised to fight for better prices for their products (Medeiros, 1989). An indication of this new element in rural social movements is illustrated by FASE, a non-governmental organisation (NGO), which states:

"Agricultural policy, as an emergent issue in rural social movement struggles, is becoming a strategic sector for those who work in rural areas" [FASE, 1990(44):4]

This recent interest in agro-food policies by NGOs and other supporters of social movements is a recognition of the relevance of production policy issues, long neglected in rural social struggles, and the growing political importance of capitalised forms of petty commodity producers or family farmers.

Attempts to explain the long neglect of agro-food policy issues include the reduction of the agrarian question to the *minifúndio-latifúndio* dichotomy, which privileges agrarian

policy, especially agrarian reform, "excluding a huge mass of technified small producers, all completely integrated with the agro-industrial system. For these producers (...) prices, costs, credit and productivity are crucial for their reproduction" (Delgado, 1990:6). Moreover, the polarised capitalist-proletarian analysis of agrarian social structure may also have contributed to this neglect, pushing agricultural policy issues into the camp of large capitalist farmers and agro-industrial capital and away from the petty commodity producers who, on this view, were all reduced to 'disguised labourers' or 'homeworkers'.

The growing interest of petty commodity producers in agro-food policy matters and in the search for their own identity is also revealed in their demand for (1) a differentiated policy concerning credit and subsidies; (2) a majority of seats in the recently created *Conselho Nacional de Política Agrícola* (National Agricultural Policy Council) and effective participation in the formulation of the *Lei Agrícola* (Farm Bill); and (3) the creation of the *Departamento Sindical de Estudos Sociais - DESER* (Union Department for Rural Studies), funded by rural unions and whose major task would be to organise studies of agricultural policies (FASE, 1990:49-51). All the issues discussed above created new perspectives for rural social movements in the 1980s, and emphasise the relevance of agro-food policy studies to the petty commodity producers.

Moreover, the 1980s was a decade of crisis, characterised by macroeconomic problems of inflation and external indebtedness, with a particularly severe recession in the first half of the decade. Macroeconomic issues, which dictated

the direction of agro-food policies, led to the reform of the rural credit system and a concomitant shift from credit subsidies to minimum price policy as the preferred instrument of intervention. Changes in agro-food policies also included more differentiated policies, such as preferential interest rates and credit availability for small farmers. Particular incentives were addressed to traditional small farmers' food crops such as beans, maize, manioc and rice. These measures were largely taken in response to the food shortages experienced in the late 1970s, which led to massive imports and prompted the incoming government to formulate the so-called 'priority' economic programme. According to Delgado (1989a:54-55), these changes did not represent a new strategy, replacing conservative modernisation as a model of growth, but rather were elements of the adjustment process to external debt servicing needs, a process which remained deeply reliant on State policies and public resources. This adjustment process, is discussed in Chapter II, including the changes in agro-food policies which followed the abolition of cheap credit and the switch to price policy tools to stimulate production, with special focus on possible effects of these changes on the conditions of reproduction of petty commodity producers.

Further evidence on the nature of these changing conditions can be derived from the analysis of the structure of production based on Agricultural Census data. Preliminary Agricultural Census data for 1985 revealed an increase both in the number of small farms or establishments (less than 10 hectares) and of rural labourers (occupied personnel) in the 1980-1985 period (IPEA/IPLAN, 1989). These unexpected rises

represent a reversal of the trends of the previous decade (1970-1980), and suggest a paradoxical result of the macroeconomic crisis referred to above. These considerations led us to develop another line of enquiry, that is, to investigate whether this resurgence of small farms represented the creation of new productive 'spaces' for petty commodity producers or was a result of the strategies of survival adopted by poor peasants in response to the macroeconomic crisis. This question will be explored in Chapter III by focusing on the changes in the structure of production, using special tabulation data for selected variables from the two recent Agricultural Censuses - 1980 and 1985.

The second general point which dominated the agrarian debate in the 1980s revolves around the 'industrialisation' process in agriculture. Agrarian debate, especially from the 1970s onwards, has been focused on changes resulting from the 'green revolution' technology-based 'conservative modernisation' policy. Before the 1980s, this policy centred on subsidised rural credit as the 'inducing' instrument, because of the difficulties encountered in trying to make the Brazilian rural structure conform to the key assumption of the induced innovation model of modernisation concerning the "*internal relative scarcity of factors*" (Santos, 1987).

The neo-classical approach to the question places petty commodity producers in a dualistic modern-traditional structure, with technical progress at the centre of the transformation. Nevertheless, some authors working within this theoretical framework of induced modernisation suggest the existence of external limits called the "self-control mechanism" which functions through the price system (Paiva,

1979:133,172).

'Industrialisation' of agriculture is also viewed as a process of formal subordination to agro-industrial/financial capital, with petty commodity producers becoming "new peasant - workers for capital" (Wanderley, 1979; Graziano da Silva, 1982). Tavares dos Santos (1978:128) admits that the difficulties of capital in transforming the rural labour process tend to *"re-affirm the viability of family labour force"*. For these authors, the ownership of land and other means of production has only formal significance as the extraction of surplus labour by industrial/financial/commercial capitals occurs in the circulation sphere.

A variant of these views posits that the profound transformation of agriculture has totally industrialised the rural labour process, transforming the rural structure into modernised bourgeois/petty bourgeois capitalist farms and a mass of producers who are anything but "homeworkers" (Muller, 1983:147). In this way, 'formal' subsumption becomes 'real' as there is a movement from the extraction of 'absolute surplus-value' towards 'relative surplus-value'. The transformation of the agricultural labour process by the use of industrial capital goods and modern inputs, and by the development of other production relations integrates agriculture into a whole 'complex', the "Agro-industrial Complex - CAI", which includes sectors supplying capital goods, commercial and financial services, and downstream processing industries. The dynamic of agro-food production is then determined by the expansion of agro-industrial capital, instead of being a dynamic dictated by internal social relations alone (Muller, 1983:146).

However, whilst recognising the centrality of agro-industry in setting the trends in agriculture, Goodman et al (1985, 1987) argue that transformation of agriculture by industrial capital is only partial, as it is unable to revolutionise the labour process completely and so achieve the real subsumption of labour, because of biological or natural constraints. As a result, the conditions of reproduction and change in rural structures hinge upon scientific and technical progress, which is dominated by industrial capital, and constantly confronts the peasant's knowledge and indigenous technology. Science and technology therefore become key elements in rural social changes. As Goodman et al (1987:153) put it:

"Technical progress in agriculture (...) becomes the condition of survival for rural producers, precisely because the rural production process is dominated by nature".

The "natural constraints" arguments against the 'real subsumption' thesis gain strength as they appear to hold in the cases of internationalised high technology production systems. This is why soyabean and poultry systems have been chosen for my case studies (Chapters IV and V). In Chapter IV, the discussion focuses upon changes in the rural social structure of soyabean production in the southern states of Rio Grande do Sul and Paraná. In Chapter V, the direct integration of petty commodity producers in the technologically-advanced poultry production system in Santa Catarina is examined. By contrast, Chapter VI, explores the case of black beans because of the recognised traditional character of the production process. Data from the survey carried out by IAPAR-EMATER/PR in 1986/87 are used to characterise the structure of bean

producers in Irati zone. The purpose of these cases-studies is to show how petty commodity producers adapt to the changing conditions of reproduction determined by technological innovation, the restructuring of agro-industrial capital and shifting State policies. It follows that the discussion will concentrate on technological progress, agro-industrial strategies and State policies as fundamental areas of investigation necessary to capture the nature of the transformations in rural production and social structures.

In Chapter I, the changing focus of debates on agrarian question, both in Brazil and at international level, is reviewed. In addition, the diversity of rural social structures produced by the 'green revolution' technology policy is discussed. The intention of this review is to locate the object of our analysis in the current agrarian debate.

The final section will review the main points discussed in this study, drawing some policy conclusions and implications for petty commodity producers.

CHAPTER I

STATE, TECHNOLOGY AND PETTY COMMODITY PRODUCTION1.1. State and Petty Commodity Production: a review of the contemporary debate.

The purpose of this section is to review recent reformulations of the agrarian question, and more particularly the place and conditions of the reproduction of petty commodity production. This purpose will be accomplished by examining separately different approaches found in postwar literature in Brazil, and at an international level, especially in Europe, America, and Africa.

In fact, petty commodity production is a term used to characterise a form of production, more commonly referred to as family farming or peasant production. It is a form characteristic or specific to capitalism, reproduced by commodity relations, when these are generalised in a social formation. It differs from the capitalist form by the specificity of the relationship between capital and labour, uniting them into a single individual or in a single household (Gibbon and Neocosmos, 1985; Bernstein, 1986,1988; Levin and Neocosmos, 1989).

1.1.1. The Brazilian debate

In Brazilian literature, this form of production is referred to as petty production, household production, peasant production, and other equally ambiguous designations. This ambiguity, however, is linked to the theoretical difficulty of placing this category of producers within the agrarian debate.

From transition to re-structuring, petty commodity producers have always been at the core of the agrarian question.

The agrarian debate in immediate postwar Brazil was enlivened by the "capitalism-feudalism" controversy, based on empirical evidence of the *minifúndio*-*latifúndio* rural structure. This issue dominated debates in the 1950s and 1960s, which became polarised with the trend led by Caio Prado Júnior, who dismissed any trace of feudalist or pre-capitalist characteristics of the agrarian structure and, on the other hand, the stronghold Marxian assertion that the *latifúndio* represented the remnants of a pre-capitalist mode of production, blocking the development of capitalist productive forces (Prado Júnior, 1979; Guimarães, 1964; Vinhas, 1972).

For Prado Júnior, it was the capitalist nature of the *latifúndio* that dominated the conditions of reproduction of internal and external *minifúndios*. In his view, the occurrence of 'pre-capitalist' labour relations such as *parceiro* and *morador*, do not characterise a "feudal" form of personal subjection of the labourer to the *latifúndio* landowner (Prado Júnior, 1979:10). Therefore, the strategy for agrarian change would not require any prior capitalist reform since *latifúndio* farms were not the main obstacle to the development of productive forces.

Guimarães (1964:197) in his earlier work, defended the pre-capitalist nature of the *minifúndio*-*latifúndio* relation. He referred to the development of extensive cattle ranching reinforcing and revitalising the decadent *latifúndio* system

"which, together with sugar, coffee and cocoa latifúndios, constitute the last resort of colonial and feudal survivals which strangle the development of Brazilian agriculture and economy".

The characterisation of the *latifúndio* as a 'non-capitalist', regressive force hampering capitalist development, is clear.

Vinhas (1972:210) adopts the same line and insists that the feudal or pre-capitalist character of the *latifúndio*-dominated agriculture would delay "capitalist penetration in the countryside" and therefore agro-industrial development. But, unlike Guimarães, Vinhas recognised the "*predominant capitalist relations of production, despite the pre-capitalist residues*".

In the 1970s, Oliveira (1976:9), followed by Sá Júnior (1976) and others, interpreted these "residues" not as something external and opposed, but articulated and reproduced by capitalism. The duality "modern-backward" was interpreted as merely formal, as the "*real process shows a symbioses and organic character, (...) in which the so-called 'modern' grows and is nurtured by the existence of the 'backward'*".

And this growth by the "elaboration of the peripheries" supplied large urban markets with low price foodstuffs and population contingents to constitute the labour reserve army, thus contributing to the process of accumulation in the cities (Oliveira, 1976:16). This extensive pattern of expansion in the frontier zones, reproducing the conditions of "primitive accumulation", would be functional to the capitalist industrial accumulation, and not a structural obstacle, as previously interpreted. The 'pre-capitalist' character of subsistence farming systems associated with the expansion of internal and external *minifúndio* is negated, by distinguishing "forms" from "modes" of production (Sá Júnior, 1976:129). This distinction was an important step forward in terms of the Brazilian debate, providing grounds to grasp the nettle of the

articulation of "modes" of production.

In sum, according to these articulationist views, petty commodity producers, identified as pre-capitalist forms of production are functional to capitalist expansion, and not an obstacle to industrial growth, the very centre of the dynamic of capital expansion. Within the same approach, Velho (1976:228), examining the Amazon frontier case, emphasised the authoritarian character of the reproduction of the peasantry. This view was further elaborated by Foweraker (1981:169-208) for whom the frontier variation of primitive accumulation was made possible by the creation of what he called a "sub-capitalist environment".

This articulationist view was criticised by Martins (1981:173-175), who focused on ground rent as a major obstacle to capital accumulation. He argued that it is not (household) labour, but that the land rent that is subsumed to capital. For Martins, the interests of large urban capitals in appropriating land rent conflicted with the interests of peasants in appropriating land for labour, which explains the recent violent struggles and land disputes, especially on the "pioneer" frontiers. The land rent it produces is appropriated by capitals in the sphere of circulation, and the peasant cultivator becomes a "nominal landowner". As the process of capitalist expansion advances, peasants become more dependent on bank credit, obtained by mortgaging land and other productive assets, and repaid in the form of rent (Martins, 1981:177). The reproduction of family-based farming is *"regulated by the necessity of renewal of the family labour force"*, or a dynamic moved by the "logic" of simple reproduction. From this analysis, he draws the functionalist view that

"low cost food (produced by the peasant) cheapens the reproduction of the industrial labour force, increasing the profit rates of large urban enterprises" (Martins, 1981:177).

In sum, for Martins, the "formal" subsumption of land to capital is the mechanism used to expropriate peasants' surplus, who are satisfied with simple reproduction.

Neo-classical approaches to the agrarian question work within the framework of a dualistic and evolutionist view of agriculture. Traditional, subsistence agriculture evolves towards specialised, modern agriculture, as the modernisation process, involving the diffusion of science based technologies and better educated farmers (human capital) improves land and labour productivity. Early diffusionist models, pioneered by Schultz (1964), saw the poverty and backwardness of rural areas as a lack of these two resources. Hayami and Ruttan (1970) later introduced their 'induced innovation model' based on the capacity of technological innovation to re-allocate traditional factors of production (land and labour) in the economy. The constraints of the inelastic factor supply of land and labour, for example, could be overcome by the development of high yielding varieties and mechanical tools, respectively (Ruttan and Hayami, 1984:59). This model was a response to the "efficient-but-poor" hypothesis raised by Schultz (1964), which recognised the economic rationality of peasants' behaviour *vis-à-vis* technological changes. Neo-Marxist criticism of the induced innovation approach, seen as a conventional resource allocation model, is based on its assumptions of conditions of perfect competition, along with the profit maximisation behaviour of producers, which are hardly appropriate for underdeveloped Third World countries

(Beckford, 1984:77). However, the importance of this model is its recognition of technological innovation as an explanatory factor of social change. Also, the basic assumptions of this model provided the foundations for the 'conservative modernisation' strategy adopted in Brazil, and justified domestic and international investment in research and technology, and institutional development. The creation of the EMBRAPA/EMBRATER (Brazilian agricultural research and extension organisations) system and IARCs (International Agricultural Research Centres), fits in this context.

In fact, the 'conservative modernisation' strategy embodies the neo-classical view that the productivity of traditional producers can be increased by developing and inducing the adoption of new industrialised agricultural technology, regardless of their size or conditions of access to resources, because of the assumption that technology is socially 'neutral' in character. On this assumption, both *latifúndio* and *minifúndio* producers can potentially benefit equally from technological innovation, transforming them into modern capitalised enterprises. The implication of this strategy is that agrarian reform is unnecessary on economic grounds, preserving the conservative alliances between the authoritarian military State, oligopolised agro-industry and *latifúndio* landlords.

In practice, however, the destruction of hundreds of thousands of resource-poor petty family farms dramatically revealed the selective nature of modernisation, and the scale of rural social restructuring it provoked.

The rapid social differentiation that followed was characterised firstly by 'purifying' the mixed labour

relations, represented by the *colonato* system on coffee *fazendas* or the Northeastern *latifúndio*-based *moradores*, and then by the process of land consolidation, resulting from adaptation to the new technological base of production (D'Incao e Melo, 1975; Brant, 1977; Castro et al, 1979). The violence of the process which drove millions of petty household farmers out of agriculture in the modernising region, concentrated in the Centre-South, transformed them into a temporary, landless *bóia-fria* labour force. Brant (1977) argued that this process led to the creation of a unified (rural and urban) labour market, marking the 'industrialisation' of agriculture. The particular stressed by D'Incao e Melo (1975:87-88) is that this surplus labour force was ready for "any kind of job", and the irregular casual nature of employment lowered the average wage, aggravating their misery. The corollary was the lowering of the variable costs of capitalised enterprises, with the *bóia-fria* as an 'affirmative presence' of capitalism. This orthodox Marxian interpretation of the modernisation process, inspired other works, and the agrarian issue became centred on the conditions of the *bóia-fria* or *volante* rural worker. The mainstream issue was not agrarian reform, but the affirmation of the labourer's proletarian status. Thus, the issue was located in the conditions of labour and the extension of the urban social welfare benefits to the rural workers; in short, the battle for the recognition of their citizenship as wage labourers. The high point of this movement was the National Meetings on *Volante* Workers in Agriculture (*Reuniões Nacionais sobre Mão-de-Obra Volante na Agricultura*), held annually at the Botucatu 'campus' of the State University of São Paulo (UNESP-Botucatu,

1982). This explicit reading of the modernisation process suggested that the agrarian question would be resolved by linear proletarianisation, whose dynamic was 'affirmed' by the very presence of the *bóia-fria* or volante worker.

A variant of this Neo-marxist analysis correctly shifted the core of the debate from the internal organisation of production to the strategic role of agro-industrial capitals determining the social transformation in the countryside (Goodman et al, 1985:35).

A particular interpretation of the dominance of agro-industrial capitals on agriculture in Brazil is given by Muller (1983:147). He argues that the modernisation process changed agriculture from '*natural laboratory*' production towards a "*social production commanded by oligopolic capital*". From the moment when the process of 'industrialisation' of agriculture is accompanied by the constitution of the corresponding industrial sector within the country, an agro-industrial complex is constituted. In his view, the particular process of 'industrialisation' of agriculture tends to be transformed into a "general process" of social change, evidenced by the changes in the rural social structure. These changes include the expansion of the industrialised bourgeoisie and petty bourgeoisie on the one hand, and the waged workers, including the so-called "homeworkers" on the other. The whole rural social structure, Muller argues, tends towards the classic bourgeoisie-proletariat structure, as both "*traditional bourgeoisie and traditional petty bourgeoisie*" classes enter into decline.

Muller's approach has been further elaborated by Kageyama et al. (1987), who analyse the changing dynamic of agriculture

in terms of a transition from a "rural complex" to agro-industrial complexes (CAIs). A "rural complex" is defined as externally oriented commodity complex, epitomised traditionally by coffee in the South and the sugar in the Northeast. The fundamental theoretical element used to support their arguments for this transition is the "*development of capitalist domestic market*" (Kageyama et al, 1987:3-4). The historical uniqueness and recent origins of the agro-industrial complex (Muller) or complexes (Kageyama et al) is characterised by the "*implementation of D1¹ for agriculture*", the turning point of a dynamic led by agro-industrial capital, commanding the "*direction, the forms, and the rhythm of change in the technical basis of agriculture*" (Kageyama et al, 1987:10). Unlike Muller, Kageyama et al. do not recognise a general dynamic but "several dynamics", so that instead of an overall agro-industrial complex, there were several complexes.

These approaches based on the notion of the agro-industrial complex(es) seem to have dominated the Brazilian debate in the 1980s, evoking some active countervailing arguments. Points of disagreement include:

- (1) the recent emergence of the agro-industrial complex (Szmrecsányi, 1983);
- (2) the homogeneity of capitals implied by the concept of complex; the implications of a unified labour process in the sphere of production; and the rigidity of the relationship between agriculture and industry (Goodman, Sorj and Wilkinson, 1985:36-39); and
- (3) the extension of the agro-industrialisation of Brazilian

¹ D1 - stands for the department of production of capital goods in the Marxist economy.

agriculture; the illusion of the efficiency of corporate farms; the neglect of its social implications and political dimensions; the tendency to ignore the non-industrialised or informal sector, fated to disappear (Martine, 1989b).

Alternative formulations also question variants of the agro-industrial thesis found in Brazilian literature, positing 'modernised family farmers' as the 'privileged ally of agro-industry' or as 'workers for capital'.

Goodman, Sorj and Wilkinson (1985), based on the same assumption of the centrality of agro-industrial capitals in determining changes in rural social structures, argue in the opposite direction by stressing (1) the heterogeneous and conflicting strategies of accumulation of agro-industrial capitals; (2) the partiality of the appropriation of the rural labour process by agro-industrial capitals; and (3) the effects of technological innovation which constantly change the conditions of rural production (See also Wilkinson, 1989). The fundamental proposition of this countervailing position is that agro-industrial capitals are unable to revolutionise the rural labour process, which remains greatly dominated by land and other natural constraints. The appropriation of the rural labour process by capital is only partial, so that the agro-industrial thesis assumption of a real subordination of (household) labour to (agro-industrial) capital is undermined by natural constraints (Wilkinson, 1986:209-210). Thus the conditions of change in rural structures hinge on the scientific and technological progress, enabling agro-industrial capitals to overcome these constraints. In these terms, the debate about petty commodity production moves from the process of decomposition towards a process of constant

adaptation.

According to Martine (1989b:25), modernisation has not eliminated small or household production, but rather reinforced its advantages in terms of flexibility and real costs of family labour. Petty producers (in this case, less than 50 hectares) are declining in number with 'industrialisation', but still accounted for 40 per cent of the total output in 1980, despite holding only 12.6 per cent of total land. This implies efficiency in terms of the intensive use of land, and a greater capacity for job creation than the corporate *latifúndio* enterprises. Moreover, industrialisation did not eliminate the peasant's knowledge of production, which requires constant surveillance and appropriate decision-making (Wanderley, 1988). The risks and uncertainties arising from climatic and other natural factors in some cases are aggravated by industrial technology; for example pests and diseases can develop a resistance to agrochemicals. Soil erosion and water/atmospheric pollution could be an ecological disaster in the heartland of modernisation, the South (Martine, 1989b:25-26).

1.1.2. The international debate

The international contemporary debate on petty commodity production has been marked by the vacuum left by the decline of deductivist approaches to agrarian change. According to Buttel and Goodman (1989:86-87), these approaches were based on the works of Marx, Lenin, Kaustky and Chayanov, whose deductivist nature lied on their focus on " *identifying a singular logic of the development of agricultural systems*". Among these approaches, the French structuralism (Althusser,

Balibar, Meillassoux, Rey), was particularly influential in Europe, and gave rise to the concept of "articulation of modes of production" (Scott, 1986:3-4).

The criticisms levelled at the general framework of structural Marxism, on essential and phenomenal grounds, include:

- (1) the tendency to produce oversimplified, essentialist models;
- (2) Overemphasis on economic determinations;
- (3) the necessity of articulation/functional arguments to solve the problem of modes/forms of production. This argument includes the explanation of family labour units as producers of cheap food and a labour force that 'subsidise' capital accumulation;
- (4) the neglect of class relations and class conflict (Scott, 1986a:5);
- (5) the transitional nature of petty commodity production and therefore, its necessary disappearance over time (linear proletarianisation thesis);
- (6) the assumption that petty commodity producers are "exploited" by capital; and
- (7) the transformation of petty commodity producers into proletarians by the real subsumption of the labour process, as in the agro-industrial thesis (Bernstein, 1986:259; Goodman, 1989:11-12).

Recent reformulations have tended to move away from both evolutionary and articulationist views of capitalist development and its relationship with household commodity production (Friedmann, 1978,1980,1982,1986a,b; Bernstein, 1986,1988; Gibbon and Neocosmos, 1985; Goodman et al 1985,

1987; Levin and Neocosmos, 1989). In essence, these reformulations have tended to defend the possibility of the co-existence of different forms of production in terms that are neither functionalist, teleological, nor economicist. One of the key concepts in these reformulations is commoditisation.

a. Commoditisation theory

The concept of commoditisation, long used to express the transformation of natural economy by the introduction of commodity exchange relations, is now providing the underpinning for recent reformulations of the agrarian question. 'Commoditisation' is now described as *"the process by which the family household and family enterprise are tied into the wider market economy in such a way that their form and conditions of existence are increasingly structured by it"* (Whatmore, 1991:7). This is particularly addressed to the formulations which attempt to respond to the shortcomings of influential theories upholding dualism, evolutionism, essentialism and functionalism (Bernstein, 1982, Long et al. 1986; Vandergeest, 1988).

For Bernstein (1982:163), the relations between capital and peasants give rise to simple commodity production, as a result of *"the destruction of pre-capitalist modes of production"*. The general term 'simple commodity production' is used to designate a form of production based on the logic of simple reproduction of households, through commodity relations. Once commodity relations are incorporated into the reproduction cycle of the household, they become an "economic necessity". Peasant producers are compelled to produce exchange values or

commodities to meet their reproduction needs, from material elements of constant capital (means of production) to variable capital (foods) alongside the production of use-values (Bernstein, 1982:164). These earlier views of Bernstein on commoditisation were criticised by Gibbon & Neocosmos (1985:161-162) as conferring "residual elements" to petty commodity production, and containing "*a peasantist form of subjectivism*".

Another leading author in this field is Harriet Friedmann (1978,1980,1986a,b) who theorised simple commodity production in her analysis of wheat production in the American plains, characterising it as a form of production, made possible only by full market integration and regulation by capitalist competition. Conceived as a synonym of petty commodity production, it differs from capitalist production only in the fact that it does not utilise commoditised labour or, in other words, there is no separation between capital and labour in the production process. As a result, this form is neither 'residual' nor 'transitional', but specific to capitalism. For Gibbon and Neocosmos (1985:170) this category is restricted to that of middle peasants. In contrast, those producing articles for direct consumption with occasional surpluses for sale, but keeping out of the competitive part of production are peasant households (Friedmann, 1978:95-96). Similarly, Gibbon and Neocosmos (1985:170) consider these producers poor peasants or 'semi-proletarians'.

The theoretical place of simple commodity production as an essential concept has been a concern prompting most of the criticisms of Friedmann's theory (Goodman & Redclift, 1985; Whatmore et al. 1986; Bernstein, 1986), since the "ideal type"

concept is confronted in the empirical case of American wheat farming. The problem identified by these critics is the confusion between the theoretical position of simple commodity production and its historically contingent, phenomenal character (Goodman & Redclift, 1985; Bernstein, 1986; Scott, 1986a,b). Scott (1986a,b) and Bernstein (1986) attempted to overcome this ambiguity by further elaborating the concept of the form of production, and by distinguishing the essential theorisation of simple commodity production from the phenomenal category of petty commodity production.

Taking as the point of departure the understanding that the essence of capitalism, is "*generalised commodity production founded upon the contradictory relation between capital and wage-relation*", Bernstein emphasised two key aspects of Gibbon and Neocosmos' approach: the relationship between the essential relations and categories of capitalism, and its phenomena, and the generalisation of commodity production. Essential categories (capital, value, landed property) are always obscured by the phenomena they produce (wages, prices, classes, etc), due to the complexity of this relationship (Bernstein, 1988:261). For Gibbon and Neocosmos (1985:170) the conditions of generalised commodity production are satisfied when individuals are unable to exist and reproduce themselves outside the circuits of commodity economy and the division of labour generated by the capital/wage-labour relation and its contradictions. In their terms, petty commodity producers are

"a phenomenal category of commodity producers who possess the means of production necessary to produce commodities, and who engage in production on the basis of unpaid household labour alone".

The reproduction of individual petty commodity producers

within particular branches of production depends on the basic relations of capitalism, regulated by the same laws of competition and commodity production. Therefore while some may be destroyed, others will be maintained or transformed into capitalist producers, creating a diversity of trends. Against the position of Vergopoulos and the agro-industrialists, petty commodity producers do not represent an exploited class, (Bernstein, 1988:264-265) as long as their general conditions of reproduction are very much the same as those regulating capitalist enterprises. Nevertheless, because of their weakness, they are subjected to all forms of extortion and "squeezing" by different capitals and the State. From this position it is not difficult to understand the creation/existence of capitalist farmers, which is unsolvable in the articulationist/agro-industrialist 'exploited class' variant.

In the reverse situation, petty commodity production can also benefit from certain relations with capital and the State, such as the appropriation of institutional rents arising from subsidised rural credit, in the same way as capitalist producers appropriate. Terms of trade conjuncturally favouring farm producers benefit large and small producers alike. European and American family farmers readily appropriated a share of the massive subsidies of State policies (Galeski and Wilkening, 1987). The Common Agricultural Policy deliberately emphasises small family farmers, whether in the ideological and economic terms of defending "democratic ideals", or as a means of promoting environment protection and employment (Buttel, 1983a:88; Gasson, 1987:34).

The position that petty commodity production is 'exploited' by capital is also to blame for the neglect of class relations within the production enterprise, an issue now coming to the fore in important recent contributions (Friedmann, 1982,1986; Marsden, 1984,1989; Arkleton Trust, 1987; Gasson, 1987). Gender relations are increasingly analysed as class-based relations: patriarchal heads represent the class position of capital, and women and children that of labour, bringing the analysis inside the household, and problematising the household self-exploitation analysis (Whatmore, 1991). Self-exploitation is less problematic when capital and labour are combined in a single individual enterprise (Bernstein, 1988:266). Complex internal relations that reproduce and strengthen pluriactive farms in industrially advanced countries cannot be explained by the self-exploitation mechanism alone. The increasing recourse to off-farm wage labour (hiring out) may mean not only insufficient objective conditions of their reproduction as farmers alone (semi-proletarianisation), but also provide a means of expanding fixed capital (accumulation) (Bernstein, 1988:269).

In summary, as pointed out by Levin & Neocosmos (1989:251), petty commodity production

"must be seen as an unstable category, vulnerable to the continuous destruction/creation of its position in the social division of labour as an effect of competition both between petty commodity producers and with capitalist enterprises".

The core point is that petty commodity producers and capitalist enterprises are equally subjected to the conditions of existence determined by generalised commodity relations, or the essence of capitalism.

b. Further applications of commoditisation theory

Although the commoditisation theory is now being criticised for its 'reification and biases' (Long et al, 1986; Vandergeest, 1988), Marsden (1989:314) insists that it holds the key for the development of *"integrative concepts around which substantive analysis can accommodate the multidimensionality of the contemporary agrarian question"*.

Two new elements introduced by Marsden are the need for integrative concepts, e.g. the commoditisation process and the multidimensionality of the agrarian question. These elements are the signs of new necessities in the era of internationalised economy, and the disruption of traditional linkages by the generalisation of commodity relations. Beyond the traditional process promoted by industrial and financial capitals, of transforming use values into exchange values, commoditisation now involves the superimposition or re-commodification of out-dated exchange values, including newly created "needs" (Long et al, 1986; Marsden, 1989:314). The linkages between agriculture and upstream and downstream agro-industries, with the increasing provision of processed inputs and the processing of farm outputs, bring agro-industrial development to the core of agrarian change. From this perspective, Goodman et al (1987) states that agriculture becomes a "residual category", performing activities still not appropriated and transformed by industrial capitals, due to the natural or biological conditions of production. On this basis, technological innovation comes into play as a key element to explain the changes in rural social structures. In this direction, efforts are now being made to examine recent developments in biotechnologies and automation, in an attempt

to foresee scenarios of rural change (Goodman et al, 1987:145-184). On these same assumptions, commodity systems approaches gain in strength, as an integrative approach subsuming rural commodity production, processing and marketing into "distinctive industrial structures" (Buttel and Goodman, 1989:87-88).

Here, contributions forged in the discussions which focus on the shortcomings of contemporary formulations point to the specificity of agriculture in the process of capital accumulation. The central problem of real/formal subsumption of the labour process by (agro-industrial) capital, transforming household commodity producers into "propertied labourers" (Davis, 1980), or "real proletarians" (Faure, 1978), is shifted to the

"industrial erosion of the rural, with the key variable being nature and the degree to which biological production systems are reproduced in the industrial context" (Goodman et al, 1987:153).

The creation or destruction of the conditions of existence for multiple forms of rural production is determined by the degree and the form in which agro-industrial capitals overcome the constraints of land, and other natural factors that characterise the rural labour process. As barriers of capital accumulation, capital tends to remove or eliminate land and nature from the productive process by technological innovation. But this is undermined by the intractability of the natural or biological production processes, hampering industrial capitals in their attempt to generalise large-scale industry-like capitalist forms of farm production. It follows that landed property rent is not the major obstacle to capital accumulation, as argued by Vergopoulos (1974) and Murray

(1978). In the same line of argument, the individual producer is constrained by his/her

"inability to eliminate the risks, uncertainties, discontinuities intrinsic to the a natural or biological production process" (Goodman et al, 1987:156).

The introduction of discrete elements of industrial technology into the rural labour process, designated as appropriationism, is part of the continuous process of mastering natural risks and uncertainties. Therefore, the conditions in which these technical and social relations are established determine the existence of diverse forms of production. In this framework, petty commodity producers are not a privileged partner of agro-industrial capitals, but a

"well adapted form of production to the prevailing patterns of surplus appropriation and technological innovation in agriculture" (Goodman and Redclift, 1985:242).

1.1.3. State and petty commodity production

The activities of the State represent one element which creates objective conditions of existence for petty commodity production in a given historical context (Smith 1986:38). However, State action, which can take distinct forms, is not autonomously determined by an independent entity, but is the result of class struggles produced in the context of multiple linkages between different forms of production. Variations in linkages between State and petty commodity production in different contexts produce many structures, which are always a matter for investigation (Scott, 1986b:99-101). In the same vein, Levin & Neocosmos (1989:252-253) also argue that political struggles for solutions to agrarian questions (land reform, restructuring of the market) simultaneously create/destroy spaces for petty commodity production, leading to class differentiation, yet without any unilinear trend

towards extinction. This interpretation of State intervention relies strongly on the specificity of rural production. This specificity comes from the limits imposed by nature on capital accumulation, due to its intractability to industrial labour processes. It follows that State instruments of action, such as rural credit, fiscal policy, research and extension services, price policy, etc, are used to regulate social conditions for the industrial transformation of agriculture. The reproduction of petty commodity production is part of the confrontation which constantly redefines the control over the natural limits of the labour process (Goodman, Sorj and Wilkinson 1987:157).

1.2. 'Green revolution' technology and Petty Commodity Production in Brazil.

The diffusion of the 'green revolution' technology model in the 1960s was at the centre of the agro-food production policy, bringing about a new pattern of accumulation in postwar Brazil. This model took the variant of 'conservative modernisation' policy, which promoted modern industrial technology production without land reform. This process had detrimental effects on small foodstuffs producers, whose alternatives were anything but seeking off-farm employment.

1.2.1. The 'conservative modernisation' policy.

The worldwide diffusion of 'green revolution' technology coincided with economic and political turbulence in Brazil, starting with an economic recession and rapid inflation, rising social unrest and culminating in the military coup of

1964. Social movements in the cities and in the countryside demanding agrarian reform were brutally suppressed, reinforcing the grip of *latifundiário* political interests on the agrarian question. In accordance with the international movement of capital, the military government opened the country up to foreign investment and trade. The attraction of huge multinational corporations for capital investment and financing was part of the industrialisation strategy. The consolidation of agro-industrial complexes as part of the 'green revolution' technology policy occurred in this context. In the immediate postwar period, agricultural modernisation hinged upon imported tractors and inputs. The prevailing import substitution strategy of industrialisation was based on transferring surpluses from the agricultural sector, which relied strongly on coffee exports and overvalued exchange rates (Mendonça de Barros, 1979:9; Delgado, 1989a:11).

In the subsequent period of instability, described by Mendonça de Barros (1979:9) as internal (inflation) and external (balance of payments) disequilibria, the roles attributed to agriculture altered to those of providing 'stability', due to its ability to affect the formation of basic prices - the urban real wage rate - and generating foreign currency. This strategy is also called the 'conservative modernisation' policy (CPDA, 1979; Delgado, 1989a) because of its anti-reformist proposal of reliance on the modernisation of the *latifúndio*. The consolidation of the agro-industrial branch by substituting imported agricultural means of production represents the 'industrialisation' stage of agricultural modernisation. This period of transformation of the rural labour process by the introduction of

domestically produced agro-industrial capital goods subordinated agriculture to the dynamic of industrial growth. This process has also been called the "*internalisation of the D1 for agriculture*" by Kageyama et al (1987:15).

'Green revolution' technological packages were designed to accelerate productivity growth in agriculture. Biological, chemical, and mechanical technologies were promoted by the State through massive transfers of institutional rents, vested in the form of rural credit subsidies, infrastructural public investments in roads and storage systems, and public services in research and extension. Externally-financed programmes, such as 'export corridors' extended and modernised roads for export. The *Companhia Brasileira de Armazém - CIBRAZEM* (Brazilian Warehouse Company) was created to restructure and expand State storage capacity, then mostly used to stockpile operational reserve and unsold surplus coffee. The *Plano Nacional de Sementes - PLANASEM* (National Seeds Plan) scattered many quality control laboratories all over production zones, in order to establish seed standards and reorganise the high yielding varieties (HYVs) seed market.

The *Empresa Brasileira de Pesquisa Agropecuária - EMBRAPA* (Brazilian Agricultural Research Enterprise) and the *Empresa Brasileira de Assistência Técnica e Extensão Rural - EMBRATER* (Brazilian Extension Enterprise) were created in order to reorganise research and extension services according to the 'green revolution' model, involving a narrow range of commodity oriented programmes, adapting varieties highly responsive to chemical fertilisers and other inputs produced by upstream industries. Former discipline-oriented research was relegated to a lower priority. A huge advanced training

programme channelled thousands of Brazilian researchers to foreign universities, especially in the United States. EMBRATER technicians quickly had to learn how to diffuse commodity-oriented "technological packages", rapidly made available by the research service EMBRAPA. Freshly re-equipped and restructured research laboratories and experimental stations replicated IARC varieties and lineages in trials, and phytosanitary treatments for diseases and pests have also been adapted. But above all the rural credit system, by providing financial facilities at negative interest rates, turned into a powerful instrument for the diffusion of industrial technology and capitalisation of farms.

1.2.2. The rural credit programmes.

The turning point in the expansion of rural credit was the reform of the system in the mid-1960s. Federal Decree N° 58,380, establishing the SNCR (National System of Rural Credit), provided the legal framework for formidable increases in the number of contracts and the volume of loans, which reached Cr\$ 28.2 trillions at 1969 prices (Martine and Beskow, 1987:23). The number of contracts increased almost sixfold from 1958 to 1968, when the volume of loans doubled at constant prices. Yet, in the subsequent period from 1968 to 1975, the value of loans in constant terms rose 19 times, distributed over 1.8 million contracts. The subsidy included in these loans is estimated by Martine and Beskow (1987:24) to have been as high as 28.8 per cent of the Net Domestic Product (at factor cost) of Agriculture.

Nevertheless, this huge volume of loans and subsidies was appropriated by a minority of medium and big farmers, since

access to this system was based on landownership. The enormous disparities in terms of conditions of competition for subsidised credit left the vast majority of small family farmers out of the system. In 1980, only 10 per cent of farmers with less than 10 ha. could procure subsidised credit, sharing the tiny per cent (4.4) of total loans (Martine and Beskow, 1987:24). The skewed distribution of subsidised loans further aggravated land and income concentration (Guedes Pinto, 1980).

The expansion of rural credit was also selective according to region and crops. The allocation of loans concentrated on six major crops - coffee, sugar, rice, maize, soyabeans and wheat. The Agricultural Census data for 1975 revealed that 72 per cent of the credit was concentrated in the South and Southeast regions, while the populous (50 per cent of the number of establishments) rural Northeast received only 14 per cent of the total (Goodman, 1986:8).

Credit subsidies compensated for the risks and uncertainties involved in farming, aggravated by capital intensification. Financial risks have been covered by complementary tools, namely, the minimum price established for each commodity through the *Programa de Garantia de Preços Mínimos* - PGPM (Minimum Prices Guarantee Programme) and the *Programa de Garantia da Produção Agropecuária* - PROAGRO (Insurance programme associated with credit concessions). The whole system worked in such a way as to provide guarantees for medium-long term investments and a minimum level of profitability to the commercially integrated sector. This mechanism created a captive market for upstream agro-industries on the one hand, and transformed agriculture in a

highly dependent on industrial inputs and credit, on the other. Loan contracts were impregnated with clauses imposing or 'inducing' consumption of modern industrial inputs. According to Central Bank norms, at least 15 per cent of total lending ought to be spent on industrial inputs. The sanctions for those who chose not to follow the 'green revolution' technological norms, generally supervised by public official or privately organised agronomist teams, were the loss of entitlement to financial compensation in case of crop failure or bad harvests. And high yielding varieties are particularly vulnerable to pests and diseases, and other natural factors, such as drought, increasing the risks of investment, and justifying State intervention. Modernised production in this sense is riskier than the traditional cultivation system. Some crops are riskier than others: wheat is the worst, followed by dry-land rice and beans, indicating differentiated technological development. These processes of forced industrialisation of the agricultural labour process led Kageyama et al (1987:57) to call it "compulsory modernisation".

Marketing credit is one of the three forms, along with operating and investment credit, that worked together with the establishment of the guaranteed minimum prices programme, ensuring farmers reference prices which supposedly cover the operating costs of production. However, this programme is not accessible to all farmers as technical, economic and bureaucratic barriers impede the participation of the majority of small farmers. Standardisation requirements, minimum scale of production, and access to market information are some of these impediments. Policy instruments, such as the *Empréstimos*

do Governo Federal - EGF (Federal Government Loans) and the *Aquisições do Governo Federal* -AGF (Federal Government Acquisitions) rather became a means of reinforcing the intermediary marketing sector. In this context most small farmers are effectively marginalised in these programmes (Martine and Beskow, 1987:26).

Investment credit for agriculture supported the expansion of upstream industries, especially the production of machinery and chemical inputs. Imported tractors and other machinery were substituted by local production. National production of tractors jumped from 37 units in 1960 to 10,048 in 1970, and 56,928 in 1975, supplying almost all the tractors required by the agricultural market. Moreover, this is part of the internationalisation of productive capital, led by multinational corporations, and is also related to the expansion of the automobile industries (Martine and Beskow, 1987:28; Goodman, 1986:4).

Subsidies conferred by investment credit reduced real prices, inducing rapid agricultural mechanisation and capital intensification. The number of tractors in use rose from 61 thousand in 1960, to 323 thousand in 1975. Reflecting the unequal distribution of rural credit, the expansion of mechanisation reproduced the same bias in terms of its distribution according to regions, crops and farm size. In 1975, 86 per cent of the total number of tractors were concentrated in the southeast-southern regions, while the populous Northeast had only five per cent (Martine and Beskow, 1987:29).

In the branch of industry that produced chemical inputs, including fertilisers, pesticides, and veterinary products,

the process of import substitution was less complete, but the distributive bias was equally reproduced. However, the use of chemical inputs is more accessible than the tractor, for example, because such inputs are more divisible. This branch remained dependent on imports of active ingredients and raw materials, such as potash, and was dominated by the same huge multinational corporations operating in advanced industrial countries.

1.2.3. Sectoral dualism.

The whole process of implementing the 'green revolution' technology model brought about a new pattern of accumulation, characterised by the progressive internationalisation of the Brazilian agro-food system. As another significant feature of the model, production focused on exports, because of the need to finance foreign investments and service debts. This orientation has been carried out by a two-lever policy: (a) export subsidies, mainly for those products exported in manufactured form; and (b) exchange rate devaluation.

As noted by Graham et al (1987:4), the 1970s were marked by *"a striking expansion of agricultural exports, particularly processed and semi-processed agricultural exports"*. The competitiveness of Brazilian commodities in the international market was maintained by policies of constant mini-devaluations of the exchange rate, and export promotion measures, particularly favouring exports of manufactured products. For Graham et al, (1987:20) these measures, favouring the industrial sector, justified a 'compensatory' agricultural policy, including the subsidised rural credit, especially for those crops intended to supply the domestic market.

This State policy, reinforced by the conjunctural improvement in external terms of trade, especially from 1968 to 1973, led to the emergence of new products as export items in the 1970s, with soyabean and orange juice as the two foremost examples. This outward oriented strategy of growth based on 'green revolution' technology has certainly increased production, but has also introduced "*severe inequalities*" in Brazilian agriculture (Graham et al, 1987:20).

The effect of agro-food policy on output growth rates and land productivity has prompted several authors to draw attention to the segmentation of agriculture in two sub-sectors. In the first, devoted to domestic products, prices and production decisions depend principally on local demand and government policy. In the second sector of exportable products, in addition to local factors, "*the international market, signals and determines importantly the allocation and growth of production*" (Mendonça de Barros, 1979:20).

The rising relative profitability of the export sub-sector is attributed to technology differentials, favourable international markets and greater State incentives (credit subsidies, exemptions, etc), drawing resources from production for domestic consumption, and accentuating inflationary pressures (Mendonça de Barros, 1979:22-23). In the second half of the 1970s, the imports of traditional foodstuffs, such as rice, maize, and beans were frequent, not to mention the imports of wheat.

According to Mendonça de Barros (1979:26) the decreasing domestic availability of food since 1971 and the doubling real cost per calorie, estimated for five basic foods - beans, manioc, rice, potato and wheat - are rooted in:

- (a) Higher investment returns and lower risk in export crops, as agronomic research was concentrated in this sub-sector;
- (b) The small participation of exportables in the local supply of foods, implying low substitution elasticity;
- (c) Favourable international prices during the period 1968-1976, reinforcing investment in the export sub-sector;
- (d) competition in the same land and labour market, also operating to favour the export sub-sector.

The resulting stagnation of domestic foodstuffs production and rising food prices was only overcome by mounting imports. Lagging production from the marginalised peasant farming sector put upward pressure on food prices, which were partially contained by price controls in contrast with the freer international market conditions of export products.

Goodman (1986b:15) supporting Rezende (1985) argues that productivity differentials only provide a partial explanation, and suggests that a social dimension be introduced. That is, staples for the domestic market are cultivated predominantly by small scale producers, who have not accompanied the current of technological modernisation. These low income producers, whose gross value of output is below nine annual minimum wages, were induced to seek off-farm jobs, to complete their revenues for their reproduction.

This suggests that the conditions of reproduction of these poor farmers were determined by the labour market, rather than by farming itself.

1.3. Diversified outcomes of the modernisation strategy.

The 'conservative modernisation' strategy which funded the capitalist transformation of the *latifúndio* sector produced neither a uniform pattern of social structure, nor generalised a particular form of production (Goodman, 1986:18-19).

The selective character of the process, differentiated by regions, rural social classes and crops, created diversified social structures, although a dominant tendency towards proletarianisation characterised the most dynamic regions of the South and the Southeast. 'Green revolution' technology did not bring about the diffusion of high yielding varieties for domestic food crops, but rather led to the expansion of strategic feedstuffs for the international market, notably soyabeans. 'Green revolution' also expelled family labourers from major modernised regions and reinforced petty commodity producers in the frontier zones (North, Centre-west). In the Northeast, the same dynamic commanding the relation between capital (agro-industrial) and labour (household), produced another specific structure, also regionally differentiated.

In sum, the modernisation strategy produced diversified structures of commodity production, three of which are family labour farms (Goodman, 1986:19-40): (a) capitalised family farms in the southern region; (b) northeastern traditional family farms; and (c) frontier peasant farms in Amazônia. Their general features are:

1.3.1. Capitalised family farms.

The emergence of the capitalised family farm in the conservative modernisation's most successful southern region presented difficulties for the argument of 'Junker road' proletarianisation and the prediction of the complete demise of the petty commodity production. Compelled by the coercive forces of State policy, articulated through subsidised credit and institutional support, such as technical assistance, and the restructuring of co-operatives, small family farmers responded to agro-industrial capital by changing their labour process without completely renouncing their family labour force. Tractor mechanisation replaced animal drawn ploughs and harrows, high yielding seed varieties replaced local germplasm; chemical fertilisers were used instead of organic fertilisers; and recourse to the chemical method of pest and disease control recommended by 'green revolution' agronomists was inevitable. Intensification of capital, or 'technification' of these petty commodity producers, first required external credit, which implied a necessity of repayment, no matter how heavily subsidised. A highly mechanised cropping system, combining winter wheat and spring soybean, epitomised the modernisation strategy in the 1970s, transforming large and small farms alike. For example, in Paraná, northern coffee and western maize-pig systems shifted to a mechanised wheat/soybean system, provoking an extraordinary substitution of rural labour by mechanisation. Also, extensive cattle ranches were transformed into mechanised and capital intensive soyabean/wheat cropping system, fulfilling the basic strategy to modernise the *latifúndio* (Shiki, 1983:122-132).

In turn, integration in the industrial pattern of production led to rising farm size, and the creation of a contingent of surplus labour, which explains the new wave of rural movements which arose in the 1970s, such as the so-called landless movements. This virtual and progressive marginalisation, established by the 'industrialisation' of the labour process in farming, further enlarged the massive rural migration observed in the 1970s from the South.

The capitalisation of production transformed family members into idle labourers, as a condition of competition in the new production system. At the same time, the need for additional land further increased prices, overheating the land market in the period of high investment (Ribeiro et al, 1981). The natural search for new cheap land in the frontier zone, large enough to reproduce the family in the new capitalised production system, was the motive force for the occupation of the centre-western and northern region. This sort of constraint in small scale farming often leads to the proletarianisation of secondary family members, enlarging the contingent of free workers in the labour market or joining the encampments of the landless movement campaigning for agrarian reform. The case of Ronda Alta-RS is an outstanding example (Grzybowski, 1982).

The reproduction of capitalised family farmers has been mediated by co-operatives, firstly acting as a strategic instrument of wheat import substitution policy in the 1950s, and secondly as a support for State modernisation strategy in the 1960s. In fact, co-operative organisation became the main channel of state policy, mediating the agro-industrial capitals' interest in diffusing their inputs, extending credit

facilities in conjunction with the provision of appropriate technical advice, to set up the new modernised system of cropping, and the management of marketing and distribution. Thus the co-operatives integrated petty commodity producers into upstream and downstream agro-industries.

In this sense, co-operatives became the privileged, if not the only, means of access to state organised resources. The capacity to renew the means of production depends on the price relation, which is influenced by State policies, and the bargaining power of producers, both of which are mediated by the co-operative. As the process of modernisation intensified, the co-operatives themselves became virtually independent enterprises, competing with powerful multinational corporations in the processing industries and trading.

Another notable fact manifested in the 1970s was that the co-operatives put themselves into a position of political representation. Capitalised family farmers' demands were dictated by the new objective conditions of reproduction, which included the absorption of institutional rent. Credit subsidies, market and state-fixed minimum prices, insurance coverage (PROAGRO) export taxation, costs of inputs, all were important. Mass demonstrations demanding better prices, such as those of pig growers in the southern region, or the 13 per cent export tax exemption for soyabean, were headed by co-operative leaders rather than farmers/rural workers' unions. As stated by Goodman (1986:28), the capitalisation of the rural production process is *"imparting a more corporativist character to rural mobilisation in southern Brazil (...)"*. Capitalised family farmers' demands have become more generalised, and strongly identified with those of large

farmers. As agro-food policies are established by product, the social movement itself ended up mostly unified by product. Demonstration of discontent by wheat/soyabean farmers, using tractors and combine harvesters to block roads or barricade banks in protest against State price policies, is an example. This form of mobilisation sometimes joined small farmers, large farmers, their co-operatives and unions, and agro-industries, blurring social differences to join together against State action as the recognised regulator of the production system, overshadowing internal class contradictions. These contradictions only come up when non-integrated peasants and landless rural workers gather in roadside encampments and occupy idle lands, to demand immediate agrarian reform. In the modernised South, the other facet of the 'conservative modernisation' strategy then, is unveiled.

Another form of adaptation of small family farmers to the dynamic of agro-industrial development is represented by the "integrated peasants" in viticulture (Tavares dos Santos, 1978), tobacco (Cravo, 1982), pigs and poultry (Sorj et al, 1982; Paulilo, 1990). In these systems, the agro-industries command the entire labour process. This control extends over all the means of production, from the choice of technological specifications, such as animal breed or crop varieties, quality standards and requirements, the rhythm of labour, and more importantly, operational costs and output prices. Once again, the integrated peasants' struggles include State policy targets, although direct confrontation with the industry is becoming increasingly likely, due to the 'visibility' of their subordinated relation.

In the case of the poultry industry in the South, the system found the necessary conditions of expansion (Rizzi and Libardi, 1989:6). The concentration of petty commodity producers in this region was the source of the crucial elements required by the poultry industry: family labour and essential raw materials. Unable to enter the capital intensive soyabean/wheat system because of natural constraints (topographically unfavourable for tractor mechanisation) and the perspective of unemployment for secondary family members, 'integration' offered small producers in these areas an alternative strategy of reproduction. The means of production are supplied exclusively by the contractor company, which determines the technological specifications, including not only the formulated compound feedstuffs, the day-old chicks, but also the rhythm and the volume of production. All investment in equipment and aviaries is now taken independently by the farmer, but under the technical advice and inspection of the agro-industrial firms (IPARDES, 1989:22).

The competitiveness of this integrated system has transformed the South into a major supplier of chickens for domestic and international markets. It now strongly competes with the dominant system based on the oligopolised feed industry and with large independent raisers, which had proliferated on the outskirts of metropolitan areas, especially around São Paulo. However, this competitiveness is derived from the harsh conditions of production imposed on "integrated peasants".

1.3.2. Northeastern traditional small farms.

In the Northeast, 'conservative modernisation' policy disarticulated the traditional *latifúndio-minifúndio* structure. Capitalisation of the *latifúndio*, through subsidised credit, frequently led to what is known as *pecuarização*, in which small 'internal' peasant cropland is converted to grassland (Goodman, 1986:32; Bicalho and Hoeffle, 1990:54-55). The reproduction of this traditional peasantry (both internal and external to the *latifúndio*) is threatened, by both the reduced access to the land, now transformed into grazing land, and by the reduction of temporary employment as cattle ranching normally requires limited labour. Without land or labour in the *latifúndio*, proletarianisation takes on the form of migration. 'External' peasants also lose their source of off-farm income, with family members working as temporary labour. Bicalho and Hoeffle (1990:54) add to the discussion that the remaining small and *minifúndio* holdings undertake unpaid labour for access to land. As they state:

"Land poor peasants are allowed to plant short-cycle crops for one or two years without paying rent, on conditions that the land is left completely cleared and, often, planted with pasture".

Increasing surplus labour is an asset for cattle ranchers, who use it to clear fallow land and woodlands for more pasture, still at a low cost.

Nevertheless, this process did not reduce the concentration of *minifúndio* farms in the Northeast. Small family units became even smaller in the 1970s, as the average size of establishments with less than 10 hectares declined from 3.65 in 1950 to 2.61 in 1975. At the same time, the number of family labourers increased in these small farm

establishments (Wilkinson, 1986:77). Peasantry is seen as essentially external, as sharecropping declined and squatting by *posseiros* increased. The reduction in the average size and high number of family labourers per farm unit points to the *"decreasing importance (of minifúndio) as domestic foodstuffs producer"* (Wilkinson, 1986:78). On the other hand, small family units continued to rely on casual off-farm employment for their livelihood. According to Wilkinson (1986:78), the numbers in temporary employment increased, which, associated with the reduction in average farm size, *"would suggest the accentuation of the dependency on off-farm income (...) and a process of disguised proletarianisation"*.

This off-farm income did not come from the *latifúndio* sector, but from other family farm units, structurally divided between *"a rural proletariat owner of a plot of land (minifúndio) and a family unit of production"* (Wilkinson, 1986:79). In terms of Agricultural Census data, this distinction can be made by examining the farm size group of 0-10 hectares as compared with those of 10 to 50 hectares². The process of differentiation is based more on the degree of dependence on casual labour than on technical innovation, even those of relatively low cost, such as animal-drawn equipment. In 1975, on average, 60 per cent of all casual labour was employed on farms with less than 50 hectares, so that an articulation inside the *minifúndio* sector appears to provide the means of their own reproduction. Wilkinson (1986:88)

² As argued by Wilkinson (1986:80), the division of farm size by area is useful as the level of capitalisation in the Northeast is rather low. Only six percent of farms under 10 hectares used animal-drawn ploughs and 13 per cent for those between 10 to 50 hectares.

argues that this is partly due to the regional climate and the synchronisation of all crops in the production system, which demand maximum work at each stage, referring to the specific case of livestock and food multi-crop system. In ecological conditions where *pecuarização* is not profitable, and where, at the same time patches of fertile soil occur, food crops could be raised on a commercial scale. In such areas, medium size farms could generate more employment for the *minifúndio* surplus labour than the cattle ranch-*latifúndio* (Wilkinson, 1986:85).

In summation, the modernisation process in the Northeast disarticulated the *latifúndio-minifúndio* system by reducing the access to land and labour in the *latifúndio*. On the other hand, modernisation has accentuated the dependence of the *minifúndio* sector on off-farm income, especially through temporary jobs.

Differentiation in the *minifúndio* sector was not based on capitalisation of the productive process, as in the southern region, but on the commoditisation of labour.

As stressed by Goodman (1985:47), capitalisation of family farming has rather emphasised the "enclave character" of the agricultural modernisation in the Northeast. The capital intensive irrigation programmes in São Francisco Valley, horticulture family farms, or agro-industry-led contract producers of fruits and vegetables are examples of these "enclaves".

1.3.3. Frontier peasant farms.

The age of agro-industrial development in the Amazon region, encouraged by generous subsidies, including regional

development projects and fiscal incentives, changed the role of the *posseiro* peasants on the frontier as suppliers of cheap food for the urban industrial centres (Velho, 1976) and the strategy of the *latifúndio* system. Large enterprises would no longer need *posseiro* systems of frontier occupation (Foweraker, 1981), reproducing non-capitalist social relations, and then dispossessing them to complete the cycle of frontier development. The State strategy of occupation, based on large estates, gave large southern enterprises direct access to huge tracts of public land, purchased at nominal prices (Goodman, 1986:36) for their productive (cattle ranching) and speculative purposes. Easy access to virgin public lands and the spontaneous settlement by *posseiro* peasants and other small producers are neither necessary steps in frontier occupation by capital, nor does the peasant staple food production have a central role in urban supply. On the contrary, the conservative large-estate-oriented strategy of occupation blocked or 'closed' the easy access of the *posseiro* peasant to land, appropriating beforehand public lands.

The violent struggles for land involving *posseiros* (squatters), *grileiros* (land grabbers), and indigenous peoples, now include large southern enterprises and the state. In this context, the presence of *posseiros* is an additional difficulty and a threat to legitimacy and political hegemony. The escalation of violence, which cost the lives of many peasants, ended by exposing the militarised view of the agrarian question held by the authoritarian State, manifest in the creation of the *Grupo Executivo de Terras do Baixo Amazonas* - GEBAM and the *Grupo Executivo de Terras do Alto Tocantins* - GETAT in 1980.

The reproduction of peasants in frontier regions, in conditions created by State policies, where they are politically oriented towards large-estate projects, depends on the strength of their movements against expropriation of their land. According to Martins (1989:85)

"heavy State subsidies and fiscal incentives to the large enterprises which opened the countryside to capitalist investment, protected and re-affirmed the land rent and property speculation (...)".

In this perspective, there is no concern about commodity production and rising productivity. In Martins's (1989:80) view, vast cattle raising projects and other activities for export, such as cocoa, coffee and rubber, are ancillary to the rent capturing 'industry'. In other words, *"the rationale of agricultural enterprises in Amazônia is not in production"*. However, this rent-capturing rationale is far less evident in the Centre-west, where capitalised forms of production, using heavy mechanisation are replicating the southern model of intensive production. Production systems there involve (a) 'frontier occupation' crops in which a *posseiro* peasantry is often present and later expropriated, for intensive cultivation, extensive pasture or simple speculation; or (b) direct forest clearance with heavy mechanisation, one to three year cultivation of rice, followed by the introduction of pasture, soybeans, or maize as permanent system crops.

In one way or another, the spaces for the reproduction of petty commodity producers in the traditional form of spontaneous occupation have been squeezed by the State policy of supporting large enterprises.

In summary, the remarkable transformation brought about

by the generalisation of commodity relations in postwar Brazil, especially in the period known as 'conservative modernisation' (1965-1980), created heterogeneous structures of production. In this process, the State intervened greatly by creating powerful mechanisms centred in the credit system, by orchestrating the distribution of institutional rent and the diffusion of agro-industrial technology. In this context, petty commodity producers adapted to the new conditions of competition by changing their methods of production to the standard dictated by the industrial capital. Many were swept aside, and others were simply dispossessed and transformed into free wage labour. Thus, the process was far from homogeneous.

By the end of the 1970s, signs of exhaustion of the model, mostly associated with the functioning of the credit system, were detected by Mendonça de Barros (1979:27) and others, whose criticisms were formulated in terms of the efficiency of this system, its equity and impact on monetary policy.

In the 1980s, with the exhaustion of the model, attention has shifted to the impact of changing policies on the conditions of existence of petty commodity producers. The preliminary results of the 1985 Agricultural Census issued in 1987, pointed to the reversal to the former tendency of accelerated destruction of this form of production, suggesting that the crisis has possibly created some spaces for them.

CHAPTER II

AGRO-FOOD POLICY CHANGES AND PETTY COMMODITY PRODUCTION

Introduction

From 1965 to 1980 subsidised rural credit was the main vehicle of capitalist development in the agro-food sector during the period of so-called 'conservative modernisation' (Delgado, 1989a:18-19). Economic crises since the late 1970s led to the exhaustion of the model and, in the 1980s, the rural credit system was reformed in line with orthodox macro-economic policy of adjustment to the debt crisis. The World Bank report (1982:113) emphasised the *"drastic reduction and eventual elimination of agricultural credit subsidies"* as the single most important recommendation, reinforced by Sayad's (1984:86) arguments of inefficiency and capital substitution effects, including the diversion of subsidised credit to other activities by large debtors. The alternative policy tool recommended was the use of minimum price policy. In actual fact, this recommendation was followed and guaranteed minimum prices increased in real terms during the 1981-86 period (Rezende, 1989). For Rezende (1989:216), this policy meant *"more effective government support for domestic production"*, which responded well in crisis conditions.

Arguing from another perspective but reaching the same conclusions, Graziano da Silva (1989a:322) argued that minimum price policy reinforced not only the *"independent commodity-led organisation within the agro-industrial complex (CAI)"* but also it has created an *"institutional barrier"*

against the "price scissors" effect³ for the loosely integrated capitals. However, as pointed out by Homem de Melo (1985:195) and Goodman (1986:18), recent policy measures did not reverse the historical trends of declining availability of basic foodstuffs, aggravating the already critical position at the end of the 1970s.

In short, rural credit reform in the context of a crisis meant the furthering of price instruments in the regulation of agro-food production and consumption.

This chapter attempts to address two questions:

- a) what changes occurred in the rural credit system for petty commodity producers; and
- b) the implications of the emphasis on price instruments in the regulation of agro-food production and consumption for petty commodity producers.

2.1. Primacy of the Trade Surplus Objective in Agro-food Policy.

The macro-economic policy of the 1980s was dominated by the constraints of a balance of payments deficit and inflation. A high level of borrowing during a period of cheap financing, high liquidity in the international financial market and the subsequent rise in interest rates became sources for mounting debt (Bresser Pereira, 1989:23; Sandroni, 1989:32-47).

A voluntary orthodox adjustment programme was set up in

³ The term "price scissors" was used by Guimarães (1979:15) to describe the compression of the rural cultivators by both upstream and downstream oligopolistic industrial sectors.

1981, attempting to cope with the crisis. In 1983, another programme (or economic package) was introduced, this time under the surveillance of the International Monetary Fund (IMF). Both programmes were based on strong domestic demand restrictions (cuts in government expenditures, wage compression) and export promotion (exchange rate devaluation, financial and fiscal incentives) (PREALC, 1985:23; Körner et al, 1987:87-88; and Souza, 1989:26).

The social pressure for democratic changes (in terms of income distribution), especially from those who were bearing the burden of the recession induced by economic adjustment, brought about a more relaxed fiscal and wage policy, culminating in the heterodox Cruzado Plan. Albeit, unable to tackle the crucial problem of the external debt constraint, this short-lived experience - February to November 1986 - illustrated the extent to which aggregate demand had been depressed. A very slight increase in the real mass of wages and a stable, overvalued Cruzado, fuelled domestic demand and negatively affected the trade surplus. The collapse of the Cruzado Plan, which had created unprecedented popular sympathy for the Sarney government, and which was reflected in sweeping gains in gubernatorial elections in November 1986, deteriorated into popular anger and political dismay. A last ditch attempt to stabilise the economy was made by Bresser Pereira in 1987, but this was defeated by popular misgivings and hostility from international bankers.

Thus, the decade's prevailing policy was impregnated with an orthodox approach to crisis management, with priority being given to the creation of a trade surplus. The transformation which occurred in the agro-food system was strongly influenced

by this central objective.

The agro-food trade surplus accomplished the role of supplying the means of servicing debt, which represented 75 per cent of the gross interest payments in the period 1983-85 (Table 2.1). The table provided by Guimarães (1987) shows that agricultural exports stabilised at US\$ 10 billion dollars in the 1980s, although this is more than twice the volume exported in the first half of 1970s (US\$ 3.9 billion dollars).

Table 2.1
Brazil - Agricultural trade balance and external debt service.
Period 1976-1985, triennial.

	1977-79	1980-82	1983-85
(X) EXPORTS (US\$million FOB)			
a.Total	13341.2	21200.2	24847.9 ⁽¹⁾
b.Agriculture	7826.6	10021.0	10749.2 ⁽²⁾
c.Percentage (b/a.100)	52.7	47.3	43.3
(M) IMPORTS (US\$million CIF)			
a.Total	16029.2	23369.6	15447.4 ⁽³⁾
b.Agriculture	2987.2	3977.9	2545.2 ⁽⁴⁾
c.Percentage (b/a.100)	18.6	17.0	16.5
(S) BALANCE (US\$million)			
a.Total	-2688.0	-2169.4	9400.5 ⁽⁵⁾
b.Agriculture	4839.4	6043.1	8204.0 ⁽⁵⁾
c.Percentage (b/a.100)			87.3
d.M/X Ratio (%)	38.2	39.7	23.7
(D) DEBT SERVICE (US\$ million)			
a.Total	9077.0	17571.0	14453.0
b.Gross Interest Payment	3718.0	10104.0	10935.0
c.Agricultural Surplus/Total Debt(%)	53.3	34.4	56.8
d.Agricultural Surplus/Interest Payment	130.2	59.8	75.0

Source: Guimarães, C.V. (1987) IPEA/IPLAN.

Notes: ⁽¹⁾ Value based on FOB data in chapter of the "Nomenclatura Brasileira de Mercadorias

(NBM); period January-October.

⁽²⁾ Estimated value based on FOB data in NBM chapter; refers to the accumulated value between January - October 1986, which varied 11.6 per cent over the same period in 1985.

⁽³⁾ Estimate January-October 1986, CIF.

⁽⁴⁾ Estimate January-October, includes relevant items but excludes some technical goods and raw materials as inputs to produce fertilisers, pesticides, etc.

⁽⁵⁾ January-October 1986.

⁽⁶⁾ All absolute values refer to current dollars.

More importantly, the increase in agro-food exports responded to the demand from the 'Fordist' consumption sector in developed countries. Although having decreasing level of

participation in the total export, the agro-food sector alone was responsible for 87.3 per cent of the total trade surplus in the 1983-1985 period. The sustained subsidised exports combined with declining imports improved the already low import/export ratio, from around 40 per cent in 1980/1982 to 23.7 per cent in the subsequent triennial. Significantly, amongst the bulk of agro-food imports, wheat remained the single most important item. Imports of capital goods for agriculture (tractors, chemical inputs, genetic materials) had been continuously substituted by local industrial production.

Accompanying the process of the internationalisation of the Brazilian economy and the particular strategy of industrial growth, agro-food exports adapted their structure to increasingly processed food consumption. New demands in the international market deeply altered the composition and the contents of agro-food exports.

The first aspect of this is that agro-food exports traditionally based on tropical commodities, such as coffee, cocoa and cotton in the Brazilian case, have changed their structure towards the 'Fordist' consumption products, such as soyabean, chicken meat, beef meat (Table 2.2). Traditionally, coffee alone was responsible for three-quarters of total agro-food exports in the 1950s, dropping to less than one-third of total exports in the 1980s. Conversely, soyabean represented only one per cent of total exports in the 1950s, mounting to one-quarter of total exports in the 1980s (Table 2.2). Soyabean represented only US\$ 8.0 million of the total US\$ 1,203 million exports in 1961/65, but in the period 1981/85, soyabean accounted for US\$ 2,591 million of the total US\$ 9,644 million, or 27 per cent of exports. In the same periods,

processed meat exported accounted for US\$ 20 million in 1961/65 and US\$ 484 million in 1981/85, and orange juice for US\$ 1.0 million and US\$ 797 millions respectively. Poultry meat export figures appeared only in 1978, and in 1980 already US\$ 280 million was being exported. This development in the agro-food sector resulted from the local appropriation of internationally standardised technology of production. Now they were able to compete with American farmers (soyabean and orange juice) and European farmers (chicken), to such an extent as to bother Florida citrus growers, who asked for protection against Brazilian orange juice.

Table 2.2
BRAZIL - Main agricultural exports
Period 1951-1986 triennial (per cent)

Product Group	51/59	60/62	63/65	66/68	69/71	72/74	75/77	78/80	81/83	84/86
Sugar cane	1.94	4.85	4.32	6.21	7.00	19.23	10.67	9.41	8.90	5.76
Cotton	7.84	8.38	9.00	8.34	9.48	6.52	3.11	3.39	4.31	4.11
Cocoa	6.88	5.83	3.65	5.22	5.49	4.34	5.87	9.99	5.68	7.42
Coffee	69.43	61.54	58.90	52.78	44.39	27.24	31.75	30.28	22.51	29.05
Beef meat	0.81	1.48	2.01	1.68	5.06	4.75	2.15	2.09	1.78	4.00
Soyabean	0.30	0.46	0.67	2.12	3.89	17.20	27.85	22.20	28.33	24.12
Tobacco	1.31	2.05	2.09	1.40	1.58	1.64	2.61	3.16	4.61	4.64
Orange	0.36	0.50	0.61	0.76	1.22	1.36	1.92	4.25	7.53	10.78
Chicken meat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.37	3.17	1.51
Others	11.13	14.92	18.75	21.51	21.90	17.73	14.08	13.86	13.19	8.61
Sub-total	88.87	85.08	81.25	78.49	78.10	82.27	85.92	86.14	86.81	92.30
Total	100	100	100	100	100	100	100	100	100	100

Sources: Calculated from Marra (1988); CACEX/BACEN.

A second aspect to be noted is that agro-food exports contain more industrial labour. They are now increasingly being exported as processed or manufactured products. Even the traditional export commodities such as coffee beans and sugar are now increasingly being exported as manufactured instant coffee and refined sugar (Table 2.3).

Table 2.3
 BRAZIL - Share of agricultural sub-sector in total exports.
 Period 1951-1986 triennial (per cent)

Sub Sector	51/53	60/62	63/65	66/68	69/71	72/74	75/77	78/80	81/83	84/86
Basics	86.5	76.9	75.4	70.8	62.5	52.9	46.4	33.5	28.4	23.8
Semi-manufacture	3.9	7.9	7.7	8.3	7.5	8.7	6.7	8.4	4.1	3.8
Manufacture	0.2	1.6	1.8	3.6	5.4	7.2	7.7	9.0	9.9	9.3
Agriculture	90.6	86.4	84.9	82.7	75.4	68.8	60.7	50.9	42.4	36.8
Total Export	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Calculated from Marra (1988); EMBRAPA/CACEX.

Finally, the positive trade balance in the 1980s was also favoured by the reduction of demand. The impact of the reduction in the mass of wages by the recessive adjustment is meant a depression of the demand for food, and therefore the release of agricultural products for export (Delgado, 1988:21-22). For petty foodstuffs producers reduction of demand corresponded further loss of market. This was mainly created by the low-income population whose household expenditures on food were around 40 per cent.

In summary, external and internal macroeconomic constraints underlined state policies for the agro-food sector, leading to give primacy to the generation of trade surplus. The immediate consequences of these constraints were the erosion of sources of cheap credit, a key component of agro-industrial capital expansion in agriculture, and the worsening conditions of sustained subsidies from the public sector.

The real devaluation of the exchange rate (agreed with IMF at one-per-cent higher than inflation level) and a 23 per cent maxi-devaluation in 1983 (Körner et al, 1987:77), along with other major macroeconomic policies, such as the contraction of wage earnings and export incentives through

fiscal exemptions, direct subsidies, had the combined effect of shifting the price relation in favour of tradable goods. These expenditure-switching policies fully off-set the deterioration of commodity prices in the international market. At the same time, the defusion of food imports as a mechanism of control for domestic prices forced import substitution policy contained, for example, in the 'priority' programme⁴ in 1979. The regulation of these constraints also meant increasing pressure on public expenditure. This is to suggest that State intervention was strong in the period of crisis and, although apparently buoyant in its particular form, agro-food policies were accomplishing a crucial task of producing trade surplus.

2.2. Rural Credit Reform.

The reform of the rural credit system arose from the impact of the economic crisis on the whole financial system and the wider economic reforms this engendered. These policy changes involved particularly (a) the phasing out of many internal and external sources of cheap credit; (b) implementation of orthodox adjustment policies to control domestic consumption, government expenditures and financial liquidity; and (c) efforts to restrain inflation.

⁴ 'Priority' programme designates in this study the economic strategy set up in 1979 by the incoming government to tackle the crisis, conferring priority to the development of agriculture, including staplefoods, exports and biomass energy production sectors (Homem de Melo, 1985:XI).

As a result of this reform it has been suggested that rural credit no longer plays the key role of integrating inter-sectoral capitals (Delgado, 1985:124) and of transferring institutional rents, which made the 'conservative modernisation' strategy of development viable. The creation of markets for the expanding agro-industrial branches on the one hand, and the transformation of the rural labour process on the other, emphasise the integrating role of subsidised credit. The period of technological modernisation policy, which began with the setting up of the *Sistema Nacional de Crédito Rural e Agro-industrial* - SNCR (National System of Rural and Agro-industrial Credit) in 1965, ended with the crisis of the model in the late 1970s. This period is called the period of 'industrialisation of agriculture or a period of consolidation of the "Agro-industrial complex" (Muller, 1982; Kageyama et al, 1987; Delgado, 1989a), both concepts being associated with a sectorally integrative process of capital accumulation.

2.2.1. The Mechanism of Cheap Credit Sourcing

The *Sistema Nacional de Crédito Rural e Agro-industrial* - SNCR (national system of rural credit) created by Law 4829 in 05/11/1965, reformed the existing *Carteira de Crédito Agropecuário e Industrial* - CREAI (Board of Agricultural and Industrial Credit), created in 1937. The system administered by the *Banco Central do Brasil* - BACEN (Brazilian Central Bank) includes the *Banco do Brasil*, other federal and state banks, as well as the private commercial banks.

Resources for credit programmes are derived from:

- a) The requirement that commercial banks devote a given proportion of their demand deposits to agricultural loans (BACEN Resolution 69/1967 - 698);
- b) Fiscal and para-fiscal resources, including external loans;
- c) Other resources, such as deposits in the *Banco do Brasil*, and compulsory commercial bank reserve deposits in the *Banco Central*.

The bulk of credit for agriculture comes from the *Banco do Brasil* and compulsory commercial banks loans (which were 15 per cent of demand deposits, later increased to 20 per cent). External sources, such as long term loans from the United States Agency for International Aid (USAID), the Inter-American Development Bank (IDB), the World Bank, the Canadian and American Wheat Agreement, were important at the beginning of the system. These external sources, representing 62 per cent of the total in 1964, fell to about 23 per cent of the total rural credit in 1972 (BACEN, 1989:16).

In the 1970s, the expansion of rural credit relied heavily on internal sources, from both fiscal sources and private commercial banks. The index of real credit value rose from 100 in 1969 to 444 in 1977, or 23.8 per cent per annum, far more rapidly than production itself, which grew by only five per cent per annum (Table 2.4).

Table 2.4
BRAZIL - Expansion of loans, interest rates and inflation rates.
Period 1969-1982.

Year	R u r a l C r e d i t		Nominal Interest Rate (%)	Inflation Rate (%)
	Total Loans	Real Value		
	(Cr\$ million) (Current)	Index (Constant) ¹		
1969	6489	178949	18	20.8
1970	9428	216747	17	19.8
1971	12870	245872	7	20.2
1972	18669	304060	15	17.0
1973	30334	429951	15	15.1
1974	48273	521688	15	28.7
1975	89997	775159	15	27.7
1976	130226	794170	15	41.3
1977	165858	709043	15	42.7
1978	233942	721054	15	38.7
1979	448731	898513	38	53.9
1980	825398	825398	45	100.2
1981	1563090	744702	45	109.9
1982	2960273	721627	(a)	95.4

Source: Delgado (1985:81) BACEN/GERUR, deflated by IGP/DI-FGV

(1) Prices adjusted to 1980.

(a) 60 to 80% of the variation of ORTN.

Major economic problems made the functioning of the credit system more difficult. Firstly, the public reallocated their assets held in demand deposits towards interest-bearing savings deposits. The share of demand deposits in total deposits dropped from 69.6 per cent in 1964 to 25.3 per cent in 1978 and down to six per cent in 1988, due principally to escalating inflation.

Secondly, the decreasing rate of economic growth and the trade deficit reduced tax based sourcing (export taxes, coffee export quotas, etc.) for many agricultural funds and programmes.

Thirdly, as external debt problems worsened, external loans were no longer easily available (Delgado, 1989b:30).

The consequences of these constraining factors affected public deficits and the monetary base which had to cover the gap created by the collapse of the main source of cheap credit

for agriculture. The volume of financing covered by the public debt increased from the 10 per cent level in the period 1971-1974 to 23.3 per cent in 1979. The total subsidy estimated by Sayad (1982:137) rose from the average Cr\$ 9.0 billion (1980) during 1971-1973 period to more than Cr\$ 180 billion in 1980. In this process of credit expansion, the costs of the subsidy were increasingly being paid by the public deficit and the expansion of the monetary base.

Attempts to carry out a contractionary policy began in 1979 with the defusion of the ongoing method of calculation and the determination of the level of financing⁵ according to the production expectation parameters. Until 1979, interest rates were fixed in nominal terms. They were around 15 per cent per annum, varying from 12 to 18 per cent depending on the programme, and were later fixed at 45 per cent as the inflation rate escalated and subsidies increased. Under the new method, which came into force at the beginning of the 1979/80 crop year, credit ceilings were calculated by reference to average variable production costs (VBC) and the level of yield per hectare for a particular region and crop (World Bank, 1982:17-18).

Monetary correction was introduced, using government bonds (*Obrigações Reajustáveis do Tesouro Nacional* - ORTN) as

⁵ The applicable formula in this case was:

$$A \cdot Y_{\pi} \cdot bP'_c$$

Where:

A = Planted Area;

Y_{π} = Expected average yield for concerned region and crop;

b = Policy determined coefficient;

P'_c = Minimum price for the crop set by *Conselho Monetário Nacional* (CMN).

the index⁶. This formulation was meant to reduce or even eliminate all subsidies included in the credit system, but sectoral lobbying by farmers and agro-industries neutralised the expected effect. The pre-fixation of monetary correction was re-introduced at the beginning of 1980, with the ORTN index fixed at 45 per cent, including a newly-conceived criterion of eligibility for subsidised loans according to farm size (World Bank, 1982:19). The re-institution of formal indexation of rural credit became effective only in 1984 (BACEN Resolution nº 876, 20/12/1983), when, for the first time, full monetary correction plus a three per cent per annum interest rate came into force. Even so, in the northeastern region, monetary correction remained at 70 per cent of the variation of ORTN in the first semester, and 80 per cent in the second. Also, the areas affected by the long-lasting drought of 1978-83 were financed with loans payable at only 35 percent of the monetary correction charge (Agroanalysis, 1983, December:18). Thus, the process of indexation and consequently, the reduction of subsidies in the rural credit system, was slow, and fiercely opposed by the beneficiaries (farmers, agro-industries, and traders).

Another set of arguments explaining the reform of the rural credit system is based on the questionable efficacy of subsidised credit in promoting production growth, and its

⁶ Indexed interest rates for rural credit were expected to be determined by the formula:

$$I = a \cdot \text{ORTN} \cdot i \quad \text{Where:}$$

i = interest rate;

ORTN = monetary correction index; and

a = coefficient annually set by the *Conselho Monetário Nacional* (CMN).

distortion of rural income distribution. Low or negative interest rates have stimulated substitution as financial resources are interchangeable or 'fungible' (Sayad, 1984:99). Borrowers can easily switch resources from one "project" to another, generally preferring those where the interest or the rate of return was higher. It is estimated that roughly 30 per cent of total loans were legally 'diverted' and this was practiced by almost all large commercial farms (Sayad, 1984:101). Also, diversion is more pronounced in the case of long term loans (investment credit) than with short term loans (marketing and operating credit). Sayad (1984:98-104) argued that with high inflation the possibility of substitution increases, especially with the higher interest rate charged on commercial bank loans for non-agricultural purposes. So, in the prevailing conditions of high inflation cheap credit increased speculation instead of production. From the banking system point of view, large borrowers, in this case large farmers, can offer a real guarantee of repayment and have greater liquidity. Credit for capital formation declined gradually from the peak of Cr\$ 60 billion in 1976, to the lowest level of Cr\$ 10 billion in 1984, increasing the idle capacity in branches of upstream agro-industries which produced tractors, harvesters and other agricultural machinery.

However, in the case of operating credit, total loans only dropped below the 1975 level in real terms in 1984. This kind of credit retained the function of providing liquidity to meet productive consumption needs during the farming cycle and eventually for the marketing period. Sayad's criticism, based on investment substitution and credit diversion, inefficiency

and inflationary effects, holds that whilst credit is transformed into an unequal rent transfer, it is concentrated on privileged large farmers and that they are no longer using the resources for productive purposes. Nevertheless, this argument does not apply entirely to small family farmers who have less flexibility to use subsidised credit for speculative purposes. Along this line of reasoning, it is recognised that credit incentive is efficient for small family farmers. The design of credit reform policies adopted in Brazil, which differentiate according to the category of farmers, that is, between the mini, small, medium and large farmer, is a recognition of the existence of this kind of differentiated production response to credit availability. Furthermore, differentiation of farm categories was thereby combined with products, including in policy management the concepts of market segmentation and commodity systems. Throughout the period of 'conservative modernisation' the whole of policy management in the 1980s was based on the fixation of ceilings and financial charges for operating credit by crop, category of farmers and regions (Table 2.5).

The second argument of inefficiency is much more related to the rate of the credit subsidy. Insofar as interest rates remain fixed in the rural credit system, any inflation above this rate implies a subsidy. Thus, soaring inflation increases in correspondence the rate of subsidy. The farmers' marginal rate of response to this higher subsidy rate was negative in terms of acreage sown. Agricultural loans expanded faster than the agricultural output in the 1970s. The index of total loans jumped from 100 in 1969-71 to 324 in 1978-80, and the index of gross agricultural product at factor cost increased from 100

to only 236 in the same period (Table 2.6).

Table 2.5
Brazil - Financial charges in operating credit, by regions and farm categories. Period 1967-1986.

Region/Farm Category	1967 to 03/70	03/70 to 02/72	02/72 to 12/79	12/79 to 12/80	12/80 to 12/82	12/82 to 06/83	06/83 to 12/83	12/83 to 07/84	07/84 to 12/85	12/85 to 03/86	03/86 to 02/87
I. SUDAM/SUDENE											
a) Mini-Producer	14	13	13	21	35	55%	70%	70%	80%	85%	3
b) Small Producer	18	17	15	21	35	of	of	of	of	of	3
c) Medium Producer	18	17	15	30	35	INPC ¹	MC ²	MC ²	MC ²	MC ²	6
d) Large Producer	18	17	15	30	35	+5%	+3%	+3%	+3%	+3%	6
II. Other Regions											
a) Mini-producer	14	13	13	24	45	70%	85%	100%	100%	100%	10
b) Small Producer	18	17	15	24	45	of	of	of	of	of	10
c) Medium Producer	18	17	15	33	45	INPC	MC	MC	MC	MC	10
d) Large Producer	18	17	15	33	45	+5%	+3%	+3%	+3%	+3%	10

Source: Pagnussat (1988:108), data from Central Bank of Brazil.

(1) INPC - National Consumer Price Index;

(2) MC - Monetary correction rate.

Table 2.6
Brazil - Indexes of rural credit use and Gross Agricultural Product
Period 1969-1987, triennial.

	Type of Credit			Total	Gross
Triennial	Operating	Investment	Marketing	Credits	Agricultural Product ^a
1969-71	100	100	100	100	100
1972-74	160	187	151	165	151
1975-77	295	311	288	298	227
1978-80	373	262	305	324	236
1981-83	361	139	228	263	206
1984-86	282	152	105	198	262
1987	342	133	103	218	...

Sources: Calculated from BACEN, *Boletins Estatísticos*, several issues; and FIBGE, (1987) *Contas Nacionais do Brasil - 1970-1985* and (1988) *Indicadores*, V.7:6.

(a) At factors costs.

The ratio between total loans and agricultural product was 0.51 in the 1970-72 triennial and went up to 0.72 in 1979-81 triennial (Delgado, 1985:81). In the contractionary period, marking the first half of the 1980s when the economy underwent the worst recession (1981-1983), the sharp reduction of loans slowed down or was reduced to the level of annual agricultural output. Of course, in this critical period of crisis agriculture was hit by natural disasters, like floods in the southern region, and drought in the semi-arid Northeast.

However, the effects of these climatic interferences were mostly regional. For example, the devastating frost in the southeastern and southern region which reduced coffee production to near zero in 1976 did not affect the steady rate of production growth in the second half of the 1970s (Table 2.7). In the expansionary period, subsidised rural credit can be recognised as a powerful instrument policy of conservative modernisation and there is no evident conflict among dominant economic forces. Conversely, the contractionary period witnessed harsh competition for a share of institutional rents, conferred through credit system and other policy instruments. This period was marked by the emergence of conflicts and contradictions within the commodity systems and between these systems and the State.

For petty commodity producers, credit was more effectively used in terms of productive response (Guedes Pinto, 1980). However, the participation of small family farmers (less than 100 hectares) in total credit declined from 38.6 per cent in 1970 to 31.9 per cent in 1975 (Table 2.8). Conversely, medium and large farmers increased their share. Credit was concentrated on larger farmers because of their capacity to offer more guarantees and because of their easy access to the banking system, which naturally selected less risky borrowers.

In turn, this concentration was closely related to the ownership of land as an essential prerequisite for access to the rural credit system. It is revealing that the increase in the value of subsidies in the credit system (Table 2.9) coincided with the period of high prices of land.

Table 2.7
Brazil - Rural credit and Agricultural Gross Domestic Product¹ (AGDP)
Period 1970-1987, in 1977 Cr\$ million.

Year	Types of Credit			Total	Agricultural GDP
	Operating	Investment	Marketing		
1970	29543.7	17918.4	18719.4	66182.0	108398.1
1971	24957.7	16918.4	15475.5	57351.6	128005.2
1972	29610.7	23522.7	17985.9	71119.3	146410.5
1973	42929.3	33278.8	24384.5	100612.6	184210.7
1974	56003.0	37652.7	30726.0	124381.7	206427.6
1975	79480.2	56683.5	45172.5	181336.2	216284.2
1976	79399.1	60233.2	47149.5	186781.8	266141.5
1977	78428.0	40236.0	47194.0	165859.0	322048.0
1978	80436.9	42122.6	46108.1	168667.6	268709.4
1979	105711.5	52508.2	51958.8	210178.5	280954.5
1980	113720.9	37701.1	49559.1	200980.8	288210.5
1981	102227.8	26942.7	45140.2	174310.7	249962.3
1982	108582.8	22138.4	38080.3	168801.6	216115.3
1983	79228.3	21274.0	26918.0	127420.3	264397.3
1984	54859.6	9578.8	13390.7	77829.1	283361.8
1985	78915.5	14384.1	17685.6	110985.1	308088.4
1986	92541.8	53011.4	19869.3	165422.5	338167.8
1987	91508.6	22300.6	16625.4	130434.7	...

Sources: BACEN; IBGE Indicadores Vol.7(6), 1988; Delgado, 1985:81.

Deflator: IGP/DI-FGV.

(1) At factors costs.

Table 2.8
Brazil: Value of rural loans and production ratio in 1970 and 1975.

Farm Size (ha)	Total Value of *		Average Value of *		Ratio: Loans/ Production	
	Loans Cr\$million		Loans by Establishment		1970 1975	
	1970	1975	1970	1975		
Less than 10	1698.8	3263.0	673.4	1254.2	0.05	0.06
(%)	(5.5)	(3.2)				
10 - 100	10211.6	28982.1	2579.1	15262.2	0.14	0.19
(%)	(33.1)	(28.7)				
100 - 1000	12895.1	45094.9	31091.0	101071.5	0.25	0.35
(%)	(4.8)	(44.6)				
1000 - 10000	4820.0	19914.7	136058.0	502289.6	0.24	0.42
(%)	(15.6)	(19.3)				
10000 and plus	1230.3	3826.5	849287.4	2102458.3	0.36	0.75
(%)	(4.0)	(3.8)				
T O T A L	30853.8	101081.2	6266.0	20243.5	0.17	0.26
(%)	(100.0)	(100.0)				

Source: SAYAD, 1984:102)

(*) Deflated by IGP/DI-FGV, Base-year: 1978

Table 2.9
Brazil - Bearers of total subsidies included in rural credit programme and land prices index.
Period 1971-1981.

Year	Sources of Subsidies								Land Prices Index** (1966=100)	Total Flow of*** Rural Loans Cr\$Million(1980)
	Tax	Payer	Commercial		Monetary		Total Subsidies			
	(%)	Cr\$10 ⁶	Bank Depositors		Base Expansion		(4)=(1+2+3)			
	(1)	(1)	(%)	Cr\$10 ⁶ (2)	(%)	Cr\$10 ⁶ (3)	Cr\$10 ⁶	(%)		
1971	-	-	83.2	8.00	6.8	0.62	9.62	3.9	101	245872
1972	31.6	3.28	62.5	6.48	5.9	0.61	10.37	3.4	120	304060
1973	37.1	1.81	58.0	2.83	4.9	0.24	4.88	1.1	190	429951
1974	4.8	2.61	91.8	49.99	3.4	1.85	54.45	10.4	289	521688
1975	15.7	11.40	79.3	57.60	5.0	3.63	72.64	9.4	334	775159
1976	11.0	15.02	82.7	112.96	6.3	8.61	136.59	17.2	334	794170
1977	18.3	26.19	72.2	103.32	9.5	13.59	143.10	20.2	368	709043
1978	21.3	25.57	67.7	81.27	11.0	13.21	120.05	16.6	346	721054
1979	20.1	32.43	64.4	103.92	15.5	25.01	161.36	18.0	328	898513
1980	17.2	31.61	61.8	113.56	21.0	38.59	183.76	22.3	341	825398
1981	25.5	33.71	62.0	82.00	12.5	16.53	132.26	17.8	371	744702

Sources: (*) SAYAD, J. (1984:109);

(**) Real Crop Land Prices Index, from CAMARGO and FERREIRA, (1989:150);

(***) From Delgado, 1985:81.

Indeed, regressions estimated by Brandão (1988:177) indicate that rural credit was an important variable in explaining land prices. The expansion of cheap credit overheated the rural land market by reinforcing the capacity of landowners to enlarge their estates. The smaller farmers were under pressure to sell their plots, firstly because of the attraction of high land prices, but most importantly because in many cases their reproduction depended on the enlargement of their farms. And these aims were achieved by swapping small, valorised land for larger, mechanisable land in the centre-western frontier region. This situation was created by two major constraints: a) the natural growth of family members requiring more land for cultivation, and b) the enlargement of farm size imposed by the new technological threshold, such as the minimum size required to buy a tractor. The social differentiation resulting from this process explains part of the massive rural out-migration which occurred during the period of expansion of rural credit. The position of the resource-poor (land or other productive

capital) peasant farmer was even worse, as many were obliged to quit the land, unable to adapt to the new productive system, characterised by credit and new, industrially-based technology.

To sum up, the first point is that the bulk of the subsidies was transferred to the larger farmers. As pointed out by the World Bank (1982:25), the *"massive flow of subsidized credit to a minority of Brazilian farms"* caused distortions in income distribution. However, the petty commodity producers were not completely excluded from the benefits of rural credit policy and the appropriation of subsidies. Managing to keep pace in the competition within the new technological basis, a part of the petty commodity producers became a new category of capitalised producers, without renouncing their family labour. These family producers are the result of capitalist expansion mediated by subsidised rural credit, and therefore are sensitive to policy changes as much as any capitalist producer.

The second aspect to stress is, that although credit subsidies were becoming ineffective as an instrument of production encouragement, due to credit substitution and other shortcomings, macroeconomic difficulties of domestic inflation and external adjustments were determinant to rural credit reform. Credit subsidies steadily increased from 1974 to 1980 (Table 2.9) and declined thereafter due to the effects of the economic crisis and adjustment policies. Albeit private demand deposits in commercial banks had remained as the main source of these subsidies, the share of government expenditure and the expansion of the monetary base were increasing. According to the prevailing interpretation, the pressure on the monetary

base and the consequent increase in liquidity was an important source of inflation. The same inflation rate was also the cause of the shift of the public away from demand deposits and into interest-bearing savings accounts.

2.2.2. Changes in the Structure of Rural Credit.

Rural credit support to producers was normally classified by the *Banco Central do Brasil* (Brazilian Central Bank) according to use, namely, for operating, investment or marketing purposes. Credit support was intended to cover the whole process of production, from investment in durable industrial equipment, such as tractors, harvesters, and implements, to investment in intermediary inputs and services needed in the productive cycle, and finally to guarantee minimum prices and financial means of market stabilisation.

The purpose of this section is to examine the distribution of loans within the structure of operating, investment and marketing types of credit in the period of expansion and contraction of rural credit.

The expansion of credit for agriculture accelerated throughout the 1970s, but signs of contraction in investment credit already had appeared in 1977. Operating credit gained in relative significance during the contractionary period, because of its immediate effect on production and because of the high degree of credit dependence created during the transformation of the production system. Constrained by the need to increase both production for export and import substitution of foodstuffs to supply the domestic market, operating credit was resilient to curtailment. However, during the worst period of crisis, international food commodity

prices were low and helped the reduction of imports, without reducing the physical volume of cereals needed to regulate domestic market prices.

In general terms, the contractionary policy reflected the shift from the former broad policy of labour process modernisation - through the partial appropriation of labour by industrial capital - to a more immediate, short-term production oriented strategy. In other words, there was a shift from a qualitative to a quantitative nature of change. Indeed, from 1969 to 1979, roughly 45 per cent of all loans were used as operating credit; 29 per cent as investment credit and 26 per cent as marketing credit (Table 2.10). In the period of contraction, from 1983 to 1987 (excluding 1986, because of the swing back to an expansionary credit policy under the heterodox Cruzado Plan), around two-thirds of all loans were allocated to short-term operating capital (*custeio*) and the remaining one third for investment and marketing purposes.

Table 2.10
Brazil - Structure of rural credit according to selected periods.
Cr\$ Million (1977)

Period	Operating	Investment	Marketing	Total
1. 1969-1979 (Credit Expansion)				
Cr\$ million per annum	52668.2	34421.6	30709.3	117799.2
Per cent	44.7	29.2	26.1	100.0
2. 1980-1982 (High Loans/Production Ratio)				
Cr\$ million per annum	107560.8	34822.6	46184.6	188567.9
Per cent	57.0	18.5	24.5	100.0
3. 1983-1987 (Credit Contraction)				
Cr\$ million per annum	76128.0	16884.4	18654.9	111667.3
Per cent	68.2	15.1	16.7	100.0

Sources: Calculated from BACEN, *Anuários Estatísticos*.
Deflator: IGP/DI-FGV

a. Investment Credit

Investment credit helped tractor and other agricultural machinery industries to create a huge market, and was decisive in the process of consolidation of this sector of capital goods producers. Tractors, combined harvesters and other machinery previously imported were now locally produced by the same multinational corporations which had supplied the imported goods. Internationally leading firms, such as MASSEY FERGUSON, FIAT, FORD and VALMET, produced tractors and implements in the same process of import-substituting industrial expansion that had marked the development strategy in Brazil since the mid-1960s. However, tractor production was highly dependent on subsidised investment credit and the peak level was attained in 1976, exactly when loans for investment in agricultural capital goods were at the highest level ever (Table 2.11).

Table 2.11

Brazil - Tractor and combine harvester industrial production and rural investment loans, in Cr\$ million (1977). Period 1970-1983.

Year	<u>Industrial Production</u>		Rural Loans
	Tractor	Harvester	
1970	14457	730	17982.1
1971	22488	1232	16918.4
1972	30207	1932	23522.7
1973	39232	2754	33278.8
1974	46848	5378	37652.7
1975	59166	7688	56683.5
1976	65327	7377	60233.2
1977	52966	4800	40236.0
1978	48675	4287	42122.6
1979	55247	4563	52508.2
1980	58812	6488	37701.1
1981	39341	5084	26942.7
1982	30346	3545	22138.4
1983	24000	2599	21274.0

Sources: CASTRO, (1986:20); BACEN (for investment loans).

This high dependence provoked a crisis of idle capacity in the tractor and other machinery sectors following the sharp reduction in investment credit. According to *Associação Nacional de Fabricantes de Veículos Automotores* - ANFAVEA (National Association of Automotive Vehicles) idle capacity was as high as 60 per cent in 1982 (Delgado, 1985:82).

On the other hand, the formation of the modernised farming sector depended very much on the tractor to change the labour process as other appropriationist technologies were designed for this key machine. The introduction of the tractor established a new technological threshold in farming and also the minimum competitive scale of production. In the case of soyabean production in southern Brazil, the entire production process - from soil and seed-bed preparation through to fertilisation, sowing, cultivation to plant protection - is based on tractor-fitted implements. Only the harvesting operation requires a special combine harvester. Due to its efficiency, and the limitation of the period of harvesting, possession and control of this machine has established another level of scale in farming.

The import substitution policy successfully expanded the domestic agricultural market for locally produced tractors, attaining a level of 59,000 units a year in 1975. The domestic tractor industry started production in 1960, and in 1962 had already supplied 82 per cent of the local market. In the contractionary phase of the economy, export promotion strategy prevailed. Credit subsidies, the incentives created by the maxi-devaluation of the exchange rate, and fiscal exemptions in the export sector, diverted part of the resources from the domestic market. The outcome of this policy could be seen in

1977, when 8.7 per cent of the tractors produced was exported. From 1977 to 1986, domestic tractor production averaged 44,936 units a year and, on average, 4,498 units a year were exported, about 12 per cent (Table 2.12). The share of exports increased in proportion to the reduction of credit for domestic investment, reflecting the general effects of the restrictive macroeconomic policy.

Table 2.12
Brazil: Numbers of tractors produced, imported, exported and used domestically.
Period 1950-1986.

Year	Production Units	Imports Units	Domestic Units	Exports Units	Exports/ Production (%)	Imports/ Production Units	Production/ total (%)
1950		8375				8375	
1951		10967				10967	
1952		7363				7363	
1953		2154				2154	
1954		12258				12258	
1955		5345				5345	
1956		4117				4117	
1957		6810				6810	
1958		7135				7135	
1959		4597				4597	
1960	30	12702	19			12732	0.2
1961	1679	6382	1645			8061	20.8
1962	7586	1714	7336			9300	81.6
1963	9908	1330	9368	1	0.0	11238	88.2
1964	11537	1341	12032	2	0.0	12878	89.6
1965	8121	674	8072			8795	92.3
1966	9069	639	9214	6	0.1	9708	93.4
1967	6223	342	5474	31	0.5	6565	94.8
1968	9671	990	9168	7	0.1	10661	90.7
1969	9547	243	9664	7	0.1	9790	97.5
1970	14048	60	14176	41	0.3	14108	99.6
1971	22122	184	21660	104	0.5	22306	99.2
1972	30207	228	29704	188	0.6	30435	99.3
1973	39232	258	39454	386	1.0	39490	99.3
1974	46848	347	45995	895	1.9	47195	99.3
1975	59166	801	57931	649	1.1	59967	98.7
1976	65327	191	63776	472	0.7	65518	99.7
1977	52966	39	48568	4584	8.6	53005	99.9
1978	48675		41619	6134	12.6	48675	100.0
1979	55247		49523	7263	13.1	55247	100.0
1980	58812		50994	7743	13.2	58812	100.0
1981	39341		28104	10073	25.6	39341	100.0
1982	30346		24662	6239	20.6	30346	100.0
1983	22663		22546	1895	8.4	22663	100.0
1984	45842		41952	3299	7.2	45842	100.0
1985	43914		41243	2294	5.2	43914	100.0
1986	51559		46388	5456	10.6	51559	100.0

Source: MENDONÇA DE BARROS, J.R. and MANOEL, A. (1988:303)/SINFAVEA

Note: Includes non-farming four-wheel tractors.

Investment credit was not only used to finance sales of tractors and machines. A large range of items for crop and

animal husbandry, such as farm warehouses, tools for soil conservation and small processing, irrigation systems, vehicles and electrification systems, among others were equally financed (Table 2.13). All items except irrigation and complementary investment suffered sharp reductions in the 1980s. These reductions were expected to have deleterious effects in the medium term and, indeed, some are already visible.

Table 2.13
Brazil - Rural investment loans according to items.
Real value index for 1980, 1982 and 1986/87 (1975=100)

Items	1975 Cr\$million	1980/1975 (%)	1982/1975 (%)	1986-87/1975 (%)
Total Investment Credit	56683.5	66.5	39.1	42.5
CROP PRODUCTION	31688.5	74.5	43.8	47.0
-Perennial Crops	4813.6	124.4	27.4	34.5
-Machinery	5925.9	42.4	30.3	42.5
-Tractors	7634.5	45.3	25.0	44.7
-Draft Animals	323.7	81.8	47.2	36.8
-Farm Warehouses	1888.0	44.2	6.3	46.0
-Electricity	429.3	159.8	26.0	85.7
-Processing	1748.9	28.4	14.1	16.4
-Irrigation	515.8	204.6	147.9	269.7
-Farm Improvement	2905.2	141.6	150.9	70.3
-Soil Conservation	1198.9	18.8	19.8	23.5
-Vehicles	1608.4	64.5	30.1	30.0
-Others	3125.6	94.2	75.1	55.0
LIVESTOCK PRODUCTION	24976.8	56.4	33.1	36.9
-Cattle	10453.4	30.4	21.3	44.2
-Machinery	423.1	39.0	33.7	30.6
-Tractors	1366.1	31.0	7.1	17.0
-Farm Warehouses	370.7	51.4	4.1	38.9
-Processing	899.1	46.1	10.8	9.7
-Irrigation	399.0	169.9	106.7	48.6
-Improvement	2904.0	99.1	94.5	67.9
-Pasture	3419.3	39.1	34.7	22.5
-Soil Conservation				
-Vehicles	394.7	32.3	35.1	30.3
-Others	4256.8	39.0	27.2	15.8

Sources: (1) Delgado (1985) for 1975, 1980 and 1982;
(2) Calculated from BACEN, *Boletins Estatísticos* for 1986/1987.
Deflator: IGP/DI-FGV.

Ecological problems caused by intensive mechanisation, and the indiscriminate use of agro-chemicals were a motive for constant concern by urban and rural social movements. Food contamination by pesticides, the poisoning of rural workers and soil erosion which carried away millions of tonnes of fertile soils were some of the problems raised (Martine and Garcia, 1987).

The most sensitive aspect of these ecological concerns involves the direct effect on land productivity and rising costs. Soil compaction, organic matter losses, increasing pest resistance to pesticides, causing the farmer to use additional or stronger (more toxically concentrated doses) pesticides, etc, were some of the causes for the fall in productivity and for rising costs. In the state of Rio Grande do Sul, where the modern soyabean/wheat system of production was first diffused, yield per hectare actually fell in the 1980s, as compared to the 1970s. The two major soyabean producer states in Brazil - Rio Grande do Sul and Paraná - yielded 1.56 tonnes per hectare in 1979/81, but this yield decreased to 1.35 tonnes per hectare in the 1985/87 period. Even excluding the abnormal year of 1986, when there was severe drought at a critical time, the yield per hectare fell by 10 per cent in the 1980-88 period in Rio Grande do Sul. From the agronomic point of view, plants become more vulnerable to any short period of drought or water stress when organic matter, normally responsible for retaining moisture in the soil, is exhausted. This sort of argument was one of the strongest factors which convinced the World Bank to finance soil conservation projects in the South.

Finally, the rise of investment in irrigation in the 1980s is revealing. Whilst total investment credit was

decreasing to 42 per cent of the 1975 level, credit for irrigation rose to 270 per cent of this level. The irrigation system chosen relied on hydro-electrical power for pumping water and sprinkling water, and was an aerial-sprinkling central pivot system whose viable minimum irrigated area was 70-120 hectares (Silva, 1987:11). Considered politically as a 'priority' programme, irrigation was taken as a new motto of agricultural modernisation in the 1980s. Being an important and universally recognised method of overcoming the problem of rainfall maldistribution and for providing an adequate water supply during the biological production cycle, irrigation was expected to be able to respond to a political demand for action in the semi-arid Northeast, of activating upstream industries, and of producing expensive luxury foods for export and to southeastern metropolitan markets. The semi-arid Northeast was the single most important region that received governmental financial help in irrigation programmes. This situation changed with the growing interest in the potential of arable lands for cereal and oilseed crops, and agro-industrial investments in the *cerrado* area, mostly concentrated in the Centre-west region, which holds about two-thirds of the total irrigation potential (Simas, 1988).

In the Northeast, irrigation programmes are long dated and mostly public funded: it was first carried out by the *Departamento Nacional de Obras Contra a Seca* - DNOCS (National Department of Construction Against Drought) and was later supplemented by the *Companhia de Desenvolvimento do Vale São Francisco* - CODEVASF (São Francisco Valley Development Company), formerly SUVALE. Both organisations are now the executive agents for the *Programa Nacional de Irrigação* -

PRONI (National Irrigation Programme) and for the *Programa de Irrigação do Nordeste* - PROINE (Northeastern Irrigation Programme) created in January 1986 by Presidential Decree nº 92344. Actions carried out directly by the State through executive organisations such as DNOCS and CODEVASF are classed as public irrigation, in contrast to private irrigation which is carried out directly by private enterprises. In terms of economic viability, all these public irrigation projects in the Northeast have been far from successful (Paiva, 1987:15), and the private irrigation projects have always been dependent on public funds for investment and operation. The meagre results of public irrigation can be seen in the total irrigated area from 1970 (when the PRONI was created) to 1987. Only 83.000 hectares were irrigated and about 65 thousand used productively. The productivity per unit area was no better than in modernised southern farms, and of course the fixed investment costs were much higher. The rate of return was therefore low. In addition to the low crop yield per hectare, the irrigation system adopted failed to integrate with upland farming. For the public sector, investment costs were very high. Irrigation systems demand much construction, and to compensate these costs the rate of return must be high. A survey recently carried out by IPLAN (Assirati, 1986), showed that in some cases, the rates of return were negative. The total gross income was insufficient to cover operational costs. It follows that the burden of all fixed investment costs was borne by the public sector. Nevertheless, the reason for investment credit being continually reduced lay more in the shortage of funds and the constant public financial and budgetary crises than in

the economic viability of the projects. As priority projects, they would have received much more financial support if the enormous public debt had not been at stake.

Public and private irrigation programmes depend on public financing and direct investment in roads, electrification, construction of dams, etc. Under these conditions fiscal and credit subsidies are necessary if private investment in the projects is to be maintained. Financial support from *Superintendência de Desenvolvimento do Nordeste* - SUDENE (34/18 and 2032/83), and income tax relief funds were two of the means of rent transfer to the private sector. Public funded technological research also played a fundamental role. Lack of technological innovation still remains a major shortcoming in irrigation in the Northeast. Low rate of cropping (*taxa de ocupação*)⁷ (0.5 to 1.0), and the yield per hectare being no better here than on non-irrigated land in the South are indications of technological problems. Other non-technical shortcomings were pointed out by Graziano da Silva et al. (1989:100-111); these include high investment costs, and administrative inefficiency (bureaucracy, political interference, deficient conservation). For example, it was reported that, sometimes the number of civil servants was higher than that of farmers to be assisted, thus reviving the old tradition on public fund mismanagement and preserving local oligarchies (Hall, 1978). Only 60,000 out of the 195,000 hectares designated by the *Plano Plurianual de Irrigação* (Pluriannual Irrigation Plan) were actually irrigated, of

⁷ *taxa de ocupação* is the rate of land used for cropping in an irrigated area, and is the ratio between the area actually cropped to the irrigated area available.

which 22 per cent are no longer being cropped (May, 1989:46). From the social perspective, it is noticeable that one third of irrigated land has been give to large enterprises and not to small producers, as initially envisaged. The latter are therefore obliged to participate in the sharecropping systems which developed as the result of the lack of resources, and technological and economic uncertainties (Graziano da Silva et al, 1989:22).

In short, the rising investment in the irrigation system of farming as a new lever in the modernisation in the 1980s was hindered by its inefficiency at the prevailing level of technological progress. Private projects shared the same shortcomings imputed to the public projects, remaining highly dependent on public funding. For small producers in the regions, high risks and investment costs were major impediments to their access to irrigation programmes. In fact, irrigation projects protracted the modernisation strategy in the Centre-west with the expansion in investment on cereal and oilseed crops, although to a lesser extent and not repeating the remarkable increase in capital investment during the 1970s.

b. Operating Credit

The relative stability of operating loans in the contractionary period was dictated by the macroeconomic strategy of creating a trade surplus and of sustaining production for the domestic market as a mechanism for relieving pressures on food prices, and therefore on inflation.

Operating loans were the last link to disrupt the

strategy of 'conservative modernisation' relying on cheap credit (Delgado, 1985:88). The fact is that the entire productive model interrelated the three types of loans, although their significance in different stages of development of the technological system may vary. Investment credit was crucial in the early stage of the adoption of the system, but once the minimum set of machinery was completed, operating credit conditions became more relevant. These short term loans were needed whenever a new cycle of production was about to begin. For the lenders, operating loans enabled farmers to repay in due time the medium-run investment loans.

Credit-dependent agriculture as created by conservative modernisation was affected by two variants: the sensitivity of the agro-food systems to State-controlled policies; and, as a corollary, the need of State apparatus to provide adequate credit facilities for the desired production level and structure.

As in any other case where capital intensive technology was adopted, loans and therefore farm debts tended to increase with fixed-capital formation. The policy meant the creation of a sizeable market for industrial inputs, a process in which the agricultural production structure changed, mainly in the expansionist period of the 1970s. The data are unequivocal. This expansion can be seen when one takes the consumption of fertilisers and pesticides as indicators of the diffusion of modern industrial technology in agriculture. From 1965 to 1980 the apparent consumption of macronutrients (NPK - nitrogen, phosphorus, and potassium) rose ninefold. The annual growth rate in consumption was 18.8 per cent per annum while operating loans grew at 14.4 per cent per annum during the

period of rapid modernisation (1969-80) (Table 2.14). This period of soaring apparent consumption of fertilisers consolidated domestic industrial production of nitrogen and phosphorus fertilisers. For the third macronutrient - the potassium - there were no economically viable mineral sources from which industry could produce potassium fertilisers.

Table 2.14
Brazil - Apparent consumption of fertilisers (NPK) and operating loans
Period 1970-1986

Period	F e r t i l i s e r s		O p e r a t i n g L o a n s	
	Tonnes	Annual variation (%)	Cr\$ million (1977)	Annual variation (%)
1970-74	1482884	23.7	36612.9	16.7
1975-79	2700827	7.1	84691.1	13.5
1980	4200619	63.6	113720.9	7.6
1981	2753729	-35.3	102227.8	-10.1
1982	2718469	-1.3	108582.8	6.2
1983	2420493	-11.0	79228.3	-27.0
1984	3453025	42.7	54859.6	-30.8
1985	3198055	-7.4	78915.5	43.8
1986	3840469	20.1	92541.8	17.3

Source: Calculated from BACEN, *Boletins Estatísticos*, several years.

Fertilisers, along with other major industrial inputs such as chemical pesticides, processed feedstuffs and improved seeds, have been at the very basis of the changing labour process in agriculture, a process brought about by cheap credit. The concession of operating loans was compulsorily linked to the consumption of industrial inputs. This clause was only abolished in 1983, when the Central Bank of Brazil issued the controversial Resolution nº 706/83, disassociating the concession of credit and the 15 per cent compulsory use of 'modern technology'. The Resolution also dismissed the 'project' as a necessary procedure entitling the farmer to

obtain the loan. The Resolution was harshly criticised by agronomists at the time. They argued that yield would fall in consequence of a decreased use of industrial inputs, that is of the technological norms of production established for major modernised crops.

The apparent consumption of fertilisers and pesticides, as well as improved seeds, proved erratic, but in marked decline, accompanying the downward trend in credit liquidity after 1980. The discrepant trend in the period was domestic production of pesticides and fertilisers. These agro-industries continued to grow even during the worst period of recession, as did herbicide-producing industries. This production partially offset the sharp decline in imports. The export of pesticides was less than three per cent of the total availability (production plus imports) in 1975, and 10 years later, in 1985, 27.5 per cent was exported, in line with the macroeconomic policy of trade surplus generation. The expansion of agro-industrial output was progressively more committed to export than to domestic consumption. The domestic production of herbicides, for example, was only 18.4 per cent in 1975-78 and export was negligible. In a few years' time, 94.6 per cent of the domestic consumption of herbicides was locally produced and 30.8 per cent of total production was exported in 1979-85.

Herbicides can replace labour-intensive mechanical cultivation and the formerly widespread manual (hoe) cultivation. Although this chemical form of cultivation is continually replacing mechanical forms in day-to-day farming practice and is now part of the modern farming system, in a context of low-wages a return to the mechanical system of

cultivation occurs very often. Cheap casual workers were used as an alternative to the rising cost of industrial chemicals as a result of both the contraction of credit and the worsening terms of trade between agriculture and industry. Thus, low wages were a strong bargaining chip in the relationship between sectors within agro-food systems.

The disassociation of operating credit from the compulsory use of 15 per cent of total credit in the purchase of agricultural inputs eased the way to this kind of sectoral bargaining. Finally, it is worthwhile noting that operating credit represented two-thirds (68 per cent) of total loans during the contractionary period (Table 2.7). It remained the most intractable of credit categories, not only because of the power of the lobbyists concerned combining the plights of huge multinational corporations with those of influential modernised farmers, who were represented by giant co-operatives in their difficulties, but also because of its links with the short term agricultural output fundamental to the leading objective of overcoming inflation and external debt. Consequently, operating credit remained procurable, and because it was difficult to increase interest rates and thus to reduce subsidies, the control of the mass of credit was affected by imposing a global ceiling in the monetary and fiscal budget.

Nevertheless, there is no doubt that interest rates were increased, as compared to levels of the 1970s, and certainly, as interest rates rise, access to credit by small producers becomes more difficult.

c. Marketing Credit

This category of loans was part of a State policy mechanism aimed at stabilising prices at the farm level, avoiding price degradation.

In fact, it worked as a means of transferring resources to the oligopolistic downstream agro-industries and commerce, as well as to producers' co-operatives, which absorbed over 90 per cent of total loans. Oilseed, sugar-cane, coffee, wheat, poultry, and dairy agro-industries gained the most benefit from activities.

Farmers' access to marketing credit is closely linked to their level of integration with industrialised systems of production and consumption. Individually, less than 10 per cent of total loans were absorbed by farmers directly. It is supposed here that only the larger farmers could have done this. The co-operatives seem to be the organisations most likely to benefit farmers directly, especially the small and medium producers (CFP, 1986). The co-operatives' share in the total marketing credit was around one-fifth in 1977/78 - 1979/80.

The effectiveness of State intervention lies in its capacity to overrule the price determining power of the oligopolistic sector. This is what was intended with the introduction of pre-marketing loans (Pre-EGF), for example. This Pre-EGF line of credit aimed at reducing price degradation in the crucial harvest season, driving the petty producers away from intermediary traders; this was handled only by co-operatives and *Cooperativas Integradas de Desenvolvimento Agrário* - CIDAS (Agrarian Development Integrated Co-operatives).

In the 1980s, marketing credit became complementary to price support policy. This will be discussed in the section 2.3.

2.2.3. Rural credit and petty commodity production.

Although the contractionary policy and the consequent reduction of credit subsidies was apparent during the decade, it seems that operating rural credit continued to play a more significant production incentive role than did the minimum prices.

The resilience of rural credit to the full indexation of interest rates as a measure of reduction or elimination of subsidies forced the alternative strategy of both: (a) reducing the total volume of credit through the top stance of *Conselho Monetário Nacional* (CMN), and (b) limiting loans to selected policy objectives. The latter includes differentiation according to categories of farmers (small, medium, and large farmers), regions (Northeast, Amazônia) and crops (basic foodstuffs, sugar cane). The management of the reformed operating credit system was controlled by the coefficient for readjustment of operational costs value (VBC), fixed annually for each crop and at different levels of land productivity. The Table 2.15 sums up the annual variation of the limits of coverage, indicating nominal protection to the category of small farmers, to the selected regions of North and Northeast, as well as to the production of bean and manioc. In fact it was rice and wheat that absorbed rural credit the most, as shown by their high credit-crop output ratio. In 1977, 10 per cent of total operating credit went to wheat, which contributed only three per cent of the total

value of crop output.

Conversely, in the same year, 11 per cent of the total crop production was manioc, which was produced with barely two per cent of total credit (Table 2.16).

Table 2.15
Brazil - Limits of loans in percentages of operational costs (VBC),
according to farm types^a and crops.
Period: Crop year 1980/81 to 1987/88

Farm types/ Crops	1980/81	1981/82	1982/83	1983/84	1984/85 ^b	1985/86	1986/87	1987/88
LARGE FARMS								
Cotton	100	60	50	40	40	40	40	40
Irrigated rice	100	60	50	40	60	80	80	80
Dryland rice	100	60	50	40	60	80	80	80
Beans	100	100	100	100	60	90	100	100
Manioc	100	60	50	40	60	-	-	100
Maize (S, SE)	100	60	50	40	60	80	80	90
Maize (Centre-West)	100	60	50	40	60	80	80	90
Soyabean (S,SE)	80	60	50	40	40	50	50	50
Soyabean (Centre-W)	80	60	50	40	40	50	50	50
MEDIUM FARMS								
Cotton	100	80	70	60	-	50	50	50
Irrigated Rice	100	80	70	60	-	80	100	100
Dryland Rice	100	80	70	60	-	90	100	100
Beans	100	100	100	100	-	90	100	100
Manioc	100	80	70	60	-	90	100	100
Maize (S,SE)	100	80	70	60	-	50	100	100
Maize (Centre-West)	100	80	70	60	-	50	100	100
Soyabean (S,SE)	100	80	70	60	-	50	100	100
Soyabean (Centre-West)	100	80	70	60	-	50	100	100
SMALL FARMS								
Cotton	100	100	90	90	60	60	100	100
Irrigated Rice	100	100	90	90	80	80	100	100
Dryland Rice	100	100	90	90	80	80	100	100
Beans	100	100	100	100	80	100	100	100
Manioc	100	100	100	100	80	100	100	100
Maize (S,SE)	100	100	90	90	80	100	100	100
Maize (Centre-West)	100	100	90	90	80	100	100	100
Soyabean (S,SE)	100	100	90	90	60	60	100	100
Soyabean (Centre-West)	100	100	90	90	60	60	100	100

Sources: Central Bank of Brazil; FGV/Agroanalysis.

(a) Large farms, production greater than 3000 MVR; Medium farms, production between 600 and 3000 MVRs; Small farms, production lesser than 600 MVR. (b) Only two types: small farms up to 2000 MVR.
MVR= *Maior Valor de Referência*

Table 2.16
Brazil - Operating credit to producers and co-operatives by crops, in percentages.
Period 1969-1986

Crops	1969	1971	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986 ¹	Crop ¹ Output ²
Cotton	15.2	13.7	7.6	8.7	4.7	6.5	7.3	5.7	5.6	5.4	7.0	6.8	5.2	8.5	5.9	5.9	5
Rice	18.7	11.1	11.8	14.5	17.6	15.0	15.1	12.3	13.1	12.6	11.2	10.6	11.8	12.6	16.5	14.8	8
Potato	...	...	...	2.0	1.4	1.5	1.7	1.8	1.4	1.2	1.9	1.5	1.4	1.2	0.9	...	...
Cocoa	1.3	1.7	0.8	0.8	0.9	0.9	1.1	1.6	1.2	1.1	1.2	1.5	1.0	1.2	0.8	1.6	4
Coffee	9.4	15.9	15.3	14.5	9.6	10.8	12.2	11.3	12.4	13.8	6.8	9.7	8.9	7.1	6.0	5.9	13
Sugar cane	7.6	7.5	6.6	8.9	10.7	9.7	8.3	8.9	6.5	7.0	8.2	11.5	11.2	7.0	8.9	8.5	9
Beans	2.0	1.7	2.6	1.9	1.4	1.9	3.2	2.8	2.9	5.8	8.2	5.0	3.5	3.9	3.2	5.1	6
Citric fruits	...	...	...	1.2	1.2	1.3	1.6	1.8	1.9	1.7	1.8	1.1	1.8	1.0	1.3	...	...
Tobacco	...	...	...	0.7	1.5	1.4	1.4	2.3	1.6	1.1	1.3	1.9	1.8	2.4	2.1	...	...
Manioc	1.0	1.1	0.6	0.4	0.4	0.8	0.9	0.7	1.6	2.1	2.6	1.5	1.1	1.6	1.5	1.2	11
Maize	13.4	10.6	11.4	10.3	10.8	10.1	7.6	8.1	9.1	11.3	12.8	11.4	9.8	10.7	13.7	19.1	10
Soyabean	3.3	7.5	14.6	16.9	17.4	19.2	19.0	19.0	20.2	16.1	15.2	16.8	21.3	22.4	24.5	20.0	17
Wheat	5.6	8.0	4.4	9.7	12.4	12.1	10.0	10.3	9.8	7.4	4.9	4.8	3.6	4.7	6.1	8.1	3
Other	22.5	21.2	24.3	9.5	10.0	8.8	10.6	13.4	12.7	13.4	16.9	15.9	17.6	15.7	8.6	9.7	14
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100 ³	100 ³

Source: (1) 1969 to 1985, Pagnussat (1988:125) / BACEN/DERUR.

(2) 1986 and crop output, Goldin and Rezende, 1990:93.

(3) Excluding specific non-crop credits.

Table 2.17
Brazil - Rural credit according to farm types, in percentages.
Period 1980-1988

Year	Mini/Small	Medium/Large	Cooperatives	Others	Total
1980	24.4	60.7	14.9	0	100.0
1981	30.3	52.2	17.5	0	100.0
1982	35.8	48.9	15.3	0	100.0
1983	37.6	50.5	12.6	2.2	100.0
1984	38.2	49.9	10.8	1.0	100.0
1985	26.4	67.9	5.5	0	100.0
1986	24.1	62.5	13.4	0	100.0
1987	18.9	63.2	13.6	4.3	100.0
1988	17.7	64.4	15.4	2.5	100.0

Source: Banco do Brasil, Boletins Estatísticos, several issues.

The distribution of credit according to crops hinged upon the ability of farmers to integrate the industrially based technology of production. This factor militated against manioc and bean, in spite of the relatively favourable conditions of financing (lower interest rates, full VBC coverage) for these two crops. In fact, two-thirds of total operating credit was absorbed by cotton, rice, coffee, sugar cane, maize, soyabean and wheat during the 1970s and 1980s.

Mini and small farmers increased their shares in total

credit value during the worst period of recession and credit contraction, that is from 1980 to 1984 (Table 2.17). In terms of operating credit, there was a sharp reduction in the total volume of loans. But for bean and manioc, credit was made available, especially to small farmers and at subsidised interest rates. To make the policy more effective, the *Banco do Brasil* set up small agencies (*Postos Avançados*) in remote regions where peasant staplefood producers were normally located. The system worked as long as the operating credit was available.

The number of contracts for mini producers in the period 1980 to 1983 increased from 730,000 to 1,070,000 and the amount of loans was stable until 1982, declining thereafter (Table 2.18). The same reasoning applied to the small producers. However, in 1984 credit was reduced to a third of its level in 1981 and 1982 for the mini producers, though it was more stable for the category of small producers. Loans fell to the lowest level since 1972. So, at least until 1983, subsidised operating credit for mini-small farmers was still available as part of the policy intended to stabilise domestic market prices. However, these results must be cautiously interpreted because of the alterations in the criteria for the classification of farm size, affecting the relative values.

Table 2.18
Banco do Brasil's total rural loans by farm types.
 Period 1980-1988, in 1988 thousand cruzados per contract.

Types/Indicator	1980	1981	1982	1983	1984	1985	1986	1987	1988
MINI									
Cz\$ billions	257.5	308.1	336.9	235.1	110.4	172.3	231.1	142.3	107.2
Thousand contracts	728.4	908.9	925.8	1071.7	532.1	596.3	733.2	806.1	384.4
Cz\$ millions/contract	0.35	0.34	0.36	0.22	0.21	0.29	0.32	0.18	0.28
SMALL									
Cz\$ billions	535.2	550.6	561.9	374.9	338.3	305.3	382.8	347.3	278.7
Thousand contracts	699.2	676.8	546.7	486.8	429.1	374.6	481.6	499.3	277.3
Cz\$ millions/contract	0.77	0.81	1.03	0.77	0.79	0.81	0.79	0.70	1.01
MEDIUM									
Cz\$ billions	780.9	718.1	688.9	455.1	272.3	490.9	655.6	619.4	550.5
Thousand contracts	276.6	217.1	197.3	169.8	121.0	170.7	268.2	282.5	168.9
Cz\$ millions/contract	2.82	3.31	3.49	2.68	2.25	2.88	2.44	2.19	3.26
LARGE									
Cz\$ billions	1175.8	760.7	536.9	319.7	315.0	733.0	935.4	1023.5	855.2
Thousand contracts	92.5	57.0	38.6	30.6	36.6	54.6	89.8	114.7	70.2
Cz\$ millions/contract	12.71	13.34	13.91	10.44	8.60	13.42	10.42	8.92	12.17
CO-OPERATIVES									
Cz\$ billions	482.7	495.6	384.9	203.8	127.5	100.1	341.5	354.3	336.5
Thousand contracts	3.8	18.0	7.1	4.0	3.0	1.3	3.6	6.4	5.6
Cz\$ million/contract	127.8	27.53	53.92	51.43	42.20	79.53	94.20	55.48	59.89
OTHERS									
Cz\$ billions	-	-	-	35.5	1201.2	2.7	-	112.1	54.2
Thousand contracts	-	-	-	1.7	0.7	0.0	-	2.6	1.8
Cz\$ million/contract	-	-	-	20.9	17.3	224.7	-	43.4	30.7
TOTAL									
Cz\$ billions	3232.0	2833.2	2509.4	1624.2	1175.5	1804.2	2546.3	2598.9	2182.3
Thousand Contracts	1800.4	1877.9	1715.5	1764.6	1122.6	1197.5	1576.4	1711.6	908.2
Cz\$ million/contract	1.80	1.51	1.46	0.92	1.05	1.51	1.62	1.52	2.40

Source: Calculated from *Banco do Brasil, Boletins Estatísticos*, several issues.

The relaxation of the credit squeeze meant the shift of the loans back to the medium/large farmers. This group of farmers absorbed almost two-thirds of the total credit contracted by the *Banco do Brasil*, which normally operated about 70 per cent of the total rural credit. In 1988, petty commodity producers absorbed only 45 per cent, in real value, of the credit contracted in 1980-1982. On the other hand, in the same year, medium and large farmers fully recovered the level of credit they had contracted at the beginning of the decade. After the failure of the Cruzado Plan, and with rising inflation, immediate measures were made to restore monetary correction in all financial assets (Instruction nº 57,

17/12/86 CMN), this correction being indexed to *Obrigações do Tesouro Nacional* - OTN (Government's Bonds Rate) and later changed to *Indice de Preços Recebidos* - IPR (Farmgate Price Index). The adaptation of policies to inflation, with six to 15 per cent interest rates on rural loans, permitted the creation of a rural savings account or the *Caderneta de Poupança Rural* (BACEN Circular Nº1130, 12/02/87) and envisaged the alleviation of the burden of feeble State budget spending on subsidies. This rural savings account became an important alternative source of rural credit, but only affordable by capitalised farms. An example of the difficulties of mini and small farmers was the virtual inability to repay the investment credit contracted during the Cruzado Plan. These difficulties were manifested in the farmers' demonstrations occurring at the time and obliging the government to concede a re-composition (virtual amnesty) of the debt (BACEN, Resolution nº1306, 10/04/87) for small and mini farmers.

In terms of regional distribution of credit, the regions of high concentration of non-modernised commodity producers have suffered most. This is the case of the North/Northeast region, where the share of the credit was practically halved at the end of the decade as compared to the beginning. In the Northeast, the real index value of rural credit decreased from 100 in 1980 to 37 in 1988. Conversely, that of the Central West increased in real terms from 100 to 131 in the same period (Table 2.19).

Table 2.19
Brazil - Index of rural credit concessions by regions, 1980=100.
Period 1980-1988

Year	Brazil	North	Northeast	Southeast	S.Paulo	South	Centre-west
1980	100	100	100	100	100	100	100
1981	87	66	103	70	81	92	83
1982	77	45	68	67	72	89	78
1983	50	26	40	40	40	63	52
1984	36	10	27	29	32	45	40
1985	56	16	43	42	44	69	70
1986	79	35	65	59	69	90	106
1987	80	38	59	69	78	86	117
1988	67	18	37	37	63	76	131

Sources: *Banco do Brasil, Boletins Estatísticos*, several issues.
Deflator (1988): IGP-DI/FGV.

Thus, although mini and small farmers had maintained the level of credit contracted during the worst recessive period (1980-1983), this level declined sharply thereafter (Table 2.18). In short, the relative 'protection' of petty commodity producers envisaged in the 'priority' programme at the beginning of the decade, attempting to contain inflation and avoid food crises similar to those occurring in 1978 and 1979, was diluted when the credit squeeze was relaxed in 1985. The same pattern of credit concentration had happened in the previous period of expansion in the 1970s as shown by Guedes Pinto (1981:69). Small farmers decreased their participation in the total value of rural credit from 34 per cent in 1966 down to 11 per cent in 1976. Conversely, large farmers increased their participation from 20 per cent up to 54 per cent in the same period. On the same issue, Pagnussat (1988:137) sustained the opposite view, based on Agricultural Census data and using as indicators the distribution of credit according to total farm area and the value ratio between financing and production. The problem here is that farm size according to area does not take into account the intensity of production, which accounts better for the farm size.

2.3. Price Policy.

The characteristics of changes in agro-food policy in the 1980s must be regarded as an alternative policy to the exhausting credit incentive and food import policy prevailing in the 1960s and 1970s. In the theory of price policy it has been assumed that a fully commoditised productive sector will respond to price incentives, which interfere in producer prices. It is understood that stable and higher prices will improve farmers' incomes and have an indirect impact on rural wages (Pankert, 1988:135, 293).

However, as pointed out by De Janvry (1986:73) price policies have contradictory functions as they are both a *"source of revenue for certain classes and costs for others"*. So high prices may stimulate agricultural producers, but decrease the real incomes of rural and urban workers.

In fact, the contradictions of price policy seem to have strengthened the regulatory role of the State, mediating interest conflicts within and outside commodity organisations. Also, the volatility of policy in the period of crisis has revealed the sensitivity of the State to conflicting sectoral and social interests. De Janvry (1986:76) asserted that prices have a limited inducement effect, as aggregate supply elasticity in developing countries is low (0.5 to 0.15 in the case of Africa), fundamentally because of the lack of technological options and the exhaustion of horizontal expansion there.

The effect of prices on farm income, and especially for petty commodity producers, depended on the extent of their integration with the dominant agro-food system. Moreover,

although price incentives seem less weighted at first sight, in the sense that the market is promptly available to anyone, the conditions of access for the petty commodity producers remained constrained by the lack of infrastructure, (transport, information) and the necessary power for negotiation within the commodity system. Price increases induce supply response and increase the real incomes of farmers with holdings sufficient for a marketed surplus (De Janvry, 1986:74). In the case of India, output growth in agriculture created employment for the landless, and stimulated industrial growth, although at the cost of decreasing the real incomes of landless workers and urban workers and the urban poor, because of the higher food prices (De Janvry, 1986:73-74). In the local conditions where agro-food products were actually traded, prices were cushioned by local traders and agro-industrial purchasing agents, and therefore incentives were not transferred to the farmer, especially the petty commodity producers. For instance, Mollo (1983:37) asserted that the participation of the industrial and export sector in the Minimum Prices Guarantee Programme is not likely to be transferred to the consumers because of the "market imperfection". Conversely, the concession of marketing credit (EGF) to these sectors made resources less available to the farmers, especially when they were most needed (in the harvesting season), and therefore increased inequalities in price competition between agriculture and industry. For petty commodity producers, it is argued that access to price benefits hinged on their ability to organise themselves in order to overcome their shortcomings, either in economic (scale, infrastructure) or in political fields (CFP, 1986:56-

57).

Rezende (1985:14-15) saw the producer price policy as a compensatory measure needed to reduce uncertainties in agriculture, which is subject to natural constraints, rather than as a problem of low profitability as argued by Sayad (1984). Rezende also criticised the liberalisation of foreign trade as a means of controlling consumer prices and at the same time of encouraging farming. For him, the two basic assumptions - stability of international prices and low domestic prices, due supposedly to export contingency and internal prices control, cannot be sustained. The first assumption was invalidated by the period of world price instability, since the international food market was absorbing the internal policy problems of advanced capitalist countries (Rezende, 1985:18). This international farm crisis is manifested by protected high internal prices and overproduction in the industrially advanced countries (Goodman and Redclift, 1989:13). The second assumption is contested by Rezende (1985:28), who relied on Dias and Lopes' calculation of domestic prices of staples to conclude that *"domestic prices of maize, rice and cotton are higher than FOB export prices, although lower than CIF import prices"*. This means low competitiveness, which makes trade liberalisation innocuous as a price incentive for farmers, especially for petty commodity producers. For Rezende (1985:19), ecological conditions and the technological level were the real barriers to international competitiveness.

The other type of price policy is consumer price. The objective here is to provide cheap food to the urban population, food that can be transformed either into real

income gains, or can be transferred to capitalists, who can lower the real wages and therefore convert them into profits. In general, these factors have kept the prices paid to farmers low, and these low prices collide with the producers' interests and the price policy itself. In fact the appeal of a low producer price as a policy is that it makes agriculture competitive in the international market and helps to keep consumer prices low. This was the kind of policy pursued during the 'conservative modernisation' period, with massive rent transfer through credit incentives.

In the 1980s, as cheap credit sourcing collapsed, the alternative policy was one of supporting higher producer prices by fixing minimum prices above the inflation rate, and of pursuing an anti-inflationary low food consumer price by price control of staplefoods. For selected staplefoods, credit incentives directed mostly towards small farmers were maintained. Low international food prices had been discouraging production, stimulating minimum prices and insurance cover along with export incentives, including marketing credit premium (*crédito prêmio*), and fiscal exemptions. However, with soaring inflation prevailing since the late 1970s, and the consequent tendency to currency appreciation, the exchange rate became a crucial policy instrument. The currency maxi-devaluation of 30 per cent in December 1979 and 23 per cent in February 1983, are examples of measures ensuring competitive prices for Brazilian commodities in the world market, and therefore favouring exports. This indeed was at the very basis of the trade surplus macroeconomic policy discussed previously (section 2.1). Trade surplus policy also demanded a steep reduction in

imports. This implied the reduction of wheat imports, which had been functioning as a price regulator in the domestic food market, offsetting the locally produced traditional staplefoods shortfall. This is the policy model hypothesis underlying the analysis in this section.

2.3.1. The Minimum Prices Guarantee Programme - PGPM.

Price policy is understood here as a whole body of policy measures established for the agro-food sector in order to reach social and (macro) economic objectives. The *Programa de Garantia de Preços Mínimos* - PGPM (Minimum Prices Guarantee Programme) was the major instrument of this policy. The programme was structured by a set of components adapted to the agro-food production cycle. At the beginning of the cycle or before the farmer decided what to sow, the government fixed minimum 'basic' prices. These were an anticipation of the prices the government was prepared to pay for the farmers produce in the harvest season. By then, two other components of the programme had come into play: the Federal Government's Loans (EGF) and Federal Government's Crop Purchases (AGF). Thus, the farmers, or their co-operatives or the intermediary agents can borrow the financial means from the programme to store their commodities under the EGF option, or to sell them directly via AGF. For those who have contracted marketing credit (EGF), it was possible to switch, at minimum prices, to the AGF at the end of the contract.

Alternatively, when market prices are above minimum prices, the borrowers can simply pay off their debt, including all due charges (storage fees, interest rates - normally well below market rates, administration fees) and present their bid

for better prices in the marketplace.

Within the structure of EGF, it was possible to use this source of funds for other purposes, such as the acquisition of sacks and other packing materials, product preparation for marketing, support for small-animal producers and their co-operatives, and so on. A special loan programme, Pre-EGF, was created for co-operatives and agrarian reform support companies (CIDAs), aimed at assisting mini and small farmers. Money was advanced to co-operatives and CIDAs acting as intermediary agents between the mini and small farmers (affiliated or not) and these organisations. The reference prices were the minimum prices (BACEN/DERUR, Communication 1061/87). This was the most directly oriented programme for mini and small producers in terms of price support. The existence of this kind of programme suggests that mini and small farmers had little access to the normal PGPM. Another feature of the PGPM is that it did not apply to all farming activities. The programme was commodity oriented, but was not guaranteed for all major products because of the limitation in the size of the market or because of inadequate infrastructure. For example, the extension of the programme to animal products involves the availability of suitable storage conditions, such as freezer warehouses and all freezing systems.

The government, as the manager of the price system, was responsible for decisions concerning the differentiation of agricultural zones; it was the bearer of commercial and financial charges; it was responsible for the subvention rates, and the inclusion or withdrawal of different crops to correct "distortions" in the system. All of these are in fact

involved in the accommodation of different interest groups in the system.

The system was governed by minimum basic prices fixed before the period of production, together with other financial conditions (VBC, interest rates, insurance premium rate, exchange rate) , in order to influence farmers' decisions (positive or negative). In most cases, minimum prices and the VBC (VBC representing the amount of credit available) were considered the most frequent determinants in farmers' decisions on what to sow, and in what proportion. The Pre-EGF comes into action during the harvest, followed by the EGF-AGF system after the harvest.

When the harvest was not good and the market prices were well above the minimum prices, the normal practice was to use EGF loans to support the accumulation of stocks by co-operatives and private companies (traders and agro-industries) and to a small extent stocked directly by the larger farmers.

When the harvest exceeded expectations, market prices tended to fall below the minimum guaranteed prices, and government marketing organisations such as the *Comissão de Financiamento da Produção* (CFP) and *Companhia Brasileira de Alimentos* (COBAL) intervened in the market, purchasing and stockpiling agricultural products for future supply. This normally occurred when the prices rose in consequence of real shortage or speculatively induced shortage.

The shortfall was overcome by pouring government stocks through public auctions into the cereal stock market. This was the way the State accomplished its regulatory function in the core of the market system (Delgado, 1989b:34).

"Inconsistency" in policy measures, as was said to exist,

can be attributed to the multipurpose objectives of the policy. These objectives were underlined by guiding factors in the government's need to stimulate production for the domestic market in order to dissipate the effects of inflation, and at the same time to increase exports to service debt.

The multiple objective 'priority' programme magnified the role of agriculture in respect to two major macroeconomic problems, the mounting balance of deficit and inflation. In the 1980s there were two adjustment programmes, according to which agriculture would have to respond to the price incentives of staplefoods, namely bean, rice, maize and manioc.

On aggregate, minimum prices were not particularly high, except for 1985 and 1986, when the aggregate index peaked to an unprecedented level (Table 2.20). However, more importantly, minimum prices, normally fixed before the cropping season (August for the major southern grain crops), were indexed to *Índice Nacional de Preços ao Consumidor* - INPC (National Consumption Prices Index) variations during the whole production cycle up to harvest (Agroanalysis, 1981, Vol.5:8). This mechanism eliminated the erosion of real basic prices in the harvesting season, when the minimum prices system effectively operated with both loans (EGF) and direct acquisitions (AGF) through State marketing companies (CFP). The erosion of minimum prices by inflation was neutralised by the incentive effect of basic prices.

Table 2.20
 BRAZIL - Indexes of minimum prices for major crops. Period 1970-1989.
 (1981 Minimum prices = 100)

Year	Seed Cotton		Rice		Edible Beans		Maize		Soyabeans		Aggregate Index	
	Minimum Price	Base Price	Minimum Price	Base Price	Minimum Price	Base Price	Minimum Price	Base Price	Minimum Price	Base Price	Minimum Price	Base Price
1970	81		91		50		83		85		79	
1971	81		83		53		83		95		81	
1972	98		94		56		87		115		92	
1973	95		111		64		105		119		102	
1974	108		108		84		135		115		112	
1975	123		132		78		131		152		127	
1976	116		119		78		125		138		118	
1977	135		114		90		113		120		113	
1978	128		110		82		102		103		102	
1979	118		105		77		97		95		96	
1980	94		98		72		86		n.a.		86	
1981	100		100		100		100		100		100	
1982	105	116	102	112	106	111	112	132	105	116	106	118
1983	96	114	91	107	97	107	98	126	94	111	95	113
1984	103	136	95	125	92	101	92	132	81	106	90	118
1985	126	127	125	126	113	120	140	146	151	153	134	138
1986	106	110	108	113	95	105	123	128	133	138	116	122
1987	72	96	76	106	75	95	86	128	88	130	81	116
1988	73	87	72	81	74	77	96	99	80	96	81	90
1989	n.a.	74	n.a.	69	n.a.	75	n.a.	103	n.a.	81	n.a.	82

Source: Goldin and Rezende 1990:94 (IPEA; CFP; World Bank, 1989).

Notes: Minimum prices first deflated (IGP) and then averaged out for the harvest months. Base prices refer to August of the preceding year. The aggregate indices are weighted averages of the individual products' indices, the weights being each product's contribution to the total value of agricultural production in 1980.

Table 2.21

Brazil - Ratios between average real producer prices and real minimum prices for the harvesting months, according to selected crops and regions. Period 1969-1988.

Years	Beans 1 st crop Paraná	Maize S.Paulo	Cotton S.Paulo	Rice Irrigated R. Grande do Sul	Rice Non- Irrigated Goiás	Soyabean Rio Grande do Sul
1969		1.20	1.15		1.41	
1970	1.98	1.13	1.09		1.06	1.37
1971	1.27	1.31	1.36		1.60	1.42
1972	1.16	1.23	1.16		1.60	1.17
1973		1.23	1.28		1.22	1.64
1974	1.61	1.05	1.39		1.38	1.91
1975	0.96	1.12	0.95	1.18	1.64	1.19
1976	1.46	1.08	1.51	1.08	1.11	1.05
1977	2.04	0.97	1.27	0.82	0.99	1.74
1978	0.88	1.63	1.15	1.03	1.15	1.70
1979	1.03	1.47	1.21	1.15	1.36	1.88
1980	1.45	1.53	1.41	1.37	1.34	1.08
1981	2.31	1.30	1.28	1.02	0.97	1.35
1982	0.98	0.93	1.08	1.13	1.09	1.19
1983	0.77	1.09	1.11	1.03	1.16	1.32
1984	1.39	1.40	1.82	0.92	1.10	2.47
1985	0.92	0.90	0.84	0.88	0.96	0.97
1986	1.04	1.02	1.11	0.98	1.05	1.00
1987	1.19	0.92	1.16	0.79	0.87	1.04
1988	0.88	0.89	1.29	0.80	0.92	1.54
Averages						
1973-77	1.51	1.09	1.34	1.03	1.27	4.51
1977-81	1.54	1.38	1.26	1.08	1.16	4.55
1981-85	1.27	1.12	1.23	1.00	1.04	1.46

Source: Goldin and Rezende, 1990:100.

Notes: The harvesting months were March to May (for cotton rice and soyabeans), April to June (for maize) and December to January (for the first crop of beans).

Another important step in the changing agro-food policies was the virtual de-linking of operating credit from minimum basic prices, which were used as a reference price to fix the ceiling for rural loans. With this de-linking, price incentives through a higher minimum prices guarantee were not expected to have a direct impact on the demand for credit. To replace the minimum price reference, the Operational Costs Value (VBC) was created, aimed at expressing the direct costs of production, estimated for each crop and for different levels of land productivity. These changes probably explain,

in part, why the minimum prices of major crops were often higher than the farmgate prices in the 1980s, in spite of the small real increase in annual adjustments of minimum prices (Table 2.21).

For the second objective of the 'priority' programme - the incentive to export produce - minimum prices were maintained high during the period, especially for soyabean (Table 2.20). More significantly, agro-food production for export was determined by the general incentive to increase trade surplus, especially favouring manufacturing industries, to which the two maxi-devaluations of the exchange rate were strongly related. Currency devaluation raises the relative prices of export commodities. In 1979, the devaluation rate was 30 per cent, with three objectives: (a) to encourage exports; (b) to reinforce the government's budget by eliminating the *Imposto sobre Produtos Industrializados* - IPI (Manufactured Produce Tax) and the *Imposto sobre Circulação de Mercadorias* - ICM (Commodity Circulation Tax) subsidised credit; and (c) to adjust incentive policies to the General Agreement on Tariffs and Taxes (GATT) norms (Agroanalysis, 1980, Vol.4:11). At the same time, the Export Tax was introduced in order to avoid the transfer of gains to foreign importers. Insofar as the domestic agro-food market become internationalised, new intervention mechanisms were required. For example, the expansion of the soyabean-maize-meat model of production and consumption made the domestic food market vulnerable to international price fluctuation. The government then had to use all sorts of policy tools, i.e. export quotas, export taxes, domestic prices control (*tabelamentos*) to cushion the international prices effect on domestic inflation.

2.3.2. Consumer prices connection: price control and subsidies.

During the whole period of 'conservative modernisation' (1965-80), a low consumer price policy prevailed and relied on two major instruments: (a) administrative price control for food basket items; (b) imports and consumer price subsidy for wheat.

Wheat imports were progressively reduced because of their pressure on the trade balance, and of the strategy, prevalent in the 1980s, of replacing imports by stimulating production of local farmers through price instruments.

In the beginning of the 1980s, local wheat production remained buoyant, averaging 2.37 million tonnes annually between 1978-1984. In 1985, wheat yield suddenly doubled that of the previous year, reaching 4.2 million tonnes, and increasing thereafter to average 5.4 million tonnes in 1985-1988 (Table 2.22). This massive increase in domestic production permitted a sharp reduction in wheat imports after 1985.

Table 2.22
Brazil - Wheat production, harvested area and
yields per hectare. Period 1978-1988

Period	Harvested Area 1000 hectares	Production 1000tonnes	Tonnes/ hectare
1978/84	3590	2368	0.9
1985/88	3363	5395	1.6

Source: Calculated from IBGE/FGV
Agroanalysis, Feb. 1989

Consumer prices, which had long been low because of huge subsidies mounting to US\$ 1.9 billion in 1986, equivalent to 0.7 per cent of the Gross Domestic Product (GDP) (Goldin and

Rezende, 1990:40), were substantially reduced in 1987 when the price of one tonne of wheat jumped from Cz\$ 1060.31 to Cz\$ 6500.00 (SUPER/SUNAB Portaria N°93, 12/06/87). Consequently, wheat flour and all derivatives, which are now part of the basic popular diet, also underwent an increase in price (Soares, 1988:3). This 515 per cent increase gives an idea of the magnitude of the subsidy included in the administered prices of wheat. Indeed, in 1966-1982, both wheat consumption and production subsidies were estimated to be US\$ 5.9 billion (at the official exchange rate) or US\$ 10.6 billion (at the shadow exchange rate) by Calegar and Schuh (1988:43). According to these authors, two-thirds of these massive subsidies was diverted to outside target people and millers. Actually, only 19 per cent of total subsidies was being appropriated by the targeted low income group of consumers. Even after 1987, farmers' subsidies were maintained, primarily through prices supported above world market prices. Imported and subsidised wheat, and therefore foods derived from cheap wheat tended to substitute local foodstuffs, mainly beans, rice and manioc in the customary diet (Calegar and Schuh, 1988:16).

Insofar as foods can be substituted, these low wheat prices established the competitive threshold for other foods, negatively affecting local production of rice and beans. In this respect, Goldin and Rezende (1990:40) also mention the substitution of other traditional staples, such as maize and manioc. Thus, imported and subsidised wheat tended to undermine the production of local foodstuffs. On the other hand, wheat production subsidies have benefited soyabean and other large modernised farmers in the South.

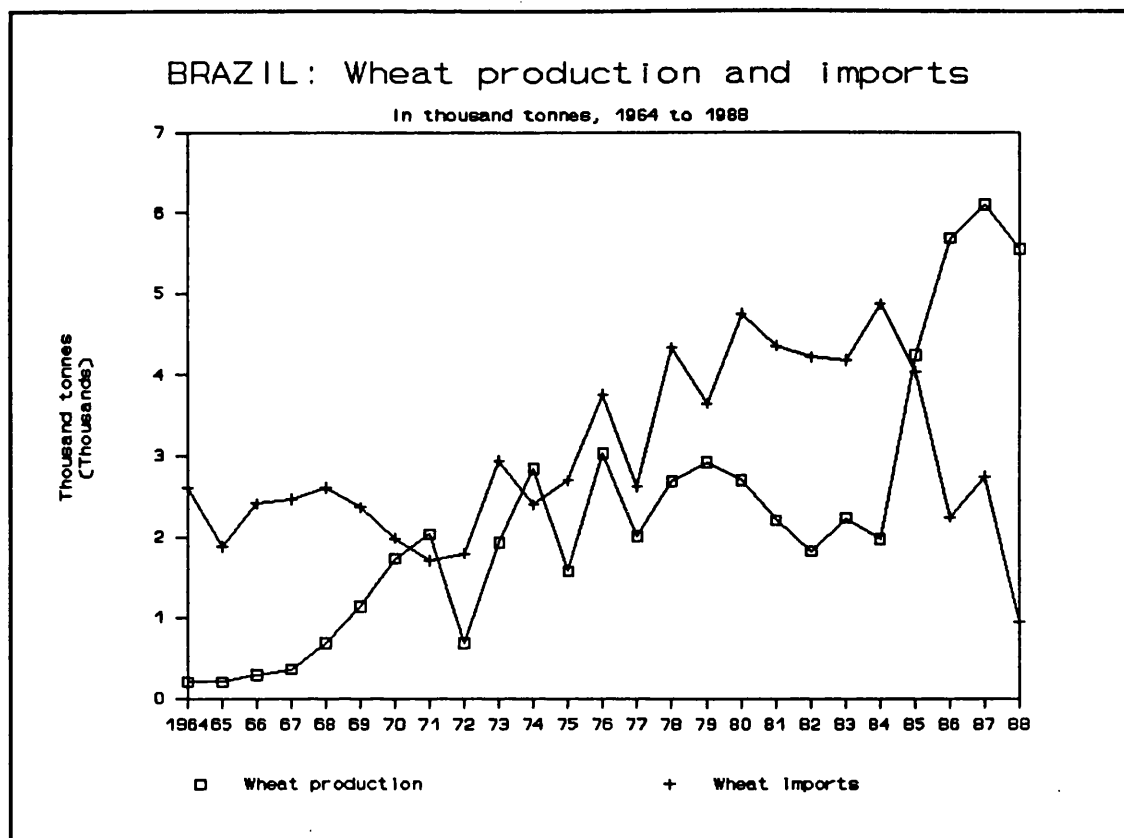


Figure 1 BRAZIL: Wheat imports and domestic production

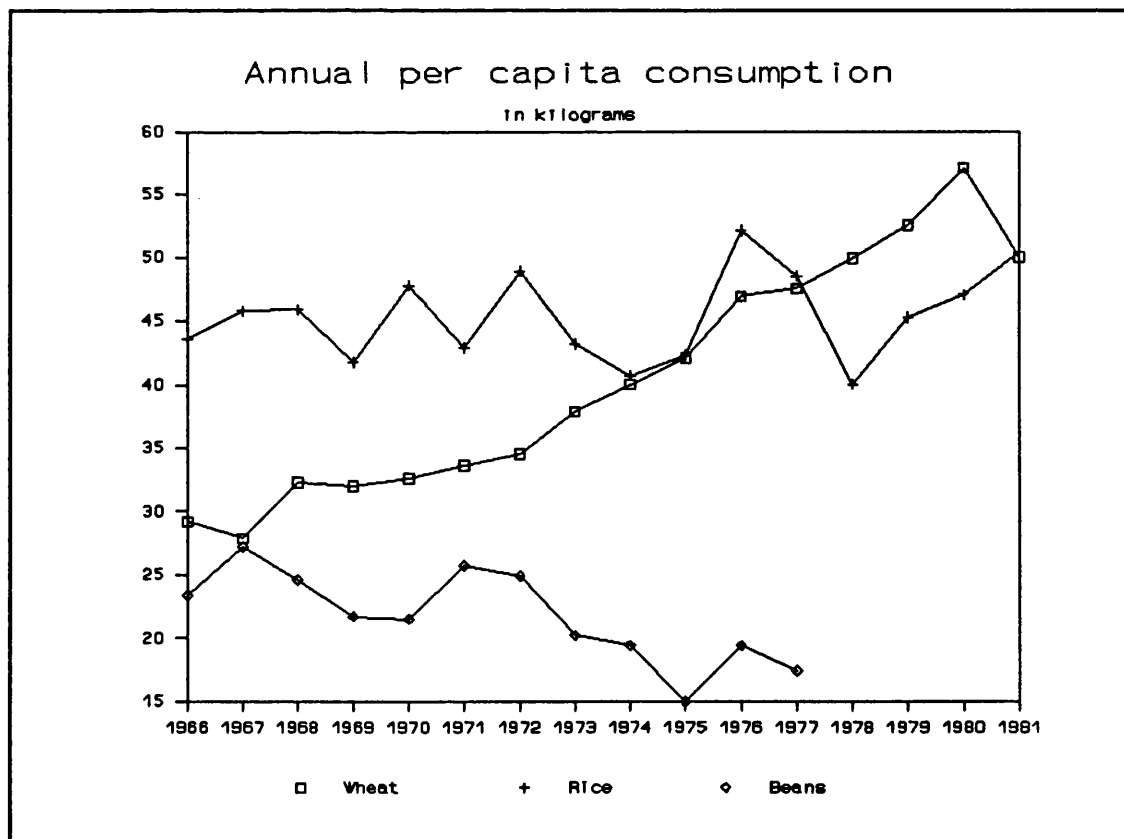


Figure 2 Brazil: Consumption of wheat, beans and rice.

Moreover, local foodstuffs production was already being

undermined by stagnant domestic demand. The climax of the foodstuffs production crisis was a shortage of maize, rice, and beans in 1978-79, the shortage implying unprecedented imports in a context of growing balance of payment difficulties. The policy reform substantiated in the so-called 'priority' programme, launched at the beginning of Figueiredo's government, was a direct response to the crisis.

This programme addressed the multiple objectives of growth in domestic staplefood crops, export crops and biomass energy production (Homem de Melo, 1985:XI).

Constrained by the government's need for restrictive measures, reducing the importance of food imports as a means of overcoming food shortage and stabilising internal prices on the one hand, and prices support incentives for local foodstuff producers on the other, the alternative method was the tightening of consumer prices control. This alternative was a source of frequent skirmishes involving policy managers and private stockholders. Agro-industries, wholesalers and co-operatives, or powerful commodity organisations such as the *Instituto Rio Grandense do Arroz* - IRGA had been exerting constant pressure for the relaxation of price control.

These pressures were an important factor in triggering off the relaxation of price control on rice, maize and beans, in accordance with the "marketing rules" or "intervention prices", which allowed more room for price manoeuvres to the private stockholders. The introduction of "marketing rules" implied a more relaxed control on consumer prices. Presidential Decree nº 95457 created the Intervention Price mechanism as a step towards a freer price system, with the so-called "free market zone" functioning between the minimum

prices at the bottom and the Intervention Reference Prices at the top. The reference price was defined each year, for each region and product. It was equivalent to the mobile average price calculated at a 60-month-interval until 90 days before sowing (Agroanalysis, February 1988). Moreover, intervention started only after prices had exceeded the upper limit for two weeks, and in any case intervention prices might fall below 105 per cent of minimum prices.

Price control was seen as a complementary measure to an anti-inflationary policy, and the highly oligopolistic structure of the retail market, where "the supermarket was considered a key element" (Cyrillo, 1987:145) was considered an asset. A stimulus to capital concentration in the retail market would have been a strategy to assist the watch-dog organisations and to lower food prices through the scale effect. It was admitted that this oligopolistic structure would keep prices low through State enforcement (*tabelamento*), but this enforcement often rebounded on agricultural prices (Cyrillo, 1987:143). Price control in the 1980s was a process of negotiations between watch-dog State organisations, represented by the *Secretaria Especial do Abastecimento e Preços* - SEAP (Special Secretary of Prices and Supply), and the *Associação Brasileira de Supermercados* - ABRAS (Brazilian Association of Supermarkets) in the setting-up of "Agreements" on the *Conselho Interministerial de Preços - Superintendência Nacional de Abastecimento* - CIP/SUNAB (Inter-ministerial Prices Council - National Supply Superintendency) commanded a price-list of items selected to be frozen or stabilised. However, it is in fact highly unlikely that these 'Agreements' ever worked because, as pointed out by Cyrillo (1987:150),

capital concentration in the retail sector, as well as in the industrial and wholesale sectors, led to a closer integration between individual capitals (firms). And this fact gave them more strength and freedom, just the opposite of the situation predicted in the strategy. Cyrillo also suggested that in this oligopolised structure, firms were flexible enough to create new formulae to avoid State enforcement of price control, with evident negative implications on prices actually paid by consumers. The newly passed "marketing rules" or "intervention prices" made the government's action more predictable and less troublesome to the oligopolistic price concertation.

2.3.3. Minimum prices policy and petty commodity production

The access of the Guaranteed Minimum Prices Programme to the petty commodity producers was assessed by CFP (1986). They carried out a survey in the modernised southern region, covering the state of Paraná, Santa Catarina and Rio Grande do Sul.

The main conclusions drawn were that the access of petty commodity producers to the Minimum Prices Programme was minimal, even in a region where most of the usual credit takers were concentrated, i.e. the South. From a sample of which 80 per cent of farmers was associated with co-operatives, only six per cent (29 out of 481) operated with EGF/AGF systems (CFP, 1986:37). Isolated petty producers (not associated to any co-operatives or CIDAs) were not even targeted as beneficiaries of the PGPM. The major obstacle was found to be the scale of operation involved in the small farming unit, this scale being incompatible with the structure

of the Price Programme (CFP, 1986:45), which was oriented to commercial agriculture.

In fact, this study raised the most apparent feature of the commoditisation process, where farm produce is transformed into tradable commodities. The difficulties raised in respect to quality of the product, and the need to satisfy the capitalist market standard (moisture content, purity, classification according to the market norms), refer to the production cycle after the farming stage has already been completed. The product leaving the farm may not satisfy the structure of the markets and their needs for standardised products, which are liable to being handled, packed, transported and stored as long as possible with no impairment of quality. Access to the PGPM, e.g. EGF, actually means that farmers are asked to take part in a production phase which is no longer agriculture, but rather industrial processing, even a very simple process, for example involving the elimination of impurities, drying up to the standards of prevailing conservation norms, and the classification of the product according to quality standards. What appeared as 'low prices' before were then called 'discounts', which represented the adaptation of farm produce to the market norms. The minimum prices programme assumed that these market norms or standards could be achieved by the provision of services through co-operatives, traders and industries. As such, the simple processing activities were primarily beyond the direct control of the farmer. Even when these services were provided by co-operatives, individual farmers often saw them as third party companies overcharging for their services or mishandling their products, a view particularly strong among small producers.

This was naturally an indication of the low level of influence these producers had on their own co-operatives.

The problem of scale can be seen as a structural constraint confronting the industrial scale of processing and the regulation of the banking system with the farm unit of production. The handling of small quantities tends to increase operational costs of processing plants, designed for large scale operation. Operators have to process a load at the level that is economic. Likewise, transport, classification and storage pose similar kind of problems. Small farmers kept complaining that very often store-keepers, transporters, and classifiers refused their products simply because they were offered in small quantities (CFP, 1986).

The banking system is also unfavourable to small contract operations. Bankers are remunerated for receiving a percentage of the total loans. Obviously, big contracts have only small additional operating costs and the financial risks are believed to be lower than for small contracts. Conversely, small contracts are sometimes charged additional costs by bankers, as a form of guarantee. From the supposition that risks with small contracts are high, bankers demand real guarantees and mortgages, which made the access of credit by the poor layer producers even more difficult (CFP, 1986:21). In reality, experiences reported by CFP (1986:13) in zones where there was a high concentration of small farmers and a high rate of credit taking showed that the rate of unpaid contracts (*inadimplência*) was low. From the small producers' point of view, procuring a financial contract is a time consuming, frightening and expensive task. The intricacies of bank bureaucracy, in addition to the customary lack of

information, make things worse and leave the small producer completely at the mercy of the bank agents. These are some of the barriers to access of the price programmes for petty commodity producers.

Instruments such as the Pre-EGF, intended specifically for mini-producers associated with co-operatives or CIDAs, had a limited effect. Co-operative organisation was treacherous in regions with high concentrations of mini-producers, such as the Northeast. Major beneficiaries tended to be concentrated in the South, where 62 per cent of the 365,000 producers operated with Pre-EGF credit in 1982 (Mollo, 1983:33).

As direct access to PGPM had been very limited for small producers, what was the possibility of indirect access, i.e. through industries and traders?

In this respect, Mollo asserted that industrialists and traders had shown no interest in accumulating stocks by anticipating purchases, but had only been interested in satisfying their operational needs. The implications of this is that industrialists and traders tended to use subsidised marketing credit when the subsidy rates were high enough to replace their own capital for speculation in the financial market. When the harvest was good, and prices fell, these groups did not show much interest in accumulating stocks, purchasing only what was sufficient to operate their businesses, and leaving the price regulatory tasks to the State or co-operatives (Mollo, 1983:35).

Therefore, there was no price premium transfer either to the farm producers or the final consumer through the wholesale market mechanism. On the contrary, in Mollo's view, this form of appropriation of institutional rent has further

strengthened the oligopolistic power of the large commercial and industrial enterprises vis-à-vis the farm producers.

In conclusion, the transition from credit subsidy policy to prices policy moved State actions from stimulating structural changes via massive investments in industrial technology to a more quantitative approach for increasing production, by interfering to some extent in the commodity circulation sphere. This policy, based on multi-purpose price mechanisms, was in itself a source of conflicts of interests.

Policy transition began with the phasing out of sources of subsidies in rural credit, as a result of a downward creeping in demand deposits at commercial banks and in soaring public expenditure. Subsidised credit, which was the cornerstone of the 'conservative modernisation' strategy, boosted technological innovation, creating a huge 'captive' market for emergent agro-industries.

Mounting subsidies and the volume of credit concentrated land and income in the hands of a small number of landowners and accelerated social differentiation in the countryside. Changes in the social structure in agriculture led to a massive migration and proletarianisation, but also created a new category of capitalised family farmers.

As credit subsidies mounted, the credit tool became less efficient, as the substitution effect favoured financial speculation which is common in an economy with high public debt and inflation.

Marked by the macroeconomic crisis of external debt and domestic inflation, the 1980s exhibited a slowdown in the modernisation process, with limited success in irrigation, which was hailed as a new motto for modernisation, as tractor-

pulled mechanisation and other 'green revolution' technologies had been in the 1970s. Expansion of investment in irrigation systems was concentrated in the Centre-western *cerrado* area, giving a localised revival to the modernisation policy. In the Northeast irrigation programmes, highly dependent on public funds and subsidies, and also with serious technological shortcomings, did not engender highly productive capitalist enterprises.

The prices policy essentially counted on real increases in minimum producer prices (PGPM) and insurance coverage on credit (PROAGRO). Although these policy instruments were not essentially new, adjustments were made in order to give them more effectiveness as a price incentive. In fact, measures were oriented rather to lessening the market and natural uncertainties, than to higher prices. So, it was more 'guarantees' than 'prices'. Indeed, the indices of real minimum prices were no higher in the 1980s than in the 1970s (Table 2.20). This resulted more from declining farmgate market prices in the 1980s (Gasques and Villa Verde, 1990) than the real increase in minimum prices, which levelled with the 1970s' prices. Intensive use of AGF/EGF in the 1980s, as high as 55 per cent of rice and 46 per cent of maize in the Centre-west in the period 1985-1988 (Delgado, 1989), worked as a mechanism of rent transfer and reduction of market risks. Furthermore, the ratio between the averages of real farmgate prices and real minimum prices were frequently lower than those in the 1980s (Table 2.21). This implied two things: (a) a relatively higher minimum prices inducing greater State intervention in the market, (i.e. purchasing the harvest via AGF), and (b) downward pressures on domestic market prices,

suggesting that these prices might have been influenced by low international prices and also by inflation-commanded controls and subsidies in domestic consumers' prices.

For the petty commodity producers, direct access to the minimum prices programme was considered minimal. The poorest non-integrated (to co-operative or the industrial system of production) category of farmers were not even being targeted by the minimum prices guarantee programme. The most directly oriented credit - the pre-marketing or pre-EGF credit, was operated via co-operatives and CIDAs. The programme ended by favouring the capitalised agriculture of the South, where most of the co-operatives are located, leaving behind the poorest and traditional agriculture in the Northeast. Moreover, the small scale of operation was seen as a major setback to small farm units. Even the co-operatives, which are supposed to deal specifically with this structural problem, were harshly criticised by their own affiliated small farmers for their 'unwillingness' to operate with small quantities. From the co-operative managerial standpoint, the setting up of large scale processing units are justified by the intensity of the competition at the level of industry.

An indirect access to price incentives, through marketing credit subsidies to agro-industries and traders, seems to have been less likely, as argued by Mollo (1983:35). Thus, in terms of petty commodity producers, subsidised operating credit remained the most accessible source of incentive/institutional rent. Price instruments have been less effective for petty commodity producers, facing both structural and management problems.

CHAPTER III

CHANGES IN THE STRUCTURE OF RURAL PRODUCTION.3.1. Introductory remarks.

The resurgence of family farming in the 1980s in Brazil, suggested by the outcome of the Preliminary Synopsis of the 1985 Agricultural Census data is still a point to be scrutinised.

The seminal analysis, first issued in 1987 and re-edited in 1989 by IPEA/IPLAN, stressed basically two points: (a) the reversal of the former trend of the destruction of family farming by land fragmentation; and (b) a slow down in the pace of modernisation of the productive structure. The explanatory factors furthered by IPEA/IPLAN (1989) focused on the macro-economic crisis, negatively affecting the agro-food sector by reducing rural credit, a fall in international and domestic agricultural prices and financial speculation, including on land assets (IPEA/IPLAN, 1989:1-3). To what extent these remarks meant land de-concentration or represented new 'spaces' of reproduction of non-modernised family farmers is still an open discussion.

For Goodman (1989:2) the resilience of petty commodity producers is an expression of their

"technical and social conditions of reproduction in a state of flux, resulting in the continuous creation and destruction of competitive 'spaces'".

In other words, these petty commodity producers are in a process of continuous adaptation to the dominant process of production, led by industrial capital in the capitalist social

formation.

The point to verify is whether the conditions presented by the macro-economic crisis, as discussed in Chapter II, meant the creation of productive 'spaces' for these producers, as has been suggested, or on the contrary, whether these 'spaces' tended to be destroyed? The working hypothesis assumed here is that in such a heterogeneous structure of agro-food production, the conditions presented by the policies and the crisis could either be favourable or unfavourable to the reproduction of these forms of production. It depends on the level of integration in the mainstream dynamic, which is oriented towards a deeper internationalisation of the agro-food system. From the State policy standpoint, this process would favour the generation of trade surplus, as discussed earlier.

This chapter will address the question of changes in the structure of production, using data for selected variables from the two most recent Agricultural Censuses -1980 and 1985 - available so far. Actually, the 1985 Census has not been published yet. A special tabulation printout has been made available through special demand by economists from IE/UNICAMP (Brazil)⁸. Moreover, the data tabulation concerning the labour force and the characterisation of farmer's category was based on a specially built data structure. The parallel between the two Censuses, crossed by farm size, categories of farmers and regions would unveil the major changes in the structure of production. It is expected to raise evidence on the discussion

⁸ worked-out by Prof. J.Graziano da Silva and A. Kageyama, from *Instituto de Economia/Universidade de Campinas* - IE/UNICAMP.

about (a) land concentration; (b) real features of changes in the composition of the labour force; (c) the scale of technological change; and (d) regional differentiation and specialisation.

The mainstream interpretations of the changes in the structure of production stressed the reversal of the major trend, observed in the previous period of 'conservative modernisation', (1965-1980). The concentration of land and income and the increase of cultivated area, based on the adoption of the 'green revolution' technology, along with the increasing use of hired labour were the major features of the period. These structural changes produced massive migration to the new frontier zones - the Centre-West and the North, but principally to supply the necessary labour force for the expansion of the urban-industrial centre, and especially to the civil construction industry.

For the 1980-1985 period, the preliminary Census data appear to indicate that the above trends were reversed, as revealed by the unexpected rise in the number of small establishments⁹ or farms, whose average size declined, and the rapid increase in occupied personnel¹⁰ (IPEA/IPLAN, 1989:2).

⁹ Establishment is the term used by *Instituto Brasileiro de Geografia e Estatística* IBGE (Brazilian Institute of Statistics and Geography) to describe an agricultural production unit, under unified administration in a contiguous or separate area but within the same Census-defined sector.

¹⁰ 'Occupied personnel' (*Pessoal Ocupado*) is a denomination for a person engaged in farming activities present on the farm on the 31st December of the Census base-year, specifying five categories of workers: operator and non-remunerated members of the family; permanent employees, casual or temporary employees; sharecroppers; and other conditions. Labourers engaged in contract-service (*serviços de empreitada*) are not counted, although this is certainly a type of casual labour, the only difference being the form

Mueller (1989:11) focused on the slow-down of growth in agricultural production, arguing that the causal factors were related to the economic crisis, as denoted by the reduction in liquidity, the low prices on domestic and international markets, and the diversion of resources to speculative financial markets.

Graziano da Silva (1989b:60) pointed to the possible process of land fragmentation and the minifundisation of small family units, suggesting that this process had provoked under-occupation and under-employment. For Goodman (1989:5) the creation and expansion of microfundia or establishments with less than 5 hectares, might possibly indicate *"the revival of 'pre-capitalist' tenure groups and subsistence production"*. It has also been noted that most of the increase in the number of farms and labourers occurred in the poor Northeast, suggesting that landowners may have responded to the economic crisis by adopting traditional, risk-averting strategies, and reverting to more labour-intensive forms of production and land tenure (Goodman, 1989:6).

Martine (1989a:86) argues that land de-concentration, shown by a reduction in the average size of the farm, and rising number of establishments, and occupied personnel and cultivated area, was a sign of the occupation of the 'spaces' opened by the crisis to the non-formal small production sector. Unlike Martine, Hoffmann (1989:102) concluded that

of payment (by unit of work, or on a daily, or monthly base). Kageyama (1986:359-366) made a distinction between 'occupied personnel', employment and occupation, in terms of the units of measurement. In a family unit of production, the number of occupied personnel is not equal to the number of jobs, because they are individuals with different quantities of working hours, which includes possible non-working hours in the case of family workers.

despite the growth in the number of *minifúndio* farms, with the accompanying fall in mean and median farms size, there was no alteration in the high degree of inequality in land distribution. This conclusion was based on other concentration indicators, that is the Theil and Gini Indexes.

Rezende (1987:36-37) also invoked the economic crisis as the broad causal factor determining the changes in the 1980s, but included natural causes, such as the long-lasting Northeastern drought, to explain the increase in the number of farm *"operators and family members"*. That is, the general slow down of the economy diminished the effect of the 'pull' factor on agriculture, lessening the flow of rural migration. In his second range of arguments, Rezende (1987:43) joins the other analysts, and focuses on the weaker force of 'push' factors operating in the 1980s, which would be consistent with the stagnation of employment observed on medium and larger farms. Low prices in the international market and government incentives would have induced the

"lower profitability of activities like soybeans and beef cattle (...) resulting in greater allocation of land to domestic crops".

This is the point on which the thesis of the expansion of small farming is based, *"since this form of production tends to prevail in these crops"*. Moreover,

"this greater competitiveness of petty production in the land market may have been strengthened by: (i) the likely cheapening of family labour vis-à-vis hired labour; (ii) the lesser availability of rural credit would have affected small farming less; and (iii) the falling prices of land until 1983 must have diminished the sale by small landowners, as well as facilitating its purchase by small landless farmers" (Rezende, 1987:43).

In sum, the explanations of structural change which occurred in the first half of the 1980s, tend to be

interpreted as a result of the economic crisis (and the related changes in agro-food policies), creating 'spaces' for the reproduction of small family farming, allowing the expansion of *minifúndios* (Graziano, Mueller) or *microfúndios* (Goodman). Differences remain in the interpretations of employment and production. The first line of argument tends to look at the phenomena as if family farming were trapped in the *minifúndio* sector, "under-occupied" (Graziano, 1989) or finding just the conditions of survival in 'pre-capitalist' tenure groups and subsistence production. The other current regards the expansion of the small farming sector as a response to the productive challenge in a period of crisis, because of its "*greater competitiveness*" (Rezende, 1987). This second line of argument is based on a close linkage between domestic crop production and small farming. To these lines of argument, other fields of enquiry may be included: (a) the possibility of medium and large farmers entering the domestic market; this is likely to be the case, since production growth was not concentrated in the Northeast, where small farming increased most; (b) the social differentiation within the family form of production, which includes modernised family producers and impoverished *minifúndio* family farmers in broad concepts, such as 'small farming' or 'petty production'.

3.2. Land use and concentration.

The possibility of land de-concentration in the period 1980-1985, suggested by the diminution of the average size of farms, was first contested by Hoffmann (1989:102), who applied the commonly used Gini and Theil concentration indexes.

TABLE 3.1

Brazil: Absolute and relative variation of area and number of farms^a, by total area group.
Periods: 1980-1975, 1985-1980.

Total area group	Variation in number of farms				Variation in area of farms			
	1,000 hectares		Percentages		1,000 hectares		Percentages	
	1980/75	1985/80	1980/75	1985/80	1980/75	1985/80	1980/75	1985/80
Less 2ha	-6456	282050	-0.7	28.6	-31692	215684	-3.1	21.9
2-5	-17078	145814	-1.9	16.1	-66702	421372	-2.2	14.3
5-10	19693	60141	2.9	8.5	120005	382577	2.4	7.5
10-20	38326	66063	5.2	8.6	506310	586726	4.9	5.5
20-50	42156	46663	5.2	5.5	1241060	1803625	4.9	6.8
50-100	37343	42584	10.5	10.9	2575334	2853038	10.4	10.4
100-500	36492	23124	9.3	5.4	6939906	4010851	8.7	4.6
500-1000	5859	1434	11.2	2.5	3936237	868519	10.9	2.2
1000-10000	5848	2881	14.7	6.3	14681905	5303232	16.3	5.1
10000 Plus	525	-201	28.8	-8.6	11055968	-4546703	22.6	-7.6
Non Declared	3891	2172	81.0	25.0				
Brazil	166599	672725	3.3	13.0	40958339	11899059	12.6	3.3

Source: Calculated from IBGE, Agricultural Censuses 1975 and 1980, and Census special tabulation printout, 1985.

(a) Referred to as 'establishment' in Census data.

Table 3.2
Brazil - Relative variation in number and area of farms, and average size by region.

Region	Number			Area (1000ha)			Average Size	
	1980	1985	Var(%)	1980	1985	Var(%)	1980	1985
North	410173	499736	21.8	41560	45125	8.6	101.3	90.3
Northeast	2446883	2817159	15.1	88442	92716	4.8	36.1	32.9
Southeast-S.P.	617382	715187	15.8	53341	53073	-0.5	86.4	74.2
São Paulo	273187	283125	3.6	20161	20672	2.5	73.8	73.0
Southeast	890569	998312	12.1	73502	73745	0.3	82.5	73.9
South	1145548	1201509	4.9	47912	48130	0.5	41.8	40.1
Centre-West	267748	315860	18.0	113437	117019	3.2	423.7	435.9
Brazil	5159851	5832576	13.0	364854	376753	3.3	70.7	64.6

Source: Calculated from IBGE Agricultural Census 1980 and Census special printout 1985.

Apparently, 673,000 new establishments (farms) appeared in the period 1980-1985, most with less than five hectares, while the decline of farms with more than 10 thousand hectares could have meant a better land distribution (Table 3.1). The smaller average size (70.7 hectares in 1980 and 64.6 hectares in 1985) could have been an indication of declining land concentration (Table 3.2). But the fact is that two-thirds of the growth occurred in farms with less than five hectares, confirming the creation of *microfúndios*.

In the Northeast, where the changes were particularly

significant, the creation of *microfúndios* coincided with the expansion of the largest group of farms, which increased both in number and total area. The two ends or "tails" of land distribution increased faster than the middle sized farms, maintaining or worsening the unequal structure of land distribution, captured by the Gini and Theil Indexes. There are two separate explanations for this. First, the return of normal rainfall after a long period of drought (1979-1983), which had driven some hundreds of thousands of rural workers to the *frentes de trabalho* (work fronts), and the difficulties of employment in the cities, due to the recession. Second, improvements in production technology made it possible to grow soybeans in Western Bahia, attracting southern producers to the area, stimulating production but also land speculation.

The concentration index calculated by Hoffmann (1989:104) increased in two contrasting regions: the modernised South and the traditional Northeast. The southern states are known to have the lowest concentration indexes in the country, especially Santa Catarina and Paraná. These states were in the front line of the profound change in the productive system which occurred during the so-called 'conservative modernisation', roughly in the 1970s, when *minifúndio* farms decreased rapidly. As a consequence, the Gini concentration index increased accordingly, in line with the average farm size. The transition to mechanised systems of production expelled the small farmers, especially those in precarious land tenure conditions, such as sharecroppers, poor tenants, and squatters (*ocupantes*). The shift in the opposite direction in the first half of the 1980s was in a way the most surprising change of all, suggesting a reversal of the former

concentrationist trend. In the Northeast, on the other hand, the traditional *latifúndio-minifúndio* dichotomy, pervasive in all Latin American countries, prevailed far throughout the period of 'conservative modernisation', this region remaining the most resilient to structural change, revealing its reactionary structure of power, and perpetuating extremely unequal land distribution. It was also this region that produced the surplus labour force upon which the import substitution industrial strategy in the Centre-South had relied in the 1950s and 1960s.

3.2.1. The minifundisation process.

Globally, the growth in the number of farms occurred in all farm size groups (identified in the Census data as Total Area Group in hectares), except for those exceeding 10,000 hectares (Table 3.1). The rate of increase in the number of farms was high - from roughly 16 to 22 per cent during the period from 1980 to 1985 - except for São Paulo and the South (Table 3.2). More significantly, 55 per cent of the variation in the number of farms, and 36 per cent of the variation in area, occurred in the Northeast. The remaining two-thirds of the variation in area occurred in the agricultural frontier regions of North and Centre-West (Table 3.3).

Table 3.3
Brazil - Variation in number and area of farms.
Period 1980-1985

Region	N u m b e r		A r e a (1000ha)	
	Absolute	(%)	Absolute	(%)
North	89563	13.3	3565	30.0
Northeast	370276	55.0	4274	35.9
Southeast-S.Paulo	97805	14.5	-268	-2.3
São Paulo	9938	1.5	511	4.3
Southeast	107743	16.2	243	2.0
South	55961	8.3	218	1.8
Centre-West	48112	7.2	3582	30.1
Brazil	672725	100.0	11899	100.0

Source: Calculated from IBGE Agricultural Census 1980, and Census special printout 1985.

The case of the Northeast is particularly intriguing, because the massive creation of *microfúndio* farms and the expansion of total farming area in those small lots was offset by the expansion of latifundia farms at the other end, keeping the highest level of land concentration unchanged - G.I.=0.870 in 1985, against G.I.=0.858 for the whole country (Table 3.4)¹¹. In the South, both Gini and Theil concentration indexes also revealed a slight rise. According to these indexes, de-concentration processes occurred in the frontier expansion regions of the North and the Centre-West. This certainly compensated for the rise of concentration indexes in other regions but not enough to change the whole structure of land distribution. Gini Indexes were 0.857 in 1980 and 0.858 in 1985; the same pattern applying to Theil indexes (Table 3.4).

¹¹ An equal distribution of land would have this index equal to zero, and the opposite total inequality would have given a G.I.= 1.0.

Table 3.4
Brazil - Gini and Theil indexes of inequality of landholding
by region, in 1980 and 1985.

Region	G I N I		T H E I L	
	1980	1985	1980	1985
North	0.835	0.800	0.935	0.932
Northeast	0.862	0.870	0.899	0.911
Southeast	0.771	0.774	0.791	0.789
South	0.745	0.753	0.801	0.812
Centre-West	0.845	0.841	0.877	0.861
Brazil	0.857	0.858	0.913	0.912

Source: HOFFMANN, 1989:104, IPEA/IPLAN.

Further evidence of land concentration is that the discrepancies in control of farm land between the smallest producers with less than 10 hectares of total area and the largest group of more than 1,000 hectares, were maintained during the 1980-1985 period. The first group of small farms represented more than 50 per cent of the total number of farms, holding only a tiny per cent (2.6) of the total land area in 1985. The largest group consisted of less than one per cent of the total number of farms, but held a massive 44 per cent of the total amount of land in 1985 (Table 3.5).

In sum, the period showed a reversal of the tendency for small farms to disappear, which had been a generalised phenomenon in the previous decade. The changes were concentrated in the Northeast and in very small plots with less than five hectares, which grew 16.2 per cent in area and 22.7 per cent in number, in the 1980-1985 period, faster than any other farm size groups. Particularly in the Northeast and the South region, land concentration measures worsened. De-

concentration only occurred in the North and Centre-West, without affecting the highly unequal distribution of land which characterises the structure as a whole.

Table 3.5
Brazil - Percentages of number and area of farms in 1975,
1980 and 1985

Total Area Group (ha)	N u m b e r			A r e a		
	1975	1980	1985	1975	1980	1985
Less than 10	52.2	50.4	52.9	2.7	2.5	2.6
Less than 2	19.8	19.1	21.7	0.3	0.3	0.3
2-5	18.4	17.5	18.0	0.9	0.8	0.9
5-10	13.8	13.8	13.2	1.5	1.4	1.4
10-20	14.7	14.9	14.4	3.2	2.9	3.0
20-50	16.3	16.6	15.4	7.8	7.2	7.5
50-100	7.1	7.6	7.4	7.7	7.5	8.0
100-500	7.9	8.3	7.8	24.6	23.7	24.1
500-1,000	1.1	1.1	1.0	11.2	11.0	10.9
1,000-plus	0.8	0.9	0.9	42.8	45.0	43.9
Brazil	100.0	100.0	100.0	100.0	100.0	100.0

Source: Calculated from IBGE Agricultural Censuses 1975 and 1980;
Census special tabulation printout 1985.

Farms with less than 10 hectares gained one million hectares in the period, and represented 8.6 per cent of total area incorporated (11.9 million hectares), which is considerable, bearing in mind that they owned only 2.6 per cent of total land area in 1985. Another relevant difference in the pattern of growth in the early 1980s is the increase of precarious land tenure relations, as sharecroppers gained land in every region, even in the modernised South. In total, sharecroppers gained 1.8 million hectares. This phenomenon was widespread, not limited to traditionally poor regions (Table 3.6).

Table 3.6
Brazil - Variation in area of farms by types of producers by regions.
Period 1980-1985.

Region	Landowner	Tenant	Sharecropper	Squatter	Others	Undeclared	Total
North	6460331	-1657169	642520	-2816337	883775	70822	3583956
Northeast	2754230	-176292	493110	550836	468732	182642	4273281
Southeast-S.Paulo	-1525318	270585	130872	368263	472198	14766	-268629
São Paulo	-677892	607422	160532	234810	180793	4942	510610
South	-759997	304914	287304	134118	230866	20972	218186
Centre-West	3821635	741978	94526	-2063641	683796	305004	3583308
Brazil	10071376	91427	1808854	-3591967	2920160	599148	11899062

Source: Calculated from IBGE Agricultural Census 1980, and Census special tabulation 1985.

3.2.2. Unchanged structure of land use

Small farms, or farms with less than 10 hectares, maintained their intensive land use, cropping about 65 per cent of their land. Conversely large farms had only about five per cent of their lands under crops, and about 80 per cent under forest or pasture (Table 3.7). The extensive nature of land use in large farms is further corroborated by the presence of natural grazing land, which accounted for almost 60 per cent of the pasture in 1985 (Table 3.8). This structural characteristic of land use led many scholars to advocate production policies which favour small family producers, and to suggest a massive land redistribution of large rural estates as a means of intensification of production. Effectively, this is not the strategy of intensification which has prevailed since the mid-1960s. On the contrary, the strategy was to intensify production while maintaining the same structure of land distribution, expressed in the phrase 'conservative modernisation'. If we look at the same structure for the 1980 Census data, we find no substantial differences on aggregate (Table 3.7), suggesting that the shifts during the period, including the reduction of perennial crop area and frontier expansion, simply reproduced the same pattern of land

use.

Table 3.7
Brazil - Percentage variation of land use by total area group
Period 1980-1985

Total Area Group (Ha)	Cropland		Pasture		Forest		Idleland ^a		Total 1980&1985
	1980	1985	1980	1985	1980	1985	1980	1985	
0-10	64.7	65.3	15.7	16.1	5.8	5.4	13.8	13.2	100.0
0-2	86.3	87.0	4.6	4.3	1.0	1.0	8.1	7.7	100.0
2-5	70.5	71.4	12.2	12.2	4.2	3.9	13.1	12.5	100.0
5-10	57.2	56.7	19.9	21.1	7.7	7.3	15.2	14.9	100.0
10-50	35.3	33.9	31.5	32.3	14.5	15.4	18.7	18.4	100.0
50-100	21.2	20.1	41.3	40.6	20.5	22.9	17.0	16.4	100.0
100-500	14.6	14.4	50.1	50.3	21.5	21.0	13.8	14.3	100.0
500-1,000	10.7	11.1	56.4	58.3	20.3	17.9	12.6	12.7	100.0
1,000-plus	4.5	5.2	51.5	50.7	30.3	30.1	14.1	14.0	100.0
Brazil	13.5	13.9	47.8	47.8	24.2	23.8	14.5	14.7	100.0

Source: Calculated from IBGE Agricultural Census 1980 and special tabulation printout 1985

(*) Includes fallow, Unused, and Unusable land.

The second aspect of this structure of land use is that these numerous (three millions in 1985) small farms occupied only 2.6 per cent of the total land, yet they managed to cultivate 12.5 per cent of the land in crops in 1985. This is part of the argument illustrating the relative efficiency of small farms, as regards land use. At the opposite end of the spectrum, the large farm group (1,000 ha and plus) numbered only 50 thousand but occupied some 44 per cent of the total land and cultivated 16.5 per cent of the land in crops. That is, the massive quantity of land held in these large estates, with 13 times more land than the small farms, only managed to nearly equal the group of small farms. Roughly 50 per cent of the land on these large farms were under pasture and 30 per cent under forest or woods (Table 3.7), illustrating their extensiveness.

Table 3.8
Brazil - Land Use: scale and substitution effect
Period 1980-1985, in million hectares.

Type of Land Use	1980	1985	Variation 1985/80	Scale Effect	Substitution Effect
Perennial Crop	10.5	9.9	-0.6	0.3	-0.9
Annual Crop	38.6	42.4	3.8	1.3	2.5
Fallow Land	8.6	11.2	2.6	0.6	2.3
Natural Pasture	113.9	1.5.5	-8.4	3.7	-12.1
Cultivated Pasture	60.6	74.5	13.9	2.0	11.9
Natural Forest	83.2	83.0	-0.2	2.7	-2.9
Cultivated Forest	5.0	6.7	1.7	0.2	1.5
Uncultivated	24.8	24.0	-0.8	0.8	-1.6
Inappropriate	19.7	19.6	-0.1	0.6	-0.7
Total	364.9	376.8	11.9	11.9	0

Source: Calculated from IBGE Agricultural Census 1980, and Census special tabulation printout 1985.

Overall, the expansion of cultivated area slowed down with only 3.2 million hectares in the period 1980-1985 (Table 3.8). The variation in the period is not simply a horizontal expansion of new agricultural frontier land, but it also involves the substitution of others. Substitution-effect¹² accounts for an estimated reduction of 0.9 million hectares of perennial crops, 12.1 million hectares of natural pasture and 2.9 million hectares of natural forest. Such a reduction in perennial crop areas involved two important crops - the coffee in the South/São Paulo and the perennial cotton in the Northeast.

¹² The substitution effect is the variation in the type of use in a given period of time (t_1-t_2), discounting the scale-effect. Scale-effect is the variation in each type due to the expansion of total land given by the coefficient $\underline{x}$. In formal terms, $\underline{x} = At_1 / At_0$, where:
 $At_1 = \sum Ai_1$ = Total area of land in time t_1 ;
 $At_0 = \sum Ai_0$ = Total area of land in the initial time t_0 .
The scale-effect is given by $Sc = x.Ai_0 - Ai_0$; and the substitution-effect is given by $Su = Ai_1 - x.Ai_0$

3.2.3. Regional aspects.

Although horizontal expansion of farm land slowed down in the period 1980-1985, growth unexpectedly occurred in the traditional region of the Northeast, with some additional 4.3 million hectares, mostly concentrated in the state of Bahia. As expected, the North and the Centre-West regions continued to incorporate new farmlands - about 7.3 million hectares - a process heavily supported by state financing through special programmes, such as the POLONOROESTE, POLOCENTRO and POLAMAZONIA. Yet again, the shortage of cheap credit might certainly have affected the pace of expansion (Table 3.9).

Census data by region are expected to unveil a differentiated process of agricultural growth in this period. The movement of productive capital concentrated mostly in the South in the 1970s tended to drive northwards, as productive geographical space for the standard technology established by the modernisation policy was exhausted. Much attention was paid to the migration of the labour force and the re-creation of family farming in the frontier regions, with the expansion of the so-called 'subsistence front', but this was accompanied by a flow of both productive and speculative capital investments.

Table 3.9
Brazil - Variation in area of farms by region according to total area group.
Period 1980-1985. (In Hectares)

Total Area Group (ha)	North	Northeast	Southeast -S. Paulo	S. Paulo	South	Centre-West	Brazil
0-2	5245	175062	17502	1946	13359	2028	215136
2-5	19506	215039	79146	7643	70199	23513	415042
5-10	24268	109942	114761	-5698	98307	41002	382579
10-50	905129	547790	548654	93121	-69653	365317	2390351
50-100	1661636	492531	256607	72816	-26303	395754	2853038
100-500	1534458	374306	187017	121663	278543	-2864077	-368097
500-1000	-611744	201717	-141135	-20633	218081	1222247	868529
1-10000	128050	65512	-42299	2046	-43407	420421	530323
10000+	-1235076	1500108	-908182	219283	69711	-4192545	-4546703
Total	3583958	4273267	-268633	510607	218182	3583302	7514715

Source: Calculated from IBGE Agricultural Census 1980 and Census special printout 1985.

In their regional analysis, Cunha and Mueller (1988:267-268) distinguished several different stages of land occupation. Firstly, zones of recently incorporated land specialised in traditional foodstuffs, especially rice. Secondly, transitional zones are characterised by commercial crops, principally soyabeans. In the final stage the mechanised soyabean-maize production system zone becomes dominant. Unlike the modernisation process in the South, land in the Centre-West was incorporated using heavy tractor mechanisation from the beginning. The expansion of mechanised production occurred in areas not previously occupied by traditional labour intensive farmers, usually associated with the traditional foodstuffs production. In this regional system, the use of family labour is relatively short lived, and limited to the early phase of occupation and land clearance. Rice is the crop usually sown on this fresh soil and, on a lesser scale, beans and maize. And then, after two or three years of cultivation, when the stumps rot down, the trunks are removed and the soils are made even by good deep ploughing; tractors can be used for the whole range of mechanised technology available. In the conditions found in *Cerrado*¹³ areas, where the vegetation is not dense, investment with cheap credit is available for land clearance; the period needed to prepare the soil for intensive cropping is even shorter.

With such a tendency towards highly mechanised cropping

¹³ *Cerrado* is an ecological system in Central Brazil, characterised by low soil fertility, a high level of acidity, with a presence of toxic aluminium and sparse vegetation.

systems dominating in these newly occupied lands, it is not surprising that employment did not grow accordingly. The so-called subsistence frontier in this case is structurally precarious and it is an integral part of the process of land clearance, producing surplus labour fully appropriated by the capitalist landowners.

In fact, the 'subsistence' frontier expanded most in the North, establishing a more stable base of production in remote areas where access is difficult. Massive contingents of peasants, marginalised by the 'conservative modernisation' process in the South, flowed into this inhospitable zone, looking for new conditions of reproduction. The State, led by conservative determination to evade land reform, carried out many land settlement schemes in the Amazon region, beginning with the resettlement of peasants from areas of social conflict in the Northeast, along the margins of the sadly notorious *Rodovia Transamazônica* (Transamazonian Road), as part of its *Programa de Integração Nacional* - PIN (National Integration Programme) in the early 1970s (Cunha and Mueller, 1988:302). But State intervention was mainly prompted by growing conflicts between migrants from the South and the local interests of land speculators. In the region covered by the state of Rondônia, Mato Grosso, Mato Grosso do Sul, and Goiás, where the migratory flows were most intense, the State resettled 6.8 million hectares, involving 62,600 farmers in 40 projects, from 1970 to 1986 (Cunha and Mueller, 1988:303).

The large-enterprise-based incentive policy introduced by the State was largely to blame for land speculation. The fiscal incentives programme established for agriculture and agro-industrial projects in the Legal Amazon was particularly

influential. From 1968 to 1974, some US\$ 320 million were invested in 220 agricultural projects, feeding speculation. The prospect of speculative gains due to rising land prices became a more decisive investment than the ability to produce. Projects were as large as 100,000 hectares and averaged 21,000 hectares in size. By 1985, 30 per cent of all approved projects had simply been abandoned and, of those fully executed, profitability was poor, with negligible social benefits (Cunha and Mueller, 1988:306). The misguided incentive policy in the region, starting in the 1970s, was a major source of land speculation. It continued in the 1980s, although on a lesser scale, probably due to the crisis in State finances, leaving no resources to squander on such unpopular and expensive projects.

Frontier expansion in the 1980s maintained the same characteristics of the 1970s but continued at a slower pace, 0.6 per cent per annum, as compared to 2.2 per cent per annum. The expansion in the traditional Northeast of some 4.3 million hectares during the period 1980-1985, also might have been the consequence of either speculative or productive influences in the land market.

Firstly, the Northeast absorbed an important share of government incentives, and such large programmes as POLONORDESTE, could have stimulated land speculation, similar to what happened in the North and Centre-West. The *Programa Nacional de Irrigação* (National Irrigation Programme) concentrated much of its resources in the Northeast, and may have had an effect on the land market (Assirati, 1986).

Secondly, the shift to large scale production technologies for soybeans in these tropical regions,

especially in Western Bahia (Barreiras) attracted southern investments and contributed to the demand for land.

In summary, a process of minifundisation, including the growth of precarious tenure forms, such as sharecropping and squatting, occurred in the early 1980s, but without causing a significant de-concentration of the land distribution structure. The Centre-West reproduced the same pattern of growth that was experienced by Southern agriculture in the 1970s, introducing a highly mechanised cropping system.

3.3 Category of Farms and Labour Force

The difficulty with the concept of family farming or petty family production is its ambiguity. This is also one of the main causes for the ambiguous interpretation of the effects of the crisis on these categories of agro-food producers. The questions raised about the resurgence of family farming in the 1980s in Brazil are more likely to be understood when social categories of farmers are more precisely defined.

3.3.1. Concepts and methods.

Family farmers are defined by distinctions involving labour relations; that is, the productive unit relies partially or entirely on family labour to carry out its activities. Apart from that, other characteristics have been added to the concept, usually related to the farm size and integration with agro-industrial markets. In the Brazilian case, given the level of development of the productive forces, it is accepted that 10 hectares is the upper size limit for

small farms or minifundia, and most family farmers live on such holdings. Ellis (1989:12) refers to such farmers as peasants¹⁴.

In this section we will differentiate between categories of farmers in terms of predominant labour relations, as proposed by Kageyama & Bergamasco (1989:4-8). In the Census data collected by IBGE, labour and employment is included in the category 'Occupied Personnel'. Family labour comes with the label 'Operator and non-remunerated members of the family' but, given the way Census data are collected, sharecroppers, temporary workers and other conditions could also be family labour. The most difficult problem is to define temporary or casual labour, because of their close links with the minifundia sector. Small family labour producers can, and often do, work off the farm, as temporary hired labour at peak seasons, concomitantly cultivating their own plots. This is the type of farmer described by De Janvry (1981) as "semi-proletarian". On the other hand, the family farm can be internally differentiated by the presence of permanent or casual labour. This is because of the close connection between the use of hired labour and the commercial system of production, and the ability to generate economic surplus. The implicit hypothesis lying behind the differentiation of farm categories is that they react differently to policies, producing different forms of adaptation.

Most studies of farm structure principally rely on the

¹⁴ For Ellis (1989:12), "peasants are farm households, with access to their means of livelihood in land, utilising mainly family labour in farm production, always located in a larger economic system, but fundamentally characterised by partial engagement in markets which tend to function with a high degree of imperfection".

farm size criterion to classify farms, although there are difficulties in deciding how to separate small, medium, and large farms. Size is usually measured by the total area of the establishment, because this is the form in which the Census data is published. Other attempts to classify farm categories in Brazil are based on case-studies (Graziano da Silva et al, 1982; Munguia P., 1988; Chang and Sereia, 1989; Shiki and Del Grossi, 1989). Different categories of family farms are identified by different methods, ranging from purely ecological criteria and the traditional farm size, to more conceptually elaborated criteria, such as labour relations and capital intensity. In the late 1970s, at the institutional level, and more specifically in the rural credit system, the classification of farmers as mini, small, medium and large, according to total value of production was also a clear recognition of the existence of heterogeneous forms of production and differentiated responses to policies. This criterion can be criticised for the arbitrariness of the limits used to distinguish one category from another. Nonetheless, this criterion for identifying farm categories is far better than farm size by total area. On the one hand, it does not discriminate against small but capital intensive farms, and on the other hand, it does not excessively favour the unproductive latifundia farm.

As current Census data do not classify farm size in terms of labour relations, special tabulations are needed for this kind of research. A pioneering study was carried out by Kageyama and Bergamasco (1989) using the 1980 Agricultural Census, which attempted to measure the real magnitude of family farm categories in Brazil. What follows, relies on

their basic findings.

a. Farm differentiation

First, one is forced to assume that there is an identity between the farm as a production unit and the nuclear family comprising the operator and family members.

Basically, according to the criteria chosen above, there is first a broad division between farms without family labour or, conversely, farms with only hired labour and farms with family labour. The first cluster of farms can be identified as capitalist farms, in the sense that the fundamental relations of production are totally based on hired labour, insofar as this epitomises capitalist labour relations. Nevertheless, this basic distinction does not prevent the inclusion of two groups of farmers, which affects its analytical meaning.

First, very small farms are included, say of less than two hectares, that do not have any productive purpose, but rather are held for speculative recreational reasons. Especially on the outskirts of metropolitan areas, where the land market is oriented towards the growing well-to-do bourgeoisie, myriads of small farms have no connection with agro-food production. On the other hand, this category may include some intensive vegetable cultivation farms with no family labour in the productive structure. It is assumed that such units are numerically insignificant. Although the choice of size limits is always fluid and arbitrary, the exclusion of farms without family labour with less than two hectares will reduce the problem of statistical distortion.

The second problem refers to the inclusion of extensive farms, which can be dealt with by identifying 'establishments' - in Census terminology - with more than 500 hectares but

which do not use tractors. Such large areas could not be cultivated without tractor mechanisation, unless a massive contingent of labour is employed. Otherwise, these farms can be characterised as extensive or speculative farms. Tractor mechanisation is implicitly taken as a bench-mark of the intensive system of production, reproducing the 'green revolution' model technology. On this Buttel (1983b:107) states that:

"increasing farm size, increased mechanization and increased prevalence of large-scale industrial farming tends to be inversely associated with the prevalence of family labor (owner-managers plus unpaid family labor) and positively associated with the proportion of hired labor in the farm work force".

Again, the choice of 500 hectares as the threshold size, as proposed by Kageyama (n/d), is arbitrary and does not totally avoid the 'problem' of extensive farms with less than 500 hectares, which are very likely to exist. The other major cluster of family labour farms must also be differentiated into separate categories, as they have structural differences despite the common characteristic of using family labour.

Firstly, petty family farms can be broadly separated from the others by the size criterion, say 10 hectares. This is intended to separate the poor farms, often described as traditional, labour intensive and mostly oriented to the production of domestically consumed foodstuffs. Todaro (1988: 235) calls these 'traditional subsistence farms', as distinct from 'peasant farms', which include farms with levels of higher market integration, as in the definition provided by Ellis (1989:12). These farms are usually unable to hire any outside labour; on the contrary, in most cases they hire out spare family labour to others in farming or elsewhere. This is

an important aspect to consider in the process of reproduction in this category of farms, under the conditions of scarcity of land and other means of production.

Secondly, the presence of casual labour to complement existing family labour means that the productive unit has the capacity to pay hired labour in peak periods of the productive cycle. The employment of casual labour is therefore an indicator of the level of organisation of production, with a certain ability to invest. This is related to the size of the farm.

Casual labour, stigmatised in Brazil as *bóias-frias*, was interpreted in the 1970s as the very expression of

"the expansion of capitalist relation of production in agriculture, at the expense of subsistence agriculture, accompanied by land concentration" (D'Incao e Melo, 1983:148).

Yet, although the monetisation of labour relation brings about elements of the capitalist relation of production, it does not necessarily eliminate family labour, which can persist and be dominant even where the process of capital intensification, (and therefore technological modernisation) was most successful, as in southern Brazil. In this region, 77 per cent of the total labour force was provided by family labourers in 1985 (Table 3.10). More recently, it is accepted that it is not casual labour but the presence of permanent hired labour that represents the real dimension of capitalist forms of production in agriculture. This leads to the third differentiated category within family-labour agriculture, namely, units that are highly mechanised and therefore capable of adopting the entire set of technologies provided by the agro-industrial sector. Kageyama and Bergamasco (1989) call this category "family enterprise", in an attempt to express

the existence of capitalist relations of production within a family form of organisation.

Table 3.10

Brazil - Composition of the labour force in 1980 and 1985, by region.

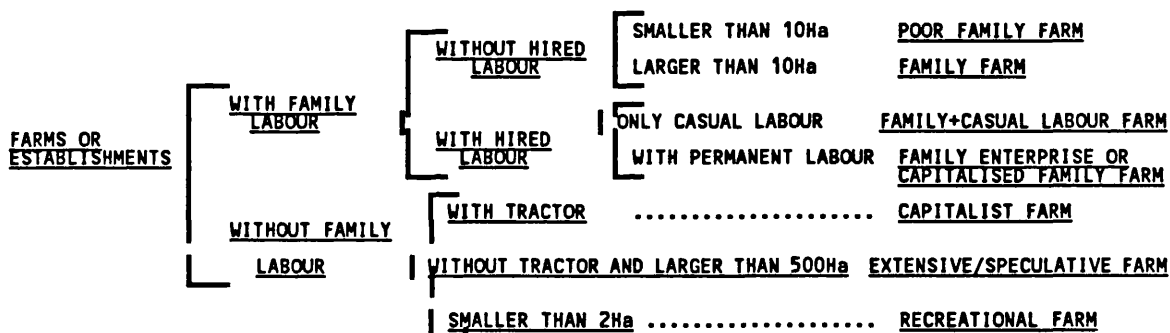
Region	Operator+Family		Hired Labour		Sharecropper ^a	
	1980	1985	1980	1985	1980	1985
North+Tocantins	84.3	87.1	14.8	11.8	0.9	1.1
Northeast	71.5	71.5	26.9	26.4	1.6	2.1
Southeast-S. Paulo	52.9	50.4	39.6	40.9	7.5	8.7
S. Paulo	40.8	37.5	56.1	59.5	3.1	3.0
South	79.8	77.2	18.4	20.8	1.8	2.0
Centre-West	54.2	52.5	43.6	44.6	2.2	2.9
Brazil	68.5	67.6	28.9	29.3	2.6	3.1

Source: Kageyama, (n/d)

(^a) Includes "other types".

Fourthly, another category of farm could be identified in farms above 10 hectares without any sort of hired labour, permanent or casual.

In sum these categories are:



b.About trends and comparability of Census data:
Variation 1980-1985.

It is intended to identify changes in the structure of

farm organisation, with the analysis of the variation in the period 1980-1985. However severe the economic crisis, one must recognise that the period is short, and any conclusion drawn from the analysis must be taken cautiously. Moreover, some methodological precautions in the reading of the Agricultural Census data, especially the interpretation of 'occupied personnel', are needed. For example, the 1.9 per cent annual growth rate of the number of labourers (occupied personnel) in the period 1980-1985, was cautiously classified as 'encouraging' by Martine (1989b:76), because of the possible spurious double counting of people 'occupied' in agriculture, leading to overestimation. Another major problem is that one cannot straightforwardly identify 'occupied personnel' with employment, as Kageyama warns (1986:Annexe 3). While employment is to be understood as the effective labour force used in the process of production, that is, the working time spent directly on the production of a particular commodity, 'occupied personnel' indicates only the presence on the farm of potential labourers on an arbitrary day - the 31st December of the Census year. Two prior problems need to be raised here. First, 'presence' does not take into account either the time spent on actual production or differentiate the labourer according to their ability to work, that is, by sex or age. Second, as New Year's Eve, the 31st December is a problematical day the possibility of not engaging casual workers on that particular day is high, despite the fact that in the South it is a period of high labour demand. However Census data are comparable, since presumably the same bias is present in the collected data for each year.

Unfortunately, because the 1985 Agricultural Census has

not been fully published, the classification of farm categories by labour relation is only possible using special tabulations. For this reason, we cannot reproduce entirely the same indicators as desired for 1985. So, the variation over the period 1980-85 is assessed by the comparable and available information.

3.3.2. The Characteristics of Farm Categories.

In 1980, family farms represented 71.6 per cent of the total number of holdings, defined in the Agricultural Census as establishments. These farms occupied 140.1 million hectares, or 38.4 per cent of total land, and employed 15.5 million people classified as 'occupied personnel', representing 73.3 per cent of the total. They had 53 per cent of the total number of tractors in operation and their output represented 35 per cent of the total monetary value of production. These magnitudes are sufficient to consider categories of family farms as playing a significant role in the production system, which emphasise the need to understand their dynamics.

The degree of their integration in a particular agro-food system, and the underlying state policies might be part of their dynamics. In turn, these factors can be expected to determine different forms of adaptation. Such integration occurs at the production level, with agro-industrial capital replacing rural labour, and at the level of exchange, with the tightening of commodity relations in an increasingly oligopolistic structure of the market. Differences between categories may also reflect the individual responses of family farmers to their objective conditions of production, such as

the access to land, to financing and other resources needed to survive in the competitive environment compelled by the dynamic of capitalism. This dynamic has been very much regulated by the economic crisis and State intervention throughout the 1980s, but all the ingredients of the crisis were already present in 1980.

The characteristics of farms, according to categories summarised in the Table 3.11, are based on a selection of indicators calculated from the results of the Kageyama and Bergamasco (1989) study of the 1980 Agricultural Census data. These characteristics of categories and identified relevant changes in the period 1980-1985, are presented below:

Table 3.11.
BRAZIL - Characteristics of farm categories in 1980. Selected indicators.

INDICATORS	F A M I L Y		F A R M S		NON - FAMILY FARMS			TOTAL
	Less than 10 ha	Greater than 10 ha	With Casual Labour	With Permanent Labour	With Tractor	Without Tractor	Less than 2 ha	
Number of Farms (%)	26.3	17.3	23.2	4.5	21.8	0.9	5.9	100.0
Total Area (%)	1.3	12.0	14.8	10.3	41.1	20.3	0.1	100.0
Number of Labourers (%)	20.6	16.6	26.9	9.2	20.9	4.0	1.8	100.0
Product Value (%)	5.6	11.8	16.2	14.0	40.0	11.3	0.8	100.0
Number of Tractors (%)	15.4	2.0	13.4	17.0	19.7	47.7	-	100.0
Average Size (Ha)	3.4	49.2	45.3	162.0	119.4	1642.0	...	70.7
Hectares/Tractor	422.7	601.0	584.1	479.6	514.1	-	669.7	669.2
Labourers/Tractor	399.8	48.1	61.4	18.1	17.0	-	349.5	38.8
Labourers/1,000 Ha	946.0	80.0	105.2	37.8	33.1	11.1	521.9	58.0
US\$1,000/Labourer(a)	0.3	0.8	0.7	2.0	2.5	3.3	0.7	1.2

Source: Elaborated from data taken of Kageyama, A. (n/d), and from a special tabulation of Agricultural Census 1980.

(a) Estimated production value per annum per labourer.

a) Farms with only family labour and with less than 10 hectares.

This is the poorest category, constituting 26.3 per cent

of total farms in 1980, employing 20.6 per cent of total labourers (occupied personnel), but owning only a tiny per cent (1.3) of the total area of farming (Table 3.11). In absolute number, 1.36 million farms with 5.15 million labourers were squeezed on 4.6 million hectares, indicating a highly labour intensive production system. The number of labourers per 1,000 hectares was 946, which is enormous compared to the 80 labourers for farms with more than 10 hectares (Table 3.11).

The scarce resources, including land - on average 3.4 hectare plots - suggest the existence of surplus family labour on the farm and the consequent need to hire out labour to supplement their income. Therefore, these farms are the probable source of casual labour for wealthier farms, and also for other sectors of the economy. The scarcity of land is often aggravated by the poor quality of the soil in terms of physical conditions and fertility, as well as its accessibility. These farms are usually located in marginal areas, either in the distant frontier zones in the northern region or in the so-called internal frontier and marginalised areas in the southern region. These are marginalised areas because they are difficult to mechanise with tractors, and so are unable to adopt the bulk of the standard technology available. So, from the basic resource of production - the land - the objective conditions of competition of these farms are the most difficult. Including all farms without hired labour, 78 per cent of total increase between 1980 and 1985 was concentrated in the Northeast and North (Tables 3.12, 3.13, 3.14). That was also the case for farms employing only casual labour (Table 3.15).

Table 3.12
Brazil - Number of farms without permanent hired labour, by region.
Variation 1980-1985 in percentages.

Region	Total			With Temporary Labour			Without Temporary Labour		
	1980	1985	Var%	1980	1985	Var%	1980	1985	Var%
North+Tocantins	395365	494382	25.0	79445	83642	5.3	315920	410740	30.0
Northeast	2030710	2474314	21.8	662159	809945	22.3	1368551	1664369	21.6
SE-SP*	379849	447198	17.7	143423	169971	18.5	236426	277227	17.3
São Paulo	170306	178431	4.8	61142	65083	6.4	109164	113348	3.8
South	958828	1005895	4.9	236347	236937	0.2	722481	768958	6.4
Centre-West	143188	169556	18.4	62624	69864	11.5	80564	99692	23.7
BRAZIL	4078246	4769776	17.0	1245140	1435442	15.3	2833106	3334334	17.7

Source: Calculated from IBGE, Agricultural Census special tabulation printout for 1980 and 1985.
(a) Southeast excluding São Paulo.

Table 3.13
Brazil - Number of farms with and without permanent hired labour, by region.
Variation 1980-1985.

Region	Total Farms	With Hired Labour			Without Hired Labour		
		Total	+Casual	-Casual	Total	+Casual	-Casual
North	95864	-3152	-3224	72	99017	4197	94820
Northeast	369646	-73958	-68454	-5504	443604	147786	295818
Southeast-S. Paulo	97505	30156	17611	12545	67349	26548	40801
S. Paulo	9938	1813	-1887	3700	8125	3941	4184
South	55961	8894	8078	816	47067	590	46477
Centre-West	43810	17442	11702	5740	26368	7240	19128
Brazil	672725	-18805	-36174	17369	691530	190302	501228

Source: Calculated from IBGE, Agricultural Census special tabulation printout for 1980 and 1985.

Table 3.14
Brazil - Number of farms with and without permanent hired labour, by region.
Variation 1980-1985, in percentages.

Region	Total Farms	With Hired Labour			Without Hired Labour		
		Total	(+)Casual labour	(-)Casual labour	Total	(+)Casual labour	(-)Casual labour
North	14.3	-16.8	-8.9	0.4	14.3	2.2	18.9
Northeast	54.9	-393.3	-189.2	-31.7	64.1	77.7	59.0
Southeast-S. Paulo	14.5	160.4	48.7	72.2	9.7	14.0	8.1
S. Paulo	1.5	9.6	-5.2	21.3	1.2	2.1	0.8
South	8.3	47.3	22.3	4.7	6.8	0.3	9.3
Centre-West	6.5	92.8	32.3	33.0	3.8	3.8	3.8
Brazil	100.0	-100.0	-100.0	100.0	100.0	100.0	100.0

Source: Calculated from IBGE, Agricultural Census special tabulation printout for 1980 and 1985.

Table 3.15

Brazil - Number of family labourers^a according to category of farms, by region. Variation 1980-1985.

Region	C a t e g o r y o f F a r m s				
	With Hired Labour		Without Hired		Total
	Total	Family	Labour+	Family	
North+Tocantins	-6611	-21583	484234		462651
Northeast	-237378	-194098	1427901		1233803
Southeast-SP ^b	274648	41967	200252		242219
São Paulo	-7336	-4128	-4193		-8321
South	84450	1363	17219		18582
Centre-West	89959	18972	56334		67762
BRAZIL	197732	-157507	2181747		2016696

Source: Calculated from IBGE, Agricultural Census special tabulation printout for 1980 and 1985.

(^a) Farm operator and non-remunerated members of the family.

(^b) Southeast excluding São Paulo.

b) Farms with family labour and permanent hired labour.

These farms are only 4.5 per cent of the total number, but are highly capital intensive, with only 18 labourers per tractor, comparable to those presented by capitalist farms (17 labourers/tractor). The ratio of farm area/number of tractors was more favourable to this 'family enterprise', compared to the capitalist farms (480 against 514 hectares/tractor). The ratio of production value to total area for this category is higher than that of capitalist farms (14/10 against 40/41), but lower than the poor family labour farms (5.6/1.3), as shown in Table 3.11. Surprisingly, the average size of these capitalised family farms was greater than that of the non-family farms (162.0 against 119.4 hectares, respectively). This category of farm is entirely integrated into the modern industrialised technology of production, as, for example, in the case of the soyabean/wheat system in the South. Generally speaking, these farms were the beneficiaries of State

production policies, being able to appropriate their share of institutional rent and enlarge their productive assets. These abilities and the related effectiveness in terms of accumulated capital, productivity, and rent absorption, put them on a competitive footing with capitalist farms.

Overall, in the farms with hired labour (including those with family labour), the opposite trend of decrease in the number of farms occurred between 1980 and 1985, in the poorest regions of North and Northeast. This number remained stable in the South and increased in the Central West (Table 3.16).

Table 3.16
Brazil: Number of farms with permanent labour, by region
Variation 1980-1985 in percentages.

Regions	Total			With Temporary Workers			Without Temporary Workers		
	1980	1985	Var% ^a	1980	1985	Var% ^a	1980	1985	Var% ^a
North	55926	52774	-5.6	46258	43034	-7.0	9668	9740	0.7
Northeast	416803	342845	-17.7	360584	292130	-19.0	56219	50715	-9.8
SE-SP ^b	237833	267989	12.7	189999	207610	9.3	47834	60379	26.2
São Paulo	102881	104694	1.8	69267	67380	-2.7	33614	37314	11.0
South	186720	195614	4.8	135284	143362	6.0	51436	52252	1.6
Centre-West	81442	98884	21.4	69585	81287	16.8	11857	17597	48.4
BRAZIL	1081605	1062800	-1.7	870977	834803	-4.2	210628	227997	8.2

Source: Calculated from IBGE, Agricultural Census special tabulation printout for 1980 and 1985.

(a) Variation in the period 1980-1985, in percentages.

(b) Southeast excluding São Paulo.

c) Two other intermediate categories of family farms are:

c1. Farms with only family labour and more than 10 hectares of land; and

c2. Farms with family labour and casual labour.

Their characteristics and magnitudes are very similar:

(i) per cent of the total number, 17.3 and 23.2;

(ii) per cent of total area, 12.0 and 14.8;

(iii) per cent of total value of production, 11.8 and 16.2;

(iv) per cent of total labourers, 16.6 and 26.9;

(v) labourers per 1,000 hectares, 80.0 and 105.2;

- (vi) average size in hectares, 49.2 and 45.3; and
 - (vii) per cent of the number of tractors, 13.4 and 17.0.
- (Table 3.11).

The discrepancies between the two categories are small for all indicators.

In terms of labour and capital intensity, they occupy the intermediate position between the poor family farm and the capitalised family farm. Although all these categories can be easily labelled as family farms, their individual characteristics are totally different, as shown above. It is also possible to conclude that family farms are not necessarily small, either in terms of land size or in terms of capital intensity. For example, among capitalised family farms, the top area group, on average, had 1,537 hectares, and the category's average size was 62.5 times bigger than poor family farms.

d) The non-family farms.

The non-family category of farms holds almost two-thirds of total area in farms, and accounted for 51 per cent of total production. According to the criteria defined, we can distinguish:

d1) Farms with only hired labour and with tractors.

This category concentrated 40 per cent of the total production value, 48 per cent of tractors and 41 per cent of the land and 21 per cent of the total number of labourers. In this farm category the total labour force employed hardly disguises under-employment. This may occur in the case of family farms, where the counting of 'occupied personnel' includes family members who work only in periods of high labour demand. This category of farms is very similar to

capitalised family farms, except for the fact that do not use family labour at all.

d2) Farms with permanent hired labour and an extensive area (more than 500 ha), but without a tractor.

The extensiveness and speculative nature of these farms is measured by the combination of a large area without mechanisation. The extensiveness is confirmed by the average area of 1642 hectares in 1980, and the relatively low production value per hectare (almost half that of farms with tractor) (Table 3.11). Holding 20 per cent of the total land, they manage to produce only 11 per cent of the output, employing only four per cent of total labourers. These farms employed only 11 labourer per 1,000 hectares, while the other non-family category employed 33 labourers. Both categories contrast sharply with the poorest family farms (with less than 10 hectares) that employed (or under-employed) 946 labourers in 1,000 farming hectares. Their inefficiency in creating employment and production makes them an easy target for an agrarian reform programme, which would transform them into a more productive structure. In absolute terms, such units represented 76 million hectares in 1980. This figure coincides with the amount of idle land available as estimated in the early 1980s by the Ministry of Agriculture - about 80 million hectares.

And finally, the comparison between labour productivity (output per labourer) among categories, tends to favour those with hired labour. This production value was only about 300 dollars per labourer for the poor family labour farms in 1980, while for the category of the capitalised family farm the same ratio was around 2,000 dollars. This ratio was about 700

dollars for the intermediate category of family labour farms with casual labour (Kageyama and Bergamasco, 1989).

3.3.3 The characteristics of changes in the period 1980-1985.

The first point about the growth of the number of labourers (occupied personnel) during the period 1980-1985 is that it occurred in the poorest regions of the North and Northeast. In 1985, the Northeast alone occupied 45 per cent of total personnel in agriculture and accounted for 50 per cent of total growth, half of it occurring in the state of Bahia (Martine, 1989a:78). On the other hand, the most dynamic regions in terms of production added very little to the total increase of occupied personnel. This is explained by their highly mechanised system of land clearance and production. In the modernised South the increase in number of labourers in agriculture was insignificant. This suggests that the growing rural labour population in the 1980s was not related to the advance of modernised systems of production, from where most of the commercial production came, either for export or for domestic consumption.

Rather, from almost 2.4 million additional labourers, two million were in the category of family labour and 0.2 million were sharecroppers and 'other conditions'. This also matches the rising number of farms operated under sharecropping and squatting forms of land occupation (Table 3.17), especially in the Northeast. These phenomena made Martine and Mueller (1989) and Goodman (1989) suggest that these 'pre-capitalist' forms of production would be a less risky alternative under the conditions of economic crisis. Arguing in the same direction, I would say that the economic recession also lowered rural

wages, as the pressure on land increased because of the deteriorating conditions of urban employment, the malabsorption of rural migrants, and the difficulties of more stable access to land in the absence of agrarian reform. Declining public investments in infrastructure (roads, hydroelectricity generating dams, etc) and the crisis in the civil construction industry jammed up two major absorbers of migrant rural labour in the 1980s, according to Mueller (1989:31-33).

Table 3.17
Brazil - Annual growth rate of number and area of farms according to types of producers; and average area in hectares. Period 1980-1985.

Types of Producers	Number of Farms			Total Area of Farms			Average Area	
	1980 (thousand)	1985	Annual growth rate (%)	1980 (million)	1985	Annual growth rate (%)	1980 (ha)	1985 (ha)
Landowner	3391	3735	1.95	324.6	334.7	0.61	95.7	89.6
Tenant	586	593	0.24	12.8	12.9	0.14	21.9	21.8
Sharecropper	319	458	7.50	3.8	5.6	8.04	12.0	12.3
Squatter	865	1076	4.46	23.6	20.0	-3.26	27.2	18.6
Other Conditions	-	19	...	-	2.9	...	...	153.7
Non Declared	-	4	...	-	0.6	...	...	150.0
Total	5160	5885	2.66	364.9	376.8	0.64	70.7	64.6

Source: Calculated from IBGE Agricultural Census 1980; and Census special tabulation printout 1985.

Table 3.18
Brazil - Variation in the number of labourers by regions.
Periods 1975-1980 and 1980-1985.

Region	1975-1980		1980-1985	
	Total	Small Farm ^a	Total ^b	Small Farm
North ^c	368964	-22823	476281	86812
Northeast	594409	-127520	1728274	890375
Southeast	166698	-2438	762256	208719
South	-440032	-215535	181929	151031
Centre-West	128004	-53411	186286	25300
Brazil	818043	-421727	3335025	1353237

Source: Mueller, 1989/IPEA/IPLAN; Kageyama, (n/d).

(a) Establishments with less than 10 hectares.

(b) Estimate includes average casual labour and contract labour.

(c) Include Tocantins for 1980-1985 period, Total.

It is also relevant that the increment occurred in small

farms (with less than 10 ha), the poorest segment of the rural productive units. In 1980, half of the farms with less than 10 hectares was characterised as poor family farms with around US\$ 300 of annual production value per labourer. The number of labourers on small farms had decreased by 0.42 million in the period 1975-1980, but reversed to a positive 1.35 million in the period 1980-1985, with almost 0.9 million concentrated in the Northeast (Table 3.18)¹⁵. Moreover, 85 per cent of these changes occurred in farms with less than 10 hectares. Here is the crucial evidence that labour increased in *minifúndio* farms, and was concentrated in the poorest region of the country (Table 3.19). In regions where family labour was prevalent, although in regions as different as the Northeast and the South, casual labour increased, accompanying the overall trend of the 1980s, but conversely permanent labour declined (Table 3.20).

Table 3.19
Brazil - Number of labourers in regions, by total area group.
Variation 1980-1985.

Total Area Group (ha)	North	Northeast	Southeast	South	Centre-West	BRAZIL
Less 10	86812	890375	208719	151031	25300	1353237
10-100	279017	125516	144479	-82377	50617	518252
100-1,000	75676	6831	51280	-6050	20412	148149
1-10,000	9278	614	28612	7441	22910	68855
>10,000	-1207	10340	2231	-257	969	32076
Total(a)	447592	1041626	427942	71354	120265	2109759
Total(b)						3335025

Source: Calculated from IBGE Agricultural Census 1980; and special tabulation printout 1985.

(a) Estimated from the number of casual labourers on 31st December.

(b) Estimated from average number of casual labourers, including contract labourers.

¹⁵ These figures are comparable as they were estimated using the same source of information and method: that is, straight from the Census data. An estimation by adding the number of *serviços de empreitada* labourers and calculating casual labour would have given an even higher contrast.

Table 3.20
 Brazil - Number of labourers by types of producers and regions
 Variation 1980-1985 (per cent)

Region	Total	Operator+ Family Members	Permanent labourer	Casual Labourer	Contract Labourer	Share- cropper
North	14.3	23.3	-22.6	0.2	-0.1	4.1
Northeast	51.8	60.6	-220.4	46.4	29.3	40.1
SE-SP ^a	19.2	11.9	153.0	25.3	23.9	42.1
São Paulo	3.7	-0.4	95.3	6.3	31.1	1.5
South	5.5	0.9	-27.2	16.3	6.7	5.8
Centre-West	5.5	3.7	122.0	5.5	9.0	6.3
BRAZIL	100.0	100.0	100.0	100.0	100.0	100.0

Source: Kageyama, (n/d).

(a) Southeast excluding São Paulo state.

And although this expansion was concentrated in the Northeast, the process was the same in whole country, even in the South, where the job losses on small farms had been particularly severe in the previous decade. This fact cast doubt on the theory that the long-lasting Northeastern drought was the single explanation for the increase of farm labourers in the period 1980-1985.

The dominance of family labour, in variations observed between 1980 and 1985, is clear. Of the 3.3 million rise in labourers in the period 1980-1985, about 2.0 millions were family labourers, distributed in all regions but São Paulo. The variation in the number of casual labourers was the second most significant, with an increase of about one million during this period, including labourers paid by piece work (*serviços de empreitada*)¹⁶. These labourers are not included in the Census survey as 'Occupied Personnel'. The amount of casual labour itself is not estimated by the occupied personnel

¹⁶ The number of such labourers was estimated by Kageyama (n/d), using the total monetary value paid by the farmer under payment by piece, divided by the average wage taken from *Centro de Estudos Agrícolas* (FGV), and transforming it in man-day equivalent (Kageyama, 1986:365).

present at 31st December, but rather is a 12 months average, and is therefore more realistic. To a certain extent it is surprising that sharecroppers increased by 6.7 per cent per annum, reversing the former declining trend. Finally, the only labour group which stagnated in the period was that of permanent hired labour, with around 2.2 million (Tables 3.10, 3.20).

In summary, the point is that there is no unique and linear process of change. There is considerable differentiation between regions and categories of farms, in response to the economic crisis and related agro-food policies.

The concentration of change in the poorest regions, and in smaller and poorer farms, suggests that it is more likely to be the negative consequence of State policy and economic crisis. The reduced resources mobilised in the period, due to the economic crisis and contractionary policy, mostly benefited the frontier regions, especially the Centre-West. Nevertheless, the shifts in farmland were in favour of family labour farms, indicating their ability to reproduce themselves in conditions of crisis (Table 3.21). An average 13.8 hectares per family worker increase is impressive, if compared to the previous quinquennial period, when this ratio was in decline. However, such evidence also indicates that the production system in reproduction is essentially based on 'traditional' factors, that is, land and family labour. Of course, to provide a more complete picture of the nature of these changes, other elements of technological change must be examined.

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published in 1987, indicates that the number of tractors in the Northeast and North stagnated in the period (Mueller, 1989:18). If this were to be confirmed, there would be little doubt about the labour intensive nature of the production system reproduced.

Macroeconomic difficulties may have affected the land market, reducing speculation, easing the access of the petty family farmers on the one hand and, on the other hand, slowing down the pace of capitalisation in modernising regions, except perhaps in the Centre-West.

Table 3.21

Brazil - Farms with and without hired labour (categories):(1) Area distribution by region, in percentages; (2) Variation in area 1980-1985; and (3) Variation in number of farms 1980-1985.

Region	Farms With Hired Labour			Farms Without Hired Labour			TOTAL
	Total	With Casual Labour	Without Casual Labour	Total	With Casual Labour	Without Casual Labour	
<u>1. Area Distribution by Region, in percentages</u>							
North+Tocantins	53.7	47.4	6.3	46.3	14.8	31.5	100
Northeast	55.3	49.9	5.4	44.7	21.6	23.1	100
Southeast-S.Paulo	75.4	64.2	11.2	24.6	12.4	12.2	100
São Paulo	74.6	53.1	21.5	25.3	12.9	12.4	100
South	58.1	45.3	12.8	41.8	13.6	28.2	100
Centre-West	84.2	69.7	14.5	15.9	9.2	6.7	100
Brazil	66.5	56.1	10.4	33.5	14.7	18.8	100
<u>2. Variation in Area 1980-1985</u>							
Thousand hectares	1477	...	...	30377	4129	27248	31854
Per cent	0.6	...	...	29.6	7.6	54.1	8.7
<u>3. Variation in Number of Farms 1980-1985</u>							
Thousand hectares	-19	-36	17	692	190	501	673
Per cent	1.0	-4.2	8.2	17.0	15.3	17.7	13.0

Sources: Calculated from data of Kageyama,(n/d) and IBGE, Census special tabulation, 1985.

3.4 Technological Change

Technological innovation as fostered by the 'conservative modernisation' policy implemented from the mid-1960s in Brazil, is associated with social changes, involving the crucial aspect of changing the structure of labour force.

The pattern of technological innovation based on mechanisation and use of agro-chemical and biological inputs has proved to be highly labour-saving and conducive to the use of hired labour relation, to the detriment of family labour, massively driven off the farm. Where the process of technological innovation was rapidly introduced and encouraged by State incentives, the effect of social differentiation among categories of farmers and land and capital concentration were particularly noticeable (Martine and Beskow, 1987:33). Small farms and unstable forms of land tenure began to disappear as a consequence of technological change, and the average size of farms increased in the process of adapting to the agricultural production system.

The reversal of the trend which characterised the 1970s revealed, by the increasing number of small family producers, the size of the rural labour force and the fall in average farm size, possibly indicates the exhaustion of the technological model in conditions dictated by the macroeconomic difficulties of the 1980s. The capitalised group of farms slowed down their activities as State support (subsidies and credit facilities) declined, on the one hand, and on the other, family farm categories encountered 'spaces' or opportunities of survival, previously denied. However, these opportunities do not include a real shift towards the capitalisation (by industrial technology innovation) of the petty family farms.

Departing from the assumption that the use of chemical fertilisers and pesticides is the first important step in terms of technological innovation, it follows that:

a) Indeed, in the poor Northeast, the positive 32 per cent

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increase in the use of chemical fertilisers in farms with less than 10 hectares denotes an improved position in 1985 as compared to the beginning of the decade. But, globally, these farms represented only a tiny per cent (4.7) of the total number of small farms, far below the figure of about 70 per cent in São Paulo and about 40 per cent in the South;

b) For the other farm size groups, the variation was smaller, leaving the whole of the Northeast with only six per cent of the farms using this basic input. So, the overall structure in the Northeast remained very much unchanged (Tables 3.22; 3.23);

c) Concerning the use of pesticides, more small farmers used this inputs than chemical fertiliser, but still at about a half the rate of other farm size groups or southern farms;

d) The variation in the use of pesticides was negative in the period analysed in almost all regions (Table 3.24); and

e) The Centre-West was the only region where changes in technological innovation were favourable. There, the natural conditions of the soil (with vast area in Cerrado), require fertilisation. Moreover, the large scale mechanisation reinforced by State support for infrastructure and incentives, helped by the relatively low price of land, explain these changes.

Table 3.22
Brazil - Use of chemical fertilisers in five regions, by total group area, in 1985.
(In percentages)

Total area group (ha)	North minus Tocantins	Northeast	Southeast-S. Paulo	S. Paulo	South	Centre-West	Brazil
N ^a of farms	408173	2447512	617682	273187	1145548	267748	5159850
0-10	2.2	4.7	37.4	69.5	39.2	15.8	15.7
10-50	5.9	7.9	46.3	77.2	65.3	28.0	38.6
50-100	4.7	8.2	51.7	77.5	67.2	30.0	34.0
100-500	3.5	9.6	52.1	77.6	61.4	31.8	32.4
500-1,000	4.7	14.3	49.9	76.9	61.6	35.9	36.6
1,000-10,000	8.0	15.4	49.7	73.6	64.1	35.3	36.1
Over 10,000	13.7	25.1	70.6	65.9	50.9	30.0	30.9
TOTAL	4.1	5.9	45.0	74.5	54.9	27.7	26.1

Source: Elaborated from data of IBGE Agricultural Census 1985, a special tabulation printout, 1990.

Table 3.23
Brazil - Variation in number of farms using chemical fertilisers, in the period 1980-1985.
In percentages.

Total Area Group (ha)	North	Northeast	Southeast-S. Paulo	São Paulo	South	Centre-West	Brazil
Number of farms	22.4	15.1	15.8	3.6	4.9	18.0	13.0
0-10	-29.6	32.1	36.4	-6.4	15.4	65.9	19.5
10-50	-47.6	17.6	16.4	-4.8	-1.0	31.4	3.2
50-100	-35.9	7.0	7.4	-1.8	-4.1	28.3	2.7
100-500	-26.4	4.7	2.5	-1.0	-2.2	17.8	3.0
500-1,000	-14.0	5.0	1.1	-3.2	-1.3	9.1	2.3
1,000-10,000	-5.0	7.6	-4.6	0	-8.4	8.9	1.4
10,000 and plus	-7.7	33.3	-18.1	-3.7	-7.4	-9.5	-5.8
Total	-38.4	23.3	17.6	-4.5	3.3	27.0	8.0

Source: Elaborated from data of IBGE Agricultural Census 1980, and Census special tabulation printout for 1985, 1990.

Table 3.24
Brazil - Use of pesticides on farms, by region
Variation 1985-80 (per cent).

Total Area Group (ha)	North	Northeast	Southeast-São Paulo	São Paulo	South	Centre-West	Brazil
Number of Farms	22.4	15.1	15.8	3.6	4.9	18.0	13.0
0-10	-24.8	-6.4	6.3	-13.1	-0.4	0.6	-4.0
10-50	-20.6	-10.6	0.7	-6.3	-5.4	4.7	-5.7
50-100	12.2	-6.0	-0.7	-1.9	-4.5	5.0	-2.2
100-500	4.0	-4.8	-2.1	-1.1	-1.0	1.4	-1.7
500-1,000	-5.4	3.9	-4.1	-3.3	1.1	4.5	-0.8
1,000-10,000	17.8	-3.1	-6.6	-2.8	-4.8	5.8	1.1
10,000 and plus	-30.4	0	-14.7	-16.7	-4.4	-6.9	-10.1
Total	-10.0	-7.4	1.2	-7.0	-3.4	3.2	-4.1

Source: Elaborated from data of IBGE Agricultural Census 1980, and Census special tabulation printout for 1985.

In short, the overall negative impact observed in the period reinforced the thesis of the exhaustion of the

technological modernisation strategy, although regional effects acted in the case of the Centre-West. In fact regional effects were more sizeable than the scale effect in terms of use of industrial inputs (Table 3.22). There were no significant differences between the farm size group of 10-50 hectares and those over 500 hectares, in terms of chemical fertiliser use. On the other hand, regional differences were far more significant. Whereas in the North and the Northeast only four and six per cent of the farms used fertilisers in 1985, 55 per cent of the southern farms and 75 per cent of the farms in the state of São Paulo used chemical fertilisers.

Taking the average cultivated area per tractor as an indication of the rate of mechanisation reveals that both the position of the North and Northeast worsened in the 1980s, increasing the gap between these poor regions and the South. The average area per tractor (377 ha/tractor) was six times higher in the Northeast than in the South (62 ha/tractor) in 1980. This gap increased to seven times in 1985 (Table 3.25).

Table 3.25
Brazil - Average cultivated area per tractor
in 1970, 1975, 1980, and 1985, by region.

Region	1970	1975	1980	1985
North	547.6	689.8	277.0	332.1
Northeast	1418.0	931.2	373.0	376.9
Southeast	116.5	79.1	59.8	57.4
South	170.7	89.4	62.0	52.0
Centre-West	323.4	149.8	102.2	86.1
Brazil	204.9	123.8	90.1	80.3

Source: MUELLER, 1989:19

In summary, the conclusions drawn here stress the diversity of the response to policies, according to regions and farm categories/farm size. The resurgence of small farms in the period occurred in the poorest agricultural regions in the country: the North and Northeast. These emergent farms increased the number of family labourers, and enlarged the area of productive farmland, but did not incorporate technological innovations. The increasing number of establishments and precarious land tenure reflected a strategy of survival in a context of economic crisis. This is in line with the increasing under-employment in *microfúndio* farms and the reproduction of traditional systems of subsistence production. These movements suggest increasing marginalisation from the mainstream process of agricultural accumulation, characterised by a policy of export promotion and trade surplus generation, rather than an active, though minor, participation in it. On the other hand, modernising regions like the South and the Centre-West, slowed down the pace of modernisation, reflecting the economic crisis, but maintained the same pattern of growth. The closest integration with the dominant agro-industrial system makes the capitalised farms, including those with family labour, more capable of appropriating institutional rents and competing in the food market, including the domestic staplefood market.

CHAPTER IV

SOYABEAN SYSTEM: AGRO-INDUSTRIES, STATE AND
THE ADAPTATION OF PETTY COMMODITY PRODUCERS

INTRODUCTION

A diversity of forms or kinds of household commodity production emerged from the partial modernisation of the labour process, as discussed in the Chapter I. This partial modernisation resulted from the diffusion of a peripheral variant of the 'Fordist'¹⁷ model of agro-food production and consumption, based on internationally standardised technology and popularised as the 'green revolution' in Third World countries. First developed in advanced industrial countries, standardised technology consisted production systems based on industrial inputs and high yielding varieties (HYV), and the derived 'compulsive sequence'¹⁸ which continually brings about new demands for industrial appropriation.

In Brazil, 'green revolution' techniques are epitomised by the soyabean-wheat system of farming, which first expanded in the South and later spread to the Centre West region. If soyabean rapidly established itself within the expanding world market by supplying feedgrains to the European 'Fordist' agro-food system, wheat undeniably became part of the Brazilian

¹⁷ The core of the 'Fordist' model of agriculture is referred to as the whole system of production and consumption based on the equation soyabean-maize-livestock, and the standardised industrial techniques of food production, including mechanical, chemical and biological innovations (Kenney et al, 1987).

¹⁸ Expression used by Rosenberg (1976:112) referring to the "forces which provides inducement to technical change, (...) and involving compulsive formulation of problems".

popular diet.

Wheat was already part of the consumption habits and subsistence production among European immigrants since the late 19th century, but consumption was boosted by the aggressive American foreign policy and multinational capital interests in the post-Korean war period (Friedmann, 1982). Since then, Brazilian consumption increased substantially, particularly in the 1970s. Although production has increased, stimulated by the modernisation policy, it only met about one third of the total consumption. Heavily subsidised, wheat tended to substitute other basic foodstuffs in the popular diet, and wheat imports became crucial to the regulation of food supply. This form of regulation further undermined local production of basic foodstuffs, especially manioc and beans whose production stagnated or decreased in the period of 'conservative modernisation'. Policy targets and agro-industrial capital interests were tuned to encouraging the wheat self-sufficiency option, in detriment to other basic foodstuffs.

Soyabean was the most effective vehicle for the transition to 'industrialised' labour processes in agriculture, both by making family labourers redundant, further increasing land concentration and producing a new category of technified household commodity producers. Part of the traditional family labour based producers adapted their labour process, by incorporating industrial inputs and machines, but without renouncing the dominant family character of the labour.

Technological changes in the soyabean system will be examined in this chapter, in terms of the historical

conditions of reproduction of petty commodity producers in the South, where those changes were most significant.

The consolidation of the soyabean system in the 1970s illustrates the success of the 'green revolution' technology policy in Brazil. Soyabean represents the most remarkable example of the expansion of a modern 'industrialised' form of production, establishing a new dynamic of agricultural production, first in the South and later in the Centre-West region.

In the 1980s, with the exhaustion of the frontier and mechanisable land in the South, the impetus of horizontal growth shifted to the Centre-West and even to the traditional Northeast region.

Before the expansion of soyabeans in the South, the dominant commercial crops, namely wheat in Rio Grande do Sul and coffee in Paraná were in crisis. Under these conditions, soyabean emerged as a competing crop, favoured by the increase in world demand. Soyabean has the characteristics of a commodity which most satisfied the conditions of industrial growth and accumulation. As shown by Graziano da Silva (1982), Brum (1982), and Germer et al (1982), soyabean was an efficient vehicle for the diffusion of industrial technology, establishing a new production process to which rural producers had to conform. This was at the core of social transformation that occurred in the 1960s, and most visibly in the 1970s.

This chapter examines the cases of the *Gaúcho* Plateau and Paraná, focusing on the changes in rural social structure induced by the consolidation of the soyabean system, especially the forms of adaptation of petty commodity producers. *Gaúcho* Plateau is a region situated in the North of

Rio Grande do Sul.

4.1. The case of the Gaúcho Plateau

Traditional farming in this zone was long dominated by two production systems. The first is represented by the large extensive cattle ranches, inherited from the 18th century colonial tenure system known as *sesmarias*. These *estância* farms were established in the natural *campo* grazing lands, where beef cattle and draught animals were raised. In the 18th and 19th centuries, the production of salted meat (*charque*) and draught animals were the main agricultural output of Rio Grande do Sul (Brum, 1988:26; Leclercq, 1987:48). The markets for these products at first were found in the gold mining economy in Minas Gerais, which needed food and a means of transportation (mules and horses), and later the coffee plantations in Rio de Janeiro and São Paulo. The 18th century towns of São Paulo and Sorocaba were important marketplaces for these goods.

The second production structure was developed from the occupation of sub-tropical forest land by European immigrants, mostly German (since 1824) and Italian (since 1875). They were given a rural plot called *colônia*, with size varying from 77 hectares until 1851, then 48.5 hectares in 1851-1889 and finally 24 hectares thereafter. These plots were ceded to the farmers free of charge until 1851, and from then on sold on the basis that the balance be paid within a five year period (Brum, 1988:27). The characteristics of these farms were (a) their small size (most of them were converted into *minifúndio* farms over time as their reproduction process implied the

division of plots into smaller ones and transmission by inheritance); (b) their multiple cropping system, mixing subsistence and commercial production; and (c) their reliance on the use of natural resources (land) and family labour as the main technical relation of production (Brum, 1988:30).

In the postwar period (1945-60), the process of modernisation began with the shift towards specialisation in wheat production and technology based on animal drawn machinery, slowly sweeping away the multi-cropping system. This multi-crop farming included crops such as maize, rice, manioc, wheat, beans, pumpkin, potato, sweet potato, alfalfa, groundnut, lentils, rye, oats and peas; as well as livestock, including chickens, pigs and dairy cattle (Brum, 1988:56). Little by little, imported tractors replaced horses and other draught animals as the source of power, and imported fertilisers began to replace manure as a method of regenerating soil fertility. Tractor mechanisation for wheat began in Passo Fundo and Carazinho in 1946, spreading rapidly to other municipalities, supported by official credit and price guarantees. The policy option was clear: these incentives were only available at the time for wheat. Traditional household farmers, the *colonos* with the difficulties of low yield and prices, entered mechanised and more specialised wheat production by 1960 - a move later reinforced with soyabean production. However, despite State support from the very beginning, production was very variable and risky, subject to pests and diseases, leading, for example, to a yield fall from the previous years average of 1,000 kilograms per hectare (kg/ha) to about 300 kilograms in 1958 (Leclercq, 1987:53). The most common consequences of the

exhaustion of soil fertility and population pressure were the migration of rural family members to fresh frontier zones, incorporating new, naturally fertile land. This migratory movement flew northward in the direction of Santa Catarina, reaching Paraná in the 1950s, and continued throughout the 1960s (Shiki, 1983:53).

The production of wheat had long been encouraged by the state administration in Rio Grande do Sul. From 1789 to 1820 sustained and high yield cropping was decimated by rust disease. A century later, experimental stations were created and the foundations of a self-sufficiency policy were laid. At national level, the creation of the *Serviço de Extensão do Trigo* - SET (Wheat Extension Service) in 1944 was the single most relevant state support to the import substitution production programme (Brum, 1988:72-73). It was within this context that the introduction of soyabeans in the mechanised system of farming imparted even greater stability.

Soyabean was already known by traditional farmers as a subsistence animal feed crop and was also used as green manure, just as had happened in the United States of America. Soyabean was intercropped with maize and used on the farm to feed pigs. Only in the 1950s was part of the produce sold to oil processing industries, among them SAMRIG and SANBRA owned by the Bunge y Born Group. These industries used to supply farmers with seeds and provide technical assistance in exchange for a monopoly of purchase (Leclercq, 1987:56). The immediate interest for industries was the oil, until then extracted from a variety of oilseeds, including groundnut, sunflower, linseed and cottonseed. High yielding varieties of soyabean were introduced by both the crushing industries and

the State system of technical assistance. American varieties, such as Hardee and Brazilian varieties, such as Santa Rosa, developed by the Campinas Agronomic Institute (*Instituto Agronômico de Campinas - IAC*), were quickly diffused. According to Homem de Melo (1983:131), 53 per cent of total soyabean area in Rio Grande do Sul in 1973, was sown with those two varieties and 60 per cent in Paraná. Screenings from American lineages produced L-326, later led to the development of the Santa Rosa variety, bearing the name of the municipality where it was first produced commercially in 1963 (Homem de Melo, 1983:130). Therefore, from the very beginning Brazilian soyabeans incorporated genetic advances made in the United States, transferring all technological characteristics, such as the plant architecture, high pod insertion for mechanised harvesting, response to fertilisers, and so on. Experiments in Rio Grande do Sul were especially reinforced by the *Projeto Soja* (Soyabean Project) with direct assistance from American researchers. The Project was later absorbed into the *Centro Nacional de Pesquisas de Soja* (National Centre for Soyabean Research), established in Londrina (Paraná state). Table 4.1 depicts the rapid evolution of varieties, suggesting that this genetic development underlies the increase in yield from about 1,060 kg/ha in the 1960s to 1740 kg/ha in the 1980s.

The combination of wheat and soyabean in the mechanised cropping system increased the intensity of both land and machinery use, consequently reducing fixed costs (Shiki, 1983:109-110; Leclercq, 1987:57; Brum, 1988:77). Technically, the sequential summer-winter rotation was made possible by the mechanisation of farm operations, which shortened the labour

time of soil preparation (ploughing and harrowing), and other labour intensive operations such as harvesting. Timing problems were initially posed depending on weather.

Table 4.1
BRAZIL - Introduction of new soyabean cultivars, in selected periods.

Period	Average Yield (kg/ha)	New Cultivars
- 1960	-	Amarela Comum, Abura, Pelicano and Mogiana.
1960-1968	1060	Hill, Hood, Major, Bienville and Hampton.
1969-1974	1394	Bragg, Davis, Hardee, Santa Rosa, Delta, Campos Gerais, IAC-2, Viçosa and Mineira.
1975-1980	1541	IAS-4, IAS-5, Planalto, Prata, Pérola, BR-1, Paraná, Bossier, Santana, São Luiz, IAC-4 and UFV-1.
1980 -	1740	BR-2, BR-3, BR-4, Ivaí, Vila Rico, União, Cobb, Lancer, Co-136, IAC-5, IAC-6, IAC-7, UFV-2, UFV-3, Cristalina and Dokko.

Source: Homem de Melo, 1983:131.

In cropping zones North of Parallel 24°S, the problem was the long biological cycle of soyabean, which delayed the wheat sowing. Conversely, South of Parallel 24°S, the late wheat harvest delayed soyabean sowing. New varieties developed in experimental stations, with shorter biological cycles or precocious varieties, tended to replace old varieties. Long-stem wheat varieties, although productive, were subject to lodging, which was solved by the adoption of short-stem CIMMYT (*Centro Internacional de Mejoramiento de Maiz y Trigo*) varieties. Technological research support was therefore

essential to the setting-up of the dual-crop system. Soyabean crops were more secure than wheat, as they were less susceptible to pests and diseases and also less subject to climatic hardships, such as the late frost which has especially damaging effects in the flowering stage of the wheat cycle.

The counterpart of this new mechanised cropping system was the destruction of the two traditional farming systems: the extensive *estância* cattle ranching and the small diversified household producers. The diffusion of the standardised 'green revolution' technology, however partial, induced social changes in the rural structure. The poorest fraction of family farmers was forced out of arable lands towards marginal hilly areas. Traditional household farming managed to crop these lands on the basis of manual work and the more flexible animal-drawn equipment. The capitalisation of the *estâncias* was the legitimising facet of the "conservative" aspect of modernisation strategy. Massive transfers of institutional rents, through subsidised credit, rapidly transformed the bucolic cattle grazing landscape into vast and homogeneously cultivated soyabean and wheat fields. The other facet of the modernisation policy was the change in the traditional household farming sector. The dynamics of change in this sector were complex, and four major components can be identified. These were: a) the dismantling of the traditional diversified intercropping system; b) the new size requirements for farms; c) the adaptation of the labour force; and d) access to credit and other public services.

With regard to the first of these elements, tractor mechanisation and the incentive policies to stimulate

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specialisation implied the abandonment of the intercropping system, which had mixed a variety of crops serving either on-farm self-consumption (family and livestock) or the market. In the process of expansion, soyabean substituted existing multi-cropping systems, as pointed out by Zockun (1980:120) and Ryff (1988:80), and shown in Table 4.2. Ryff warns that the exclusion of pasture in the analytical model over-estimates the substitution-effect of soyabean on other crops, suggesting the need for caution in interpreting the results. Nevertheless the effect of soyabean in displacing other crops is shown more conclusively when the variation of harvested area, calculated from Agricultural Censuses, is examined. Indeed, the biggest losses occurred in grazing land (minus 657,851 hectares between 1960 and 1975 in selected municipalities), followed by the harvested area for crops such as rice, beans manioc and maize, although on a smaller scale (Table 4.3).

Table 4.2
RIO GRANDE DO SUL - Substitution-effect of soyabean on other
crops. Period 1965-1980 (Triennial average)

CROPS	Area (Ha)		Variation in Area	SCALE EFFECT	SUBSTITUTION EFFECT
	1965	1980			
Rice	405404	578965	173965	535928	-362367
Bean	230518	198851	-31667	304736	-336403
Potato	58251	55645	-2606	77006	-79612
Manioc	244503	174223	-70280	323224	-393504
Maize	1543333	1822498	279165	2040227	-1761062
Soyabean	379090	3945263	3566173	501142	3065031
Tobacco	88609	105170	16561	117138	-100577
Groundnut	8692	7007	-1685	11490	-13175
Orange	15760	22300	6540	20834	-14294
Banana	4614	6676	2062	6100	-4038

Source: Ryff, 1988:80; FIBGE Anuário Estatístico

Table 4.3
RIO GRANDE DO SUL - Harvested area of soyabean and
other selected crops. Variation in selected
municipalities (1960-75) and micro-regions
(1970-1975). In hectares.

CROPS	MUNICIPALITIES 1960-75(1)	MICRO-REGIONS 1970-75(2)
Rice	-2044	-283
Potato	439	-5509
Bean	-27937	12034
Manioc	-57272	-61154
Maize	-112330	-124284
Soyabean	773336	830000
Pasture	-657851	-412293

Source: Ryff, 1988:81/FIBGE, Agricultural Censuses.

(1) Carazinho, Cruz Alta, Espumoso, Giruá, Ijuí, Palmeira das Missões, Passo Fundo, Santo Angelo, Santa Bárbara do Sul and São Borja.

(2) Triticulora de Cruz Alta, Colonial das Missões, Colonial de Santa Rosa, Colonial de Iraí, Colonial de Ijuí and Passo Fundo.

Secondly the newly-mechanised system of production required a larger area of farmland, raising the minimum competitive size. Whereas the farm size for the reproduction of a traditional household was determined by the natural soil fertility and the available supply of family labour, in the modern 'industrialised' system it was determined by the minimum technological requirements of tractor mechanised operations, new crop varieties, and other industrial inputs. Those farmers who could not meet these minimum-size conditions were forced out of agriculture, or accelerated the flow of migration towards the frontier lands - phenomenon mostly visible in the 1960s and the 1970s in Rio Grande do Sul and Paraná. The natural consequence of this adaptation was land concentration, evidenced by the reduction in the number of farms and the increase in the average size.

The third element of change was the replacement of rural labour by machinery (tractor, thresher, combine harvester), and chemical cultivation or other labour-saving, industrially-appropriated technology. Where four or five family labourers were needed to run an average traditional farm, mechanised soyabean/wheat systems required one or two semi-skilled labourers, for short condensed periods. In traditional farming, labour needs were more evenly distributed over the year, following the rationale of the multi-cropping system. Industrialised processes of production condensed operations, widening the gap between production or biological cycle and total labour time. Two immediate consequences of this were the freeing of rural labour for non-farm or off-farm activities and the encouragement of the use of casual labour. Agricultural censuses in the period of expansion of the soyabean system show the dramatic increase in casual labour.

Finally, the support from co-operatives, providing the industrial means of production, and the access to credit were crucial to these transformations. These two points are dealt with in the following section.

4.2. The case of Paraná

4.2.1. Regional structures before soyabean.

Similar changes in the rural social structure occurred in Paraná. Before soyabeans, the dynamics of agro-food production in Paraná were broadly dominated by three major processes: the livestock/timber extensive system in the Centre-South; coffee in the North; and the multi-crop household system.

a. The Centre-South. This zone is covered partly by natural *Campos Gerais* grassland, which crosses Santa Catarina and reaches into southern Paraná, and partly by forested area, mostly populated by *Araucária* pine trees. These natural resources had long sustained the extractive economy in this part of the state. In the 18th and 19th centuries, *Campos Gerais* was the natural passageway of mule trains from the Gaúcho Plateau to the marketplace in São Paulo and Sorocaba. Towns such as Palmas, Guarapuava, and Ponta Grossa were service points in the long march from the cattle production zone to its marketplace. The same colonial *sesmaria* system of distribution shaped the 'latifundist' land structure of the zone. The emergence and expansion of soyabean/wheat systems occurred mostly on these extensive cattle raising *latifúndios*, in conditions of capitalisation similar to those of the *estâncias* in the Gaúcho Plateau. The mean soyabean cropping area was 58 hectares in the Centre-South, the highest in the state, compared to a mean of 11 hectares in the whole Paraná in 1975 (Shiki, 1983:93).

b. The North of Paraná. The coffee growing North was more densely populated because coffee growing is basically a labour intensive activity. Coffee was cropped in the large *fazenda* system functioning on the basis of a slave-labour force which prevailed during most of the 19th century, extending from Rio de Janeiro towards São Paulo, and reaching the North of Paraná by the 1860s. By the end of 19th century, slave labour was abolished and European immigrants began to take over farm jobs under the newly enforced 'semi-wage' regime.

The 'semi-wage' system combined a wage regime for the head of the family with independent cropping rights in

exchange for the cultivation of an agreed number of coffee trees. Large families were preferred because of the labour demand in the harvesting season, when other members of the family were also temporarily employed. Independent cropping was eventually the source of extra cash for the family producers and the source of foodstuffs supply for urban consumers. This was especially significant in the early stage of industrialisation in São Paulo.

The northwestward shift of the coffee system after the world economic crisis in the 1930s, which strongly affected the Brazilian economy, swung commercial-agrarian capital towards the colonisation business, linked to the interests of railway companies, then dominated by the British. For example, 515,000 *alqueires*¹⁹ of land concession was given to the Paraná Plantation Limited, later converted into the *Companhia Melhoramentos Norte do Paraná* for private colonisation (Companhia Melhoramentos, 1975:114). This vast land area was divided into small plots, with size varying from three to 15 *alqueires* according to Padis (1981:107). These settlements further encouraged coffee and intercropped foodstuffs production on an individual household basis. Moreover, the 'semi-wage' plantation system was converted into sharecropping land tenancy system whereby not only coffee but other foodstuffs outputs were shared. The common features of the 'plantation' system and the individual household commodity producer were the intensive use of family labour and natural land fertility. Industrial technologies were concentrated on milling plants, chemical fertilisers, and some organo-chloride

¹⁹ 1 *alqueire* = 2.42 hectares

pesticides, used to control emerging pests such as coffee berry borer (*Hypothenemus hampei*) and Coffee leaf miner (*Leucoptera coffeella*). Two renowned pesticides were Benzene Hexachloride (BHC) and Dichloro Diphenyl Trichloroethane (DDT) later banned because of their persistence and harmful effects on humans. As a permanent crop, coffee trees do not require ploughing and even for the cultivation, manual work was preferred because of the coffee's adventitious root system. Tractors were first used for transport purposes and later for pesticide spraying or powdering.

These small coffee producers generally prospered from about 1940 to 1953 (Leclercq, 1987:63), when a severe frost decimated large coffee growing areas in Paraná and São Paulo, then the two biggest producer states. Further difficulties later arose due to overproduction, and the consequent international pressure to control Brazilian production.

In fact the early 1960s witnessed another coffee stock burning. A record harvest in 1960 of 20.7 million bags (60 kg), triggered the second worst crisis since the 1929 stock market crash. The *Instituto Brasileiro do Café* - IBC, the Brazilian state-run organisation for coffee market regulation, launched a coffee eradication and diversification plan in 1962, which paid producers a premium to destroy coffee trees and substitute alternative crops. Moreover, coffee production was further discouraged by increasing the export tax (*quota de contribuição* or *confisco cambial*), and therefore reducing prices in the domestic market. This tax was as much as 50 per cent of the international prices in 1965/66 (Leclercq, 1987:64).

The number of coffee trees slumped from 1.3 million in

1962 to 0.85 million in 1972, due to the eradication policy, and further hastened by rather frequent and helpful frosts. The eradication plan alone is estimated to have freed 627 thousand hectares, and replaced coffee with cotton, beans, rice, maize, soyabean and wheat (Leclercq, 1987:66).

In short, the dominant coffee system in the North of Paraná progressively shifted from a multi-family 'semi-wage' relationship to sharecropping and individual small household coffee producers. Crisis in the coffee market opened the way for alternative crops, among them soyabeans.

c. The Southwest. This is the most recent zone of occupation and formed an extension of the *Gaúcho* Plateau's traditional household production. Family members expelled from Rio Grande do Sul and Santa Catarina sought to reproduce themselves as small owner -operators in this frontier zone from the 1940s to the 1960s. Production systems combined several crops and animal husbandry, intended partly for their own subsistence and partly for the market. Among the marketed output, pigs and beans were the most significant. This zone is particularly noted for its recurrent land conflicts, profoundly marking the process of land settlement. Obscure land settlement schemes confronted small migrant family farmers and land grabbers known as *grileiros*, mostly linked to timber industries, provoking violence and insecurity (Foweraker, 1981).

A typical *colono*, owning about 12 to 24 hectares, used to clear three to four hectares in the first year, invariably sowing beans, rice, maize, manioc, pumpkin and sweet potato. It was a strategy of subsistence in order to build up a structure for pig raising, at the time the most commonly

marketed product. Frequently the pig herd ranged in size from 100 to 200 heads. Technology was based on animal drawn equipment, from ploughing to threshing and transportation. Family labour with two to four workers was the common feature, and often the limiting factor to their capacity of production and therefore farm size. The latter hardly went beyond 10 hectares of cropped area (Shiki, 1983:57-58). The basic family strategy was a poise of mixed crops, headed by the maize and pig combination. Although almost any crop was used as feed, including soyabean, maize was the main feedstuff and remained so in the modern 'industrialised' system, together with soyameal. The flexible multicropping system permitted the rapid conversion of any crop into a cash crop as soon as prices became encouraging and the chances of regular sale more secure. These conditions were basically determined by the structure of the market. In the 1950s, the Brazilian economy was undergoing accelerated industrial and urban growth, so that food demand increased. Local merchants and casual or itinerant truckers (*camioneiros*) served as intermediaries supplying pigs to São Paulo, Ponta Grossa and Curitiba; beans to São Paulo and Rio de Janeiro; and wheat to Curitiba (Padis, 1981:173). These truckers tended to be replaced by the emergent local wholesale sector.

In short, the characteristics of the productive structure in Southwest Paraná replicated those of the forested part of the *Gaúcho* Plateau, with small family labour units, a multicropping system and animal-draught production technology (Shiki, 1983:61). Unlike the coffee growing North, this production system rendered the development of a wage labour market more difficult. In 1970, permanent employees

represented only two per cent of the labour force while in the North, this figure was 10 per cent (Shiki, 1983:161). Therefore, the conditions of reproduction of these commodity producers essentially hinged upon the access to land and family labour. Unlike the two other zones, Southwest Paraná did not particularly experience any major market crisis apart from farmers complaints about hog prices. Therefore the emergence and expansion of soyabean production responded more to the competitive conditions created by the State, such as favourable investment credit and an expanding market. Soyabean was, in fact, the crop most suited to the conditions of agricultural growth induced by the State policy and agro-industrial interests.

4.2.2. Expansion of Soyabean Production in Paraná

Both in the traditional multi-cropping system and in the coffee intercropping system, soyabean was used as a fodder and green manure crop. In the first, the use of soyabean as fodder was particularly relevant as agro-industries were introducing new breeds of pig more appropriate to industrial purposes, mainly characterised by a lower pork carcass fat content. Imported breeds introduced in the 1950s and 1960s, such as DUROC, LARGE WHITE and LANDRACE, are still largely dominant in Paraná. Agro-industrial firms such as Swift, were paying an extra premium for low fat carcasses, and the above mentioned breeds were far more efficient than local breeds in feed/meat conversion though more demanding in feed quality. Soyabean was intended to satisfy this quality demand, which was, in fact, a demand for a higher protein content feedstuff. Soyabean seeds were either boiled before feeding or the whole

plant was simply used as fodder. The varieties cultivated were the biomass-rich American cultivars ANTON MAJOR, WILLIAM and JACKSON. Clearly, dehiscent pods with big kidney shaped beans and low yields, but with high mass volume, were not appropriate varieties for mechanisation (Shiki, 1983:86-87).

Utilisation of soyabean as a green manure was not very popular in either the North or the Southwest zones. In the North 2,000 bags of soyabean seeds were reported to have been distributed to coffee farms in 1964 for fertilisation purposes (Germer et al, 1982). However, private initiatives such as those undertaken by *Exportadora de Cereais Paranaense* and Anderson Clayton, guaranteeing purchase by contract or verbal assurance, made a powerful case for a new direction of agricultural growth, even in the 1950s (Shiki, 1983:89). The state response to the coffee crisis, headed by the *Plano de Diversificação e Erradicação do Café* (Diversification and Eradication Plan) and financially backed by the International Coffee Organisation Diversification Fund, reinforced that line of agro-industrialisation. Oilseed plants were installed in Londrina, Maringá, and Paranavaí to process available agricultural raw material, including groundnut, cottonseed, sunflower, castorbeans and eventually soyabeans. These small/medium size agro-industries were mostly interested in the edible oil for the ever-growing demand of the domestic market. At the beginning of the 1960s, the use of oilseed cake as an animal feed was restricted to emergent poultry farming near large urban areas, such as São Paulo and Rio de Janeiro. The most common use of this oilseed by-product was in soil fertilisation. The absence of an alternative outlet made oilseed cake cheap enough to foster its use as fertiliser.

This was the raw material source which enabled the growth of compound feed industries. So, the industrial structure, albeit small, was fundamental in supporting an alternative outlet to rural producers, and dictated the conditions of competition from which soyabean came out strongly.

It is interesting to note that the development of soyabean production occurred first in areas where petty commodity producers were highly concentrated. The highest indices of soyabean concentration²⁰ in 1970 were found in Maringá (North) (I.C.=4.65) and in the Extremo Oeste (Southwest) (I.C.=3.22). In 1970, three-quarters of total soyabean producers were still intercropping soyabean with other crops, including maize, rice and beans and coffee. The cultivated area in the intercropping system was 55 per cent of the total area (Shiki, 1983:91).

In short, in the early stage of growth, soyabean was integrated in the traditional labour-intensive intercropped system, alongside many other crops. That is why soyabean production prospered among small household producers, and why they were the major supplier of small and medium local oilseed processing industries. In turn, these industries aimed to meet the domestic market demand.

4.2.3. Technological change and cheap credit: the conditions for social differentiation.

Changes in the traditional techniques of production only came about with favourable financial assistance from the

²⁰ The concentration index referred to here is given by the expression $IC = (A_{sm}/A_{cm}) / (A_{st}/A_{ct})$ which is the ratio given by the relative cultivated area with soyabean in the specified region and the relative soyabean area in the whole State.

State. Access to credit was the key to 'green revolution' technology for petty commodity producers. As discussed in the case of the *Gaúcho* Plateau, the conditions of competition generated by the new technology for petty commodity producers also brought within it the disruption of the traditional technology, albeit whilst retaining family labour. The process of adaptation for these producers necessitated:

- a) the ability to obtain cheap credit and appropriate "institutional rent" needed to keep them abreast of the technological competition;
- b) the capacity to tailor farm size to the requirements of the new technology;
- c) the handling of a labour process which included a new kind of technology based on industrial inputs and machines; and
- d) the re-allocation of family labour made redundant in the farm by the mechanisation.

With regard to the first of these, the access to credit for investment, this was limited to landowning farmers with farms big enough to produce and repay the mortgage. Such a condition excluded all non-landowning household farmers and *minifúndio* farmers from the start. It also excluded numerous coffee sharecroppers in the North, already suffering from the decline of coffee as a crop, thereby leaving no alternative but to migrate or to become wage labourers.

On the second point, in the period of intense borrowing the minimum size farm accepted by the bank agents (to buy a medium-power tractor for soyabean-wheat production) was about five *alqueires* (12.1 hectares). However, during the years of intense modernisation (1970-75) farms with less than 50 hectares were unable to hold on to their business, and the

average size of 'disappearing' farms was 23.1 hectares (Shiki, 1983:144). The tractor was the first strong technological element determining changes in the structure of land distribution. With the new farm size threshold established by the introduction of 'green revolution' technology in the region, five *alqueires* farm frequently was not sufficient to secure a place in the new system. In the whole of Paraná, farms with more than 50 hectares incorporated not only 660 thousand hectares taken from the smaller ones but also one million hectares of newly cleared land. Total average size increased from 26.4 hectares in 1970 to 33.0 hectares in 1975 (Shiki, 1983:144). From the roughly 80,000 farms incorporated into larger ones, over 60,000 of these were sharecroppers, land tenants or squatters, i.e. non-landowners (Shiki, 1983:148).

For producers with a small area of farmland, operating credit was crucial to their survival in the modernised system. In 1979, two-thirds of total operating credit intended for soyabean and wheat was spent on the purchase of industrial inputs, mainly fertilisers and lime, pesticides, herbicides and seeds, essential to the modernised production process. Of the total rural operating credit assigned to farmers in Paraná, the share of the soyabean/wheat system was 10 per cent in 1970 and rose to 50 per cent in 1975. Therefore it was a massive drain upon financial resources to boost the consumption of industrial inputs in the soyabean/wheat system. The number of farmers contracting operating credit in 1975 was about 72,000, mostly concentrated in the North of Paraná, and represented only 15 per cent of the total number of farmers (Table 4.4). Investment credit was even more drastically

concentrated. In 1975 only 11,700 farmers out of 478,000 farmers had access to this kind of credit. Thus, the majority of farm producers were excluded from the official borrowing system and likely to be marginalised from the mainstream dynamic of capital intensification.

Table 4.4

Paraná - Use of investment and operating rural credit in 1970, 1975, 1980 and 1985.

Kind of credit	1970	1975	1980	1985
Total n° of farms	554488	478453	454103	466397
Investment (n° of farms)	11041	11737	10821	4163
(per cent)	2.0	2.5	2.4	0.9
Operating (n° of farms)	62195	71715	115536	111034
(per cent)	11.0	15.0	25.4	23.8
Marketing (n° of farms)			1772	981
(per cent)			0.4	0.2

Source: FIBGE, Agricultural Censuses 1970, 1975, 1980 and 1985.

Thirdly, the adaptation of petty commodity producers to the new industrialised labour process involved higher dependence on external factors, and therefore a lesser degree of control over the labour process itself. New skills and information were needed to handle industrial inputs provided by specialised agents, including the State extension services, agro-industries' technical advisers and co-operatives' technical staffs. Experience and farming practices accumulated for generations were simply scrapped. Fertiliser responsive and higher yielding new varieties had little in common with the traditional strains. New varieties were less tolerant to soil acidity, more susceptible to pests and diseases, most of

them uncommon or unharmed in the mixed cropping system. The methods of control were also provided by agro-chemical industries. Chemical tillage became cheaper than mechanical and even manual tillage, but required an even surface only obtainable by heavy soil preparation. The failure to pursue some of these procedures could mean yield failure and therefore a risk to the entire business. In the old traditional multicropping system, crop failure was offset by another crop in the system, not exposing the farmer to drastic income reduction. According to Ellis (1989:95-96) these multicropping systems may mean not only *"risk averse production strategies (...)* but advantages related to *"production efficiency, and (...)* utility maximisation in consumption".

The overcoming of these initial difficulties of technological adaptation was, to a great extent, undertaken by co-operatives in their corporate effort to consolidate modernised petty commodity production. Co-operatives acted not only in the farm produce market, but also in the industrial inputs market, functioning as a real manager of the new 'industrialised' labour process. The co-operative's technicians decided how much fertilisers the farmer had to use, the type of chemical and the right moment to apply the product, envisaging the control of pests and diseases. Some co-operatives, such as COPERVALE and COPAVEL in western Paraná, went further, by undertaking collective services to control pests and diseases, and other similar tasks. Varieties were selected and supplied by co-operatives, as well as official credit services (Shiki, 1983:210). Thus, the whole process of production was entirely mediated by the co-operative, fully integrating petty commodity producers into

the modern agro-industrial system.

The fourth implication concerns the need to reorganise the labour force, as family members were made redundant in the newly mechanised system. If the first stage of change meant the dismissal of many non-landowning producers, the family producers engaged in the newly modernised form of production had to dislodge some of the members of the family from the farm, creating situations favourable to off-farm employment. Most families moved straight to the nearest city where family members could seek urban jobs, and urban services while others could carry on farming. This displacement of family members almost emptied rural communities and undermined their lifestyle. Services and schools were reduced and even religious services were no longer required. Industrial technology therefore brought about not only changes in the labour process but also new urbanised forms of family consumption. The above-mentioned combination of farming and off-farming income secured the reproduction of smaller farms. The outcome of the process was not the generalisation of the capitalist farm by the inexorable process of social polarisation, but a capitalised form of family production. The increase in the numbers of temporary and permanent wage workers neither denied the dominant family character of farming, nor transformed the farming system into an industrial labour process. This directly contradicts the argument advanced by Peixoto et al (1978:58) regarding the "*disappearance of non-wage relations*".

4.3. Agro-industries, Co-operatives and State Policies: the technical conditions of competition.

The massive soyabean production engendered downstream agro-industrial growth of new type, replicating 'Fordist' techniques of production which increased the sector's productivity. Nevertheless, unlike the advanced industrial countries, the demand structure was skewed towards the export sector rather than stressing the links with an enlarged domestic market via concomitant increases in real wages (Ominami and Hausmann, 1985:452). In fact, the soyabean system illustrates the development of a peripheral variant of the 'Fordist' mode of regulation. The 'classic blockage', typical of import substitution industrialisation, was overcome by the 'internalisation' of export industries by the same multinational companies which operated and dominated the world market, thereby bringing new conditions of competition into the Brazilian agro-food sector.

4.3.1. Capital concentration and internationalisation.

Soyabean processing industries which were rather small and operating with various other kinds of oilseed, such as those financed by the International Coffee Organisation - Diversification Fund in Paraná, were steadily taken over and dominated by the world's giant primary processing companies.

In the 1960s in Paraná, local capital oilseed processing industries among them IRPASA, OLEROL, PACAEMBU, FUJIWARA, ANDIRA, NATA, NORPA and Cooperativa Agrícola de Cotia, dominated the sector, although some leading multinational companies also operated in this market. However, in the 1970s,

as soyabeans began to prevail over other oilseeds, there was a steady move to large industrial units, owned by multinational companies, later followed by co-operatives.

As depicted in Table 4.5, there was no processing unit larger than 600 tonnes per day in Paraná during the 1960s, but by 1974, only three companies possessed 47 per cent of the total crushing capacity installed. Multinational companies (Group I) which had 36 per cent of crushing capacity in 1968, or 600 tonnes per day (t/day), rose to more than 5,000 t/day in 1974, while local companies (Group II and III) also increased somewhat, but at a slower pace.

Table 4.5
Paraná - Crushing capacity of agro-food industries
by size and origins of capital.

Size and Group	nº	1968 t/day	%	nº	1970 t/day	%	nº	1974 t/day	%
<u>Size</u>									
Large A	-	-	-	-	-	-	3	3965	47
Large B	2	600	36	2	924	37	4	1906	23
Medium	2	240	14	4	564	24	12	2104	25
Small	15	823	50	15	998	40	7	414	5
<u>Group</u>									
I	2	600	36	2	1104	44	5	5045	60
II	2	192	12	4	632	26	7	1832	22
III	15	871	52	15	750	30	14	1512	18
Total	19	1663	100	21	2486	100	26	8389	100

Source: BADEP/IPARDES/MA, Shiki, 1983:253.

Notes: Large A - More than 600 tonnes per day (t/day);

Large B - 300 to 600 t/day;

Medium - 100 to 300 t/day;

Small - Less than 100 t/day;

Group I - Multinational companies, associated with, or controlled by, foreign groups;

Group II - National companies, established outside Paraná;

Group III - Local national companies.

At a national level, the competition forced companies

towards ever bigger crushing units. Those companies with over 1500 t/day capacity rose from 6,300 t/day total capacity in 1976 to 31,600 t/day total capacity in 1979, while those with less than 600 t/day remained virtually unchanged in the period (Table 4.6). The firms competing within this sector had two interrelated technological elements to consider, and it was which led to the 600 t/day processing unit as the limit for a profitable size.

Table 4.6
Brazil - Crushing capacity by plant size
Period 1976-1985.

Plant size (t/day)	T o n n e s p e r d a y					Growth rate (%)	
	1976 (1)	1977 (1)	1978 (1)	1979 (1)	1982 (2)	1985 (3)	1977/82 1982/85
Over 1500	6300	9300	17000	31600	43250	43250	36.00 0.00
600-1499	9150	13150	18160	18160	25150	26350	13.85 1.57
Up to 599	19282	19117	17036	19991	21589	21729	2.46 0.22
TOTAL	34732	41567	47956	69751	89989	91329	16.70 0.49
<u>Annual crushing capacity</u>							
1,000 tonnes	10420	12470	14387	20925	26997	27399	16.70 0.49

Source: Leclercq, 1987:174, 291; CFP/Bast, 1981.

(1) CFP

(2) ABIOVE, *Coordenação Econômica e Estatística*, S.P. 1983

(3) ABIOVE, *ETAC SOJA*, Vol.VI, Nº281. Curitiba, Dec.1986

The first element was the upgrading of the oil extraction system from mechanical pressing extraction to chemical solvent extraction (See Diagram below). The shortcomings of the mechanical system involved the lower efficiency in extraction and the low quality of products. A higher content oil residues in the soyameal depreciated its quality and consequently price. Moreover, mechanical extraction demanded additional labour and consumed more electrical energy (Leclercq, 1987:177). The advantages were the lower initial investment, simplicity in operation and the flexibility to switch from one

type of oilseed to another. This crushing technology was adequate to the various types of oilseed supplied by the farming sector.

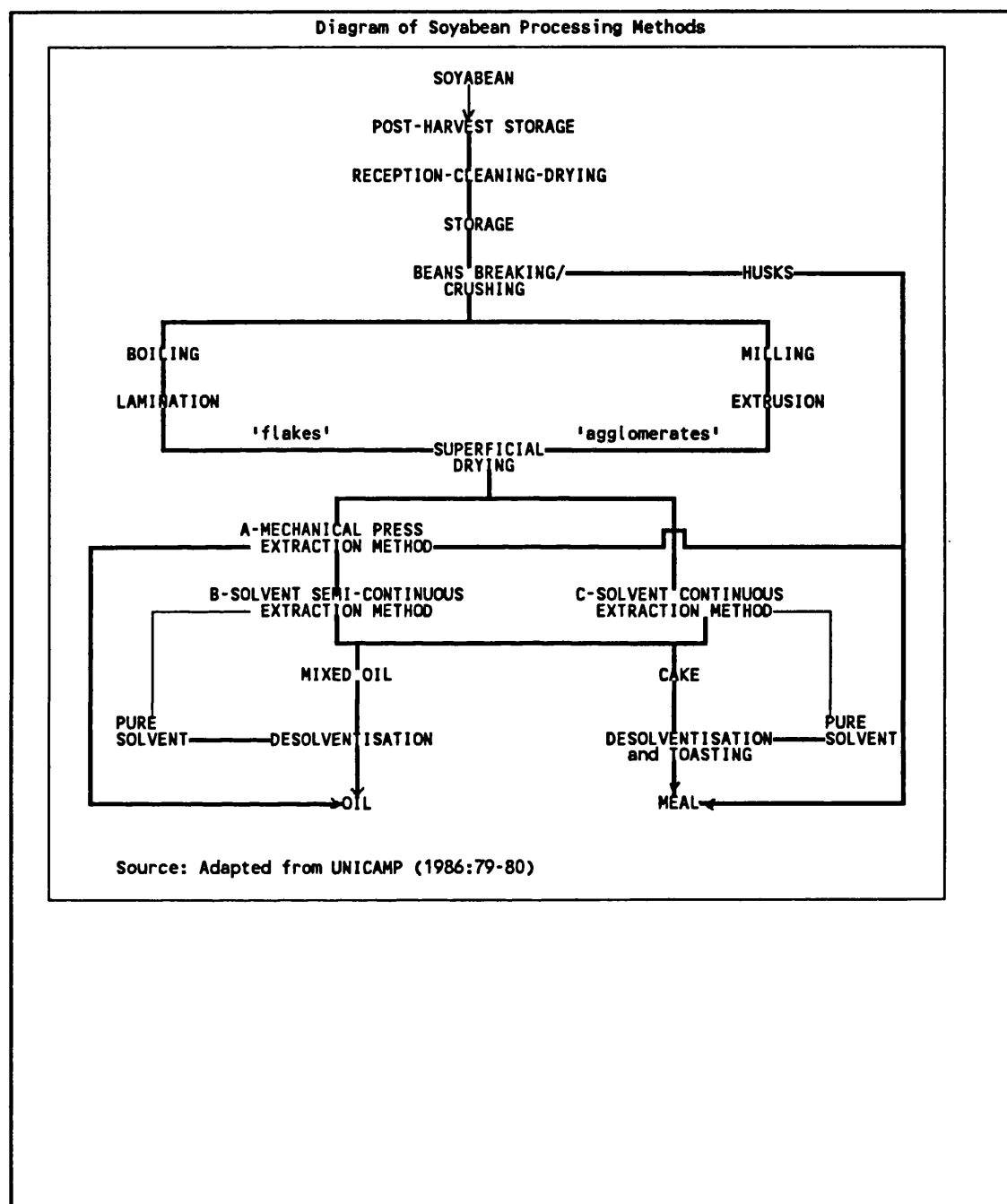


Figure 3 Diagram of soyabean processing methods

Chemical extraction with the hexane solvent system was more efficient than mechanical pressing, producing better quality soyameal, and extracting additional quantities of oil. Mixed or semi-continuous system conferred greater flexibility,

although this proved less efficient in extraction than the continuous system (Wilberg and Henklein, 1975:195). The efficiency is also measured in terms of the use of (a) labour, requiring three times less than the mixed system, and (b) solvent, which is half that of semi-continuous system. Leclercq (1987:177) estimated that these two components represented 90 per cent of the industrial variable costs. The question of scale can be raised here. Wilberg and Henklein (1975:195) found that crushing plants with a capacity of less than 200 t/day consumed 45 per cent more solvent than middle size plants and 31 per cent more than the largest (more than 600 t/day) units.

The second element is that efficiency and scale effects are negatively related to flexibility of oilseed sources. The most efficient continuous solvent system processes only one kind of oilseed, the soyabean. The more concentrated the capital on bigger processing units, the more specialised the farming system required and vice-versa. This made a farming diversification strategy more difficult. Large industrial units tended to operate with a single oilseed source, the soyabean, intended mostly for export. Conversely, small processing units tended to remain more flexible in terms of raw material sources and the production was mostly used for domestic consumption.

The specialisation of industries by their location can illustrate this sort of division of labour. Almost all processing units in Rio Grande do Sul crushed only soyabean; but in São Paulo, closer to the three big consumer centres of São Paulo, Rio de Janeiro and Belo Horizonte, only 3.3 per cent of the processed raw material was from exclusively

soyabean processors (Leclercq, 1987:177). Other raw materials involved in the processing included groundnut, cottonseed and maize (Leclercq, 1987:48-Appendix). In Paraná, industries were located in production zones such as Maringá, Londrina and Cascavel, and in the strategic railway junction of Ponta Grossa. A dominant presence was enjoyed by leading multinational companies, among them SANBRA (Bunge y Born Group), CARGILL, and CONTIOLEOS (Continental Group) (Shiki, 1983:235). The picture in the 1970s for the whole Brazilian oilseed industrial sector was similar. Five of the largest companies in the world controlled about 20,000 out of about 32,000 tonnes per day total crushing capacity, or almost two-thirds (Muller, 1980). This concentrated and specialised structure of crushing industries was favoured by the State's policies of export promotion and industrialisation, bringing about internationalised conditions of competition to which the co-operatives had to conform.

4.3.2. The industrialisation of the co-operative sector.

Co-operatives became a competitive agro-industrial force and showed strength in terms of farmers' political representation, especially in the 1980s. The process of concentration in this sector began with the federation of small single co-operatives in all soyabean producer zones. The foremost example is the FECOTRIGO²¹ in Rio Grande do Sul. Its creation in 1958 was motivated by the political needs and the growing lobbying power of wheat farmers (Brum, 1988:111). A

²¹ FECOTRIGO -*Federação das Cooperativas Triticolas do Rio Grande do Sul* (Federation of Wheat Co-operatives of Rio Grande do Sul).

precarious infrastructure was the main constraint to increasing production: hence warehousing and transport facilities constituted their main demands at the time.

In Paraná, the federation of single co-operatives took a more pragmatic and economic line, in the form of Central co-operatives, such as COTRIGUAÇU²² and COCAP²³. This was a form of organisation which permitted co-operatives to execute venture projects which no single co-operative could afford alone, such as those undertaken by COTRIGUAÇU, in the construction of a gigantic storage terminal in Paranaguá for soyabean exports. Other forms of concentration included the incorporation of weaker or bankrupt single co-operatives, and the enlargement of the social basis by recruiting new farmer-members. That was the case of COTRIJUI²⁴ in Rio Grande do Sul and COAMO²⁵ in Paraná, for example.

In terms of soyabean export, these large co-operatives or federations of co-operatives were already competing with the world's leading exporters. In 1974, four out of the 10 largest bean exporters were co-operatives, accounting for 30 per cent of the US\$ 294 million export trade (Muller, 1980). However, the grain export sector was heavily penalised by the export promotion policy which favoured manufactured goods, including agro-food commodities. This policy, which was introduced in 1965 and reinforced in 1974, was based on two key instruments:

²² COTRIGUAÇU - *Cooperativa Central Regional Iguaçu Ltda.*

²³ COCAP - *Cooperativa Central Agropecuária do Paraná Ltda.*

²⁴ COTRIJUI - *Cooperativa de Trigo e Soja de Ijuí* (Wheat co-operative of Ijuí).

²⁵ COAMO - *Cooperativa Agropecuária Mouroense Ltda.*

fiscal exemption and export credit. In fact, these measures were part of a more broadly-based strategy of export-oriented industrialisation, implemented in the wake of the military regime. The complexity of the system and the intricacies of operation frequently were altered by conjunctural factors, making it difficult to offer any reasonable aggregate quantification. The variety of policy measures depicted in Box 1 illustrates the extension of these policy tools.

Nonetheless, the differentiation of the *Imposto de Circulação de Mercadorias* -ICM (Merchandise Circulation Tax) or Value Added Tax according to policy aims, on the one hand exempted soya-oil from taxation whilst taxing unprocessed raw soyabean exports at the rate of 9.75-13.5 per cent. There was a clear incentive to export processed goods, and so obtain tax exemption and credit subsidies.

The attractiveness of these incentives affected the conditions of competition within the soyabean system, encouraging co-operatives to invest in processing plants and in a more diversified structure of industrial production. In the 1970s, the division of labour was clear: co-operatives exported raw soyabeans whilst the multinational companies exported soyameal. From a list of the 20 largest soyabean exporters in 1977, 12 were co-operatives, exporting two-thirds of the total export value of these 20 enterprises (Leclercq, 1987:61-Appendix).

Box 1
BRAZIL - Main export promotion instruments.

Instruments	Object
<u>Fiscal exemptions</u>	1. Federal Tax on Value Added for all industrial products (IPI), Decree 1967. 2. Merchandise Circulation Tax (ICM) due to states and levied on all marketed products. Decree 1968. 3. Elimination of all customs duties for intermediary products used in the production of export goods (Decree 1964, modified in 1968 and 1971). 4. Financial operation tax, reduction or exemption if the final product is re-exported. 5. Reduction of import tariffs and indirect taxes if the enterprise has an export agreement with CACEX. 6. Tax exemption on income from all export activities. Valid only for activities chosen by Finance Ministry which excludes primary products. Normally until 1968, but maintained. Not part of GATT agreement (Decree 1965).
<u>Subsidies</u>	7. Fiscal credits on IPI payments and ICM limited to 15 percent of the value. Reduced since 1982, abolished in March 1985. Depending on the state, individual firm debit account could be cancelled and the firm concerned could use this credit to pay-off debt. 8. Subsidised credit rate for export enterprises: commercial banks could obtain resources at 4 per cent annual interest rate to lend to export enterprises. An export enterprises can obtain 80 per cent of their export values in credit for 120 days at 8 per cent p.a. interest rate (Central Bank 1967, Resolution 71; modified in 1983, December).
<u>Other instruments</u>	9. The BEFIEX (Commission for Fiscal Incentives and Export Programmes) for enterprises committed to export for a certain period: special import conditions and non-application of the law of the similar. 10. Simplification of export procedures, aid for the opening of export branches.

Source: Leclercq, 1987:47-Appendix.

On the other hand, three of the top four oilseed meal exporters in 1977 were multinational corporations - Bunge y Born Group, Cargill and Anderson Clayton - which accounted for 42 per cent of the 20 largest exporters' total shipments, against only five per cent by two co-operatives (Leclercq, 1987:62-Appendix). In the edible oil export field, there was no clear-cut dominant group of capital. Growing edible oil consumption in the domestic market has been satisfied by soya oil. Total edible oil consumption rose almost sixfold in two decades - 1955/57 and 1973-75 - and soya oil tended to replace other sources of oil, especially cottonseed and groundnut oil

(Table 4.7).

Table 4.7

Brazil - Consumption of edible oil by raw materials.
Triennial averages for 1955/1957, 1964/1966 and 1973/75 in percentages.

Raw material	1955/57	1964/66	1973/75
Cottonseed	64.6	44.2	45.6
Groundnut	29.8	34.0	16.2
Maize	2.1	2.0	1.2
Soyabean	2.8	17.8	66.4
Others	0.7	2.0	0.6
Total (in tonnes)	133582	265758	787601
Index	100	199	590

Source: FIBGE, *Anuário Estatístico* p.245.

In summary, downstream agro-industries were shaped under the conditions of international competition led by the world's biggest multinational companies, and favoured by State policies of export promotion and industrialisation.

4.3.3. The crisis in the 1980s and petty commodity producers.

The crisis of the soyabean system manifested itself in the 1980s primarily as a consequence of its internationalised form of growth in a context of national macroeconomic adjustment - the external debt crisis and domestic inflation (Chapter II).

The basic constraints upon the soyabean system in this context can be broadly identified as follows:

a. reduction of rural credit subsidies, as the result of increasing interest rates (from 1984) and the reduction of

credit volume;

b. international price instability; and

c. domestic price control, which affected exports by reducing incentives and implementing export quotas.

Conversely, the countervailing compensatory measures included the following:

a. two macro-devaluations of exchange rates;

b. export incentives through credit subsidies and tax exemptions;

c. higher minimum prices and guarantees; and

d. the national unification of minimum prices.

The first apparent effect on farming was the rising share of financial charges in production costs. However, as pointed out by Liebhardt (1988:14), liquidity was satisfactory, a point reinforced by Leclercq's findings (1987:266) that there was an increase in operating credit for soyabean production in the 1980s. This rise in production costs imposed new competitive conditions. According to Leclercq (1989:289) the latter were only met by those able to achieve yields of 1,900-2,000 kg/ha, which were "*required to make the crop profitable*". The result for those petty commodity producers who could not meet these conditions was their effective expulsion from soyabean production and the search for alternative crops (Leclercq (1989:289), or movement out to the frontier zones. These difficulties were aggravated by lower yields arising, amongst other factors, from land degradation after years of intensive mechanisation and chemical fertilisation. These effects of modern technology brought on comprehensive official soil conservation programmes, first in Paraná and later in Rio Grande do Sul and

São Paulo (Ryff, 1988:127-131). The existence of competitive crops and the effect of soil and environmental degradation are factors which partially explain the stagnation or even decline (Rio Grande do Sul) of yields in the South. For the petty soyabean producers, this financial crisis meant a diminishing opportunity to continue farming under the new higher cost conditions.

Another factor affecting producers' income was the slump in international prices (except 1984) and the controls on domestic prices. Instability in the world agricultural commodity markets was the hallmark of the 1980s. As pointed out by Goodman and Redclift (1989:6),

"[T]he intensity of world price fluctuation has increased significantly, and instability has been exacerbated in the 1980s by vigorous, heavily subsidised efforts of the EEC and the United States to expand their exports".

The wider diffusion of the agro-food technology model, encouraging the emergence of new competitors such as Argentina and Paraguay, the development of substitute crops, such as palm oil in Southeast Asia, and the success of the protein self-sufficiency policy in the EEC countries, with sunflower and rapeseed, all represented demand constraints for the Brazilian soyabean products. Brazil exported about 65 per cent of its soyameal to EEC countries and about 80 per cent of raw soyabean in the 1980s (Leclercq, 1987:282).

The third factor constraining the soyabean system in the 1980s was the need for domestic price control, especially on vital consumer goods such as soya oil. This became the single most important edible oil, replacing other oilseeds and animal fats alike. Apparent consumption of soya oil was 1,500 tonnes out of a total of 1,584 tonnes consumed in 1981, about 92 per

cent (Williams and Thompson, 1988:21). Soya oil was also the main source of raw material for the production of margarine, the popular substitute for butter. Domestic consumption of the other soyabean derivative, the soyameal, also increased, especially as a compound feed for poultry, pig and dairy cattle. The distribution of consumption was concentrated on poultry raising, which alone consumed 75 per cent of total feed in the early 1980s. This illustrates the fact that, in spite of the predominance of exports, domestic consumption, albeit narrow, hinged upon soyabean production as a source of raw materials and food, directly affecting agro-industries and farmers alike. Export quotas (contingent exports) and export taxes were used to restrict exports when international prices were high, or when domestic production suffered an unexpected setback, threatening domestic supplies.

Compensatory measures were prolific in the period commencing with exchange rate devaluations. The two adjustment programmes (one voluntary and the other IMF supervised) included macro-devaluations of the exchange rate by 30 per cent in December 1979 and 23 per cent in February 1983. These favoured exportable crops, amongst which soyabean can obviously be included. Moreover, credit and fiscal policies were manipulated in order to encourage exports when the market is led by the supply side or to restrain exports when the domestic market showed signs of shortage which would put an upward pressure on prices. Box 2 depicts the ups and downs of these measures in the 1980s, in the regulation of the soyabean market. It is clear that these restrictive measures were intensely used in 1980 and 1984, when prices went up. Conversely, they were relaxed during the remainder of the

period. In 1985, the government had to purchase production at minimum prices following one of the largest soyabean harvests - about 18 million tonnes.

Box 2

Brazil: State policy of soyabean market regulation, period 1980-1986.

Measures	1980	1981	1982	1983	1984	1985	1986
Export quotas	v	v			v		
Suspension of exports	v				v	v	
Exports minimum prices					v		
Export tax	v			v			
Internal prices control	v			v	v	v	v
Regulator purchase						v	
Soyabean imports	v	v	v	v	v	v	v
Soyaoil imports	v		v		v	v	v

Source: Leclercq, 1987:298

(v) Year when the policy measure was effective.

With regard to the minimum prices policy, two aspects proved effective as a compensatory policy for soyabean farmers: (a) stable base prices, and (b) the national unification of minimum prices. In 1980s, the ratios of minimum prices to farm-gate prices were more frequently near or greater than one, not because the minimum prices were particularly high, but because of the slump in the international market price, the main determinant of domestic soyabean prices. This therefore worked as a real guarantee against market risks, reinforced by the credit insurance programme - PROAGRO. The huge government purchases in 1985 and massive insurance (PROAGRO) payments in 1986 after a hazardous drought in the South, reveals to some extent the effectiveness of these policies.

The national unification of prices particularly benefited frontier zones in the Centre-West and Northeast where soyabean production actually expanded in the 1980s. On top of the lower prices for land and its favourable topography for mechanisation (Cunha and Mueller, 1988:283), the attraction to investors from the South was based upon the unified prices guarantee, which represented a kind of transport subsidy, and accounted for about 30 per cent of the soyabean minimum prices (Gasques and Villa Verde, 1990). In the Thunenian model used by Cunha and Mueller (1988:307-308), the reduction in transport costs stimulated the expansion of the agricultural frontier.

The development of soyabean production in these frontier zones of Mato Grosso, Goiás, Maranhão and Bahia, was also due to major achievements in biological research, culminating in cultivars adapted to regions at low latitude ($<12^{\circ}\text{S}$) and to the regions of the Cerrados. Amongst other things, physiological problems such as photoperiodism were major technological challenges to the adaptation of cultivars in these regions. Recommended cultivars such as BR-9, BR-10, Doko, Cristalina, EMGOPA-302 for Cerrados and Tropical, BR-10, Timbira, BR-27 for the North and the Northeast regions, for 1988/89 and 1989/1990 cropping years, represent technological research achievements (EMBRAPA-CNPSO, 1988:72-73; EMBRAPA-CNPSO, 1990:11-12). Rising yield in these frontier zones, depended upon innovations developed by the Brazilian research structure, with novel crop management and creation of new cultivars (Homem de Melo, 1985:145).

Finally, financial resources were transferred through regional development programmes. The Programa para o

Desenvolvimento do Cerrado - POLOCENTRO (Programme for the Development of Cerrado) alone spent almost US\$ 250 million in 10 years (1975-1984). This programme was specially created in order to expand agriculture in these areas, along with private and public land settlement programmes (Cunha and Mueller, 1988:292). Furthermore, under the POLOCENTRO programme, other initiatives supporting land reclamation and the expansion of commercial agriculture were covered. Among these programmes, the *Programa de Cooperação Brasil-Japão para o Desenvolvimento do Cerrado* - PRODECER (Japanese-Brazilian Cooperation Programme for the Development of Cerrado), was one of the most active. The POLOCENTRO programme included (a) credit to producers, (b) direct public investment in infrastructure, especially roads, electrification, storage, and the marketing system, and (c) research and extension services (Cunha and Mueller, 1988:291-295). The programme was strongly biased towards medium-size and large farms. Between 1975 and 1982 about 90 per cent of the financing went to projects exceeding 200 hectares, and 43 per cent was consumed in projects larger than 2,000 hectares. Conditions of borrowing at fixed interest rates for long run investment credit, in conjunction with high inflation, in practice meant a sort of "capital donation" to the landowners. Perhaps not surprisingly, estimates from the *Fundação João Pinheiro*, (quoted in Cunha and Mueller, 1988:294), indicate that 25 million hectares were brought into production in 1975 and 1980. These lands were mostly used for beef cattle, soyabean and other mechanised crops, including maize. A major feature of the programme was that it practically excluded the participation of traditional peasant producers, with the consequence that they were frequently

obliged to leave the project area.

The PRODECER is a land settlement programme structured on the basis of the 'pilot-project' approach. Areas in the Cerrado were selected for the settlement of new family farmers in 250-500 hectare-plots for grains production. Their role was to stimulate new private investment, and to expand the agricultural frontier. The settlement programme included financing for land purchase, land clearance and soil preparation, construction and equipment. PRODECER I, implemented in 1980, settled 135 families on 70 thousand hectares in Minas Gerais. PRODECER II was more ambitious, with settlements planned for five states in the Cerrado - Minas Gerais (four projects); Mato Grosso do Sul (one project); Goiás (two projects); Mato Grosso (two projects) and Bahia (four projects). Farmers were selected by co-operatives in the South and Southeast from among landless sons of experienced farmers; capitalised tenants willing to be settled in their own plots; or small *minifúndio* farmers with little prospect of progress (Cunha and Mueller, 1988:298).

A noticeable factor in PRODECER programmes (I and II) was the presence of Japanese interests in order to ensure their source of supply of raw material. The enterprise responsible for implementing the programme - *Companhia Promoção Agrícola - CAMPO* was constituted by two holdings. On the Brazilian side, this involved banking, industrial and marketing organisations, such as BNDES, BNCC, and CIBRAZEM, and, on the Japanese side, multinational enterprises, such as MITSUBISHI - a leading Japanese soyabean importer, MITSUI - a fertiliser producer company in Brazil, and the Bank of Tokyo.

The other kind of settlement, both publicly and privately

planned and implemented, was the more socially broad-based programmes. However, this barely attained 86,000 settlers in plots of 112 hectares during almost 20 years (1967-1986). In fact the whole settlement programme was intended to relieve pressures for land reform and to tackle the thorny issue of land squatting, aggravated by conservative modernisation. The so-called "quick" settlement programmes were created in response to massive migration and land invasion, especially in Rondônia. The reality of squatters stood in sharp contrast to the State development approach based on projects oriented towards large-scale capitalised agriculture. The State's generous incentives to these large-scale projects did not prevent their disastrous performance: 30 per cent of them were not even implemented (Cunha and Mueller, 1986; Gasques and Yokomizo, 1986). On the contrary, State's policy of large-scale projects exacerbated land speculation and land conflicts involving peasant squatters and indians, particularly in the North.

According to Martins (1989:79-85) the construction of roads and other economic infra-structure, and the State's subsidies and fiscal incentives "*protected and reaffirmed land rent and speculation*" to the detriment of the frontier peasant and indigenous peoples. In this sense, the financial crisis of the State in the 1980s, and consequent reduction of fiscal incentives and credit subsidies, is believed to have created more opportunities for the frontier peasant by reducing the interest in land speculation (Martine, 1989; Mueller, 1989; Rezende, 1987). However, the dynamic of capital expansion in the Cerrado area is still strongly based on rent transfer from the State and the promotion of heavily mechanised agricultural

production.

In the South, soyabean production stagnated in the 1980s crisis, bringing alternative crops into competition. Co-operatives and State-led research and extension organisations sought to introduce new, alternative winter crops for wheat, which had been always an unstable, high risk crop, and sown mainly because of heavy State support channelled through operating credit and insurance (PROAGRO) service (Table 4.8).

Table 4.8
PROAGRO - Value of indemnifications paid to producers in Brazil.
Period 1981-1987, in US\$ million.

Crop	1981	1982	1983	1984	1985	1986	1987	Total	Mean	(%)
Cotton	10.67	15.67	11.15	1.39	2.27	16.20	15.33	72.68	10.38	5.9
Rice	47.92	23.60	17.60	16.81	12.47	61.76	25.88	206.04	29.43	16.7
Bean	38.94	27.95	23.10	8.68	9.87	37.81	40.76	187.15	26.74	15.1
Maize	6.49	8.84	6.92	5.77	6.76	65.05	21.02	120.85	17.26	9.8
Soyabean	3.24	3.55	4.73	5.33	6.05	152.73	9.83	185.46	26.49	15.0
Wheat	71.85	59.47	37.94	58.36	25.25	82.91	49.10	384.88	54.98	31.1
Maize/bean	21.91	27.67	22.45	3.79	0.97	2.10		78.89	13.15	6.4
TOTAL	201.05	166.74	123.92	100.14	63.64	418.55	161.93	1235.97	176.57	100.0

Source: BACEN/DERUR.

Attempts were made to introduce rapeseed, sunflower, linseed and even early-maturing maize. In fact, the unexpectedly good wheat harvest of 1985 and subsequent years offset the profitability crisis in the system, overwhelming possibilities of introducing alternative crops. The sudden surge in Paraná's wheat yields reflected the increasing dominance of CIMMYT cultivars (see Table 4.9).

Table 4.9
Paraná - Wheat cultivars sown in the 1987/1988 harvest.

Cultivar	Inspected Seed 50 kg/bag	Sown Area (hectare)	Percentages
ANAUAC (CIMMYT)	3,223,792	848,336	47.1
IAPAR-6 Tapejara	1,216,638	320,168	17.8
IAC-5 Maringá	735,135	193,457	10.8
PAT-7393	376,502	99,079	5.5
COCORAQUE (CIMMYT)	309,381	81,416	4.5
OCEPAR-7 Batuíra	188,304	49,553	2.8
Sulino	125,890	33,129	1.8
CEP-7780	97,601	25,684	1.4
CNT-8	86,084	22,654	1.3
Candeias	80,489	21,181	1.2
Others	516,914	104,910	5.8
Total Paraná	6,846,730	1,799,567	100.0

Source: DEFIS/SEAB, Paraná, 1989. Notes: Area estimated by dividing the quantity of marketed seeds by 3.8 bags per hectare.

Indeed, this Table shows that ANAUAC and COCORAQUE were sown in more than 50 per cent of the total area harvested in 1987/88. It was a sort of delayed success of 'green revolution' wheat cultivars. In this way, wheat ended up competing in terms of space and capital with soyabean.

In short, the economic crisis in the soyabean system entailed a higher level of competition, a level to which petty commodity producers had to adapt to survive. Access to land and other resources remained crucial, and this may have forced a renewed social changes, as the whole structure of land distribution remained untouched.

In conclusion, I am arguing that the partial modernisation resulting from the diffusion of a peripheral variant of the 'Fordist' model of agro-food production and consumption known in the Third World as the 'green revolution' produced a diversity of forms of commodity production. The expansion of soyabean production, especially in the 1970s is often presented as a conspicuous showcase for the model,

whereby traditional household producers 'industrialised' their labour process. Agro-industrial strategies and State policies, especially the subsidised rural credit induced technological changes which were a major factor determining social differentiation. In the region analysed, the production system of traditional small household producers was disrupted by the intensive tractor mechanisation, which destroyed the stable intercropping system by raising the minimum competitive farm size and making redundant part of the family labour. The outcome of this process of change was not a general transformation into capitalist farms by the inexorable process of social polarisation, but the emergence of capitalised family production. The increase in the number of temporary and permanent wage workers neither altered the dominant family character of farming nor transformed the farming system into an industrial labour process, thus contradicting contention that non-wage relations are bound to disappear.

The crisis of the 1980s tightened up the competitive requirements for petty commodity producers in the modernised South. In the Centre-west, these producers were excluded from the mainstream production process, as much of the State policies (irrigation and settlement programmes, price unification) were directed towards medium-sized, large farmers.

In its turn, the downstream agro-industrial branch of the soyabean system experienced massive capital concentration led by multinational companies, including co-operatives and other national private companies, which brought to the fore international competition favoured by State policies of export promotion and industrialisation.

The next chapter will deal with the production relations established between small household producers and agro-industrial capital, examining the case of the development of direct integration in Santa Catarina. This is to illustrate that even in this homogeneous and advanced technology production, industrial strategy may vary, and the process of social change does not necessarily lead to a large scale capitalist farm organisation.

CHAPTER V

INTEGRATION OF PETTY COMMODITY PRODUCERS
WITHIN THE POULTRY SYSTEMIntroduction

The consolidation of the soyabean agro-industrial system paved the way for the structuring of a new and highly integrated livestock sector, notably poultry, pig and dairy farming. The organisation of compound feed industries, vital to high yielding breeds, relied on regular supplies of their basic raw materials, soyameal and maize. These highly 'industrialised' commodity systems consistently incorporated small household producers, by direct or indirect integration, to use the expression taken from Sorj et al. (1982:33). The combination of a concentration of small household producers and the easy access to essential raw materials, together with the existing structure of pig raising, made the southern region the privileged geographical location for poultry and pig industries. This was the high-technology sector of the agro-food system, where scientific advances in genetics produced high yielding breeds and complementary technologies.

In the historical context of advanced industrial countries, these technological achievements enabled capital to control labour to such an extent that it practically transformed the poultry system into an assembly-line type and large scale form of industrial production (Lasley, 1983).

In Brazil, the core of poultry farming technology was entirely imported from developed countries, and the whole system was adapted to local production conditions. This technology was based on hybrid vigour genetic resources, along

with industrial inputs mostly incorporated in the compound feedstuffs. Imported breeds and the development of feed industries in the aftermath of the consolidation of soyabean industry, were the basis of high performance poultry production. In São Paulo as well as in Rio de Janeiro and Minas Gerais, compound feed industries grew rapidly by supplying the constellation of so-called 'independent' or 'indirectly integrated'²⁶ poultry (both egg and chicken) producers (Sorj et al.1982:33,57). In this system, capital concentration in feed industries was extended to farming by increasing the scale of operation. However, in the process of capital concentration, the farming sector tended to integrate vertically with compound feed production. Thanks to new technological innovations in the agricultural capital goods industry (Ortega, 1988:123) they broke away from oligopolistic relations with those specialised industries.

In the southern states - Santa Catarina, Paraná and Rio Grande do Sul - directly integrated forms of production accounted for the bulk of poultry output, especially chicken.

This Chapter attempts to show how such homogeneous production technology may induce different industrial strategies, both evolving into industrial-like capitalist

²⁶ Sorj et al. (1982:33) envisaged two forms of articulation between small and medium producers and the agro-industrial complex: "*direct integration to processing industry and [indirect] integration through the market. ...in both cases oligopolistic and oligopsonistic relations between large agro-industrial enterprises confronted with a myriad of small producers*". The second form is also referred to as 'independent' producers, and it also often includes the big capitalist poultry enterprises. Ortega (1988:12) called "independent raisers" those who produce their own compound feedingstuffs. This definition excludes all the small indirectly integrated family producers, who are at the basis of the definition of 'independent' given by Sorj et al.

farming in São Paulo, and via the direct integration of petty commodity producers, and the consequent change in the dynamic of their reproduction.

5.1 Agro-industrial strategies in the poultry system.

The organisation of the poultry system revolves around the genetic control of the production of breeding hen. This sector is now in the hands of a select club of multinational breeding companies. High yielding lineages are bred to respond to the balanced compound feed, in which maize and soyameal appear as essential components, rich in carbohydrate and proteins, respectively. These features explain the organisation of compound feed industries which originated from oilseed crushing plants. The poultry system also involves a wide range of chemico-pharmaceutical inputs, including vitamins, minerals, antibiotics, and vaccines, administered either in a package mix known as *premix* or as elements of the compound, or diluted in the water. The farming section of the system takes different forms of organisation: (a) direct integration with processing industries, (b) the 'independent' family raiser or indirectly integrated raiser in the sense given by Sorj et al. (1982:33); and (c) the 'independent' capitalist poultry raiser, with salaried workers and developing a process of vertical integration (Ortega, 1988:12).

In advanced industrial countries, poultry systems have attained a high level of industrial appropriation, reducing considerably the dependence upon natural conditions. Achievements in research and technology have reduced enormously the production time of chickens - from 84 days in

1944 to only 47 days in 1984. The feed/meat conversion rate was halved from 3.9 kg of feedingstuffs to 1.96 kg in the same period. The genetically modified chicken is bigger, weighing on average 1.89 kg in 1984 while in 1944 it weighed only 1.35 kg (Troccoli and Barata, 1987:5). These remarkable technological achievements accompanied by capital concentration and vertical integration in advanced industrial countries, engendered mass production of cheap chicken meat and eggs. In the USA, for example, few large producer companies control the bulk of chicken and eggs production (Lasley, 1983:8).

The transfer of this highly modified and homogenised production system to developing countries required only relatively minor adaptations to local ecological conditions. Imports of breeding hens or "matrices" and "grand-parent" lineages constituted the basis of the transfer process.

5.1.1. The centrality of genetic control.

High yielding breeds with a high capacity of feed conversion were obtained in a short time by incorporating the hybrid vigour factor. This factor constitutes the technological component of the oligopolistic control of the poultry industry. Breeding chickens are obtained by cross-breeding pure lineages of chickens or 'grand-parents'. The latter need to be supplied continually by breeding industries which master the genetic materials.

In Brazil, imports of matrices began in the early 1960s from the United States and Canada. Later, in 1968, imports of matrices were prohibited in an attempt to reduce dependence. Only 'grandmothers' were allowed to be imported. Leading

international breeding companies supplied associate local matrix producers with high yielding breed 'grandmothers'. For example, the Granja Ito (SP) was the exclusive dealer of HY-LINE (eggs) and INDIAN RIVER (meat) lineages; and Granja Rezende (MG) held the exclusive rights to import the American lineages HUBBARD and PETERSSON. The latter company held 40 per cent of the high yielding breed matrix market in 1980 (Sorj et al. 1982:17).

A high technological dependence resulted from this sort of productive structure. Research and Development of high yielding breeds has been tightly linked to large international capital, which converted technological mastery into the cornerstone of the internationalisation of the 'industrialised' poultry system. If, on the one hand, this proved a factor of rapid diffusion of the system worldwide, on the other hand increasing production and consumption of poultry products thwarted efforts to invest in local technology. Early attempts by the *Instituto Biológico de São Paulo* (a state research institution), in the 1950s, and the success of *Granja Guanabara* in developing its own lineages of 'grandmothers' were exceptions (Sorj et al. 1982:17).

Local research requirements were fundamentally adaptations of imported lineages to local ecological raising conditions. These were the basic aim of programmes in the research centre created in Concórdia (SC), stressing the attainment of greater efficiency in nutrition, health, management and marketing (Sorj et al. 1982:25). In São Paulo and Minas Gerais, adaptive research was carried out by universities and other State research organisations.

The 1970s was a decade of rapid expansion of this

'grandmother' import dependent system of production, converting Brazil into the third largest chicken producer and exporter in the world. This enlargement of the productive structure engendered two new developments in the 1980s. First, the interest of leading international breeders in investing in local breeding of high yielding lineage grandmothers, such as the US\$ 10 million invested in a joint-venture between *Agroceres Avicultura S.A.*, a State owned bank (BNDES), and the Scottish ROSS BREEDERS LTD, in 1987. This investment was aimed at the production of 4.4 million breeding hens per year by 1991. Internalising Scottish technology would also make it possible to raise a 4.4 pound chicken in only 48 days (*Gazeta Mercantil*, Intern. Weekly Ed., 28/09/1987; Araújo et al. 1990:64). This magnitude of matrix production represents the whole Brazilian production in 1975 and almost 40 per cent of the production in 1980.

Second, the creation of local ability to develop genetically modified and highly productive lineage, may herald the prospect of autonomous growth. Quite recently (1989), the *Universidade Federal Rural de Viçosa* (MG) reported their achievements in chicken breeding as sufficiently productive to produce hybrids weighing five pounds in 49 days, and laying hens producing as many as 320 eggs a year (*Gazeta Mercantil*, Inter. Weekly Ed., 14/08/1989). In the 1990s, the prospect of a total internalisation of the poultry system is technically conceivable.

5.1.2. Compound feed industry - 'independent' raiser system.

Commercial scale production of compound feed began with leading international companies such as Ralston Purina, the first firm set up in Brazil, soon followed by Cargill, Central Soya and Anderson Clayton in the latter half of the 1960s (Sorj et al. 1982:18; Ortega, 1988:41). Integrated into oilseed crushing industries because of their needs for a regular supply of protein raw material, feed industries became a concentrated and specialised sector of activity. These industries supplied a myriad of 'independent' poultry raisers. Capital concentration relied on (a) the economies of scale allowed by cheap transport costs of essential raw materials (soyameal and maize), and, (b) the monopoly power over the sophisticated technology required in the addition of chemico-pharmaceutical supplements. Both these factors prevented the development of small scale units of production. Chemico-pharmaceutical supplements were also provided by another oligopolistic sector, dominated by multinational companies such as ABBOTT, BAYER, AJINOMOTO, CYANAMID, DOW, EATON, LEPETIT and many others (Sorj et al. 1982:22). Vitamins, mineral supplements, antibiotics and hormones were ingredients of the compound prescribed for each stage of the biological cycle.

This specialised industry²⁷ - 'independent' raiser system lost its momentum in the 1980s. Production, which increased fourfold in the 1970s, ushered by the overall industrial

²⁷ Specialised industry here refers to a compound feedstuffs producer company which is affiliated to the *Sindicato das Indústrias de Rações* - SINDIRAÇÕES (Feed industrial union).

growth, declined in the 1980s (Table 5.1) apparently echoing the recessive crisis in the economy. However, a number of restraining factors should be noted for a better understanding of the particular dynamic of this segment of the agro-food system. According to Ortega (1988:43-47), among these factors are: a) advances in micro-computer software; b) the development and diffusion of *premix* supplements, c) the rise in transport costs, and d) the increasing competitive power of direct vertical integration of the petty commodity producers' system.

Table 5.1
Brazil - Compound feedstuffs production by type
of industry. Period 1965-1985 in thousand tonnes.

Period/ year	Total	SINDIRACOES Industries	Independent raisers, Co-operatives and Others.	
			Output	Percentage
1965/69	2136	1780	356	17
1970/74	4255	3546	709	17
1975/79	9678	7907	1771	18
1980	15494	11156	4338	28
1981	14281	9569	4712	33
1982	12602	8552	4049	32
1983	11563	7975	3588	31
1984	10823	7078	3745	35
1985	11237	7223	4014	36

Source: Trocolli and Barata (1987:3) Agroanalysis, FGV.

Computerised innovations proved to be a new and efficient tool in the formulation of compound feed in small scale operations. This was one of the obstacles to the vertical integration of this segment by large capitalist poultry raisers. Other electronic equipment assisted in the automation of the production line, reducing labour requirements. Progress in micro-computing technology - an internalised and protected

branch of industry in Brazil - permitted the construction of compact plants or small processing capacity industrial units with ranges of 500-1000 kg/hour production up to 4,000 - 6,000 kg/hour (Ortega, 1988:93). These compact plants gave greater flexibility to the production of compound feed, permitting their integration with chicken raising enterprises. This integration brought the additional advantages of reducing storage, the possibility of programming production and consumption of feed and the availability of fresh products.

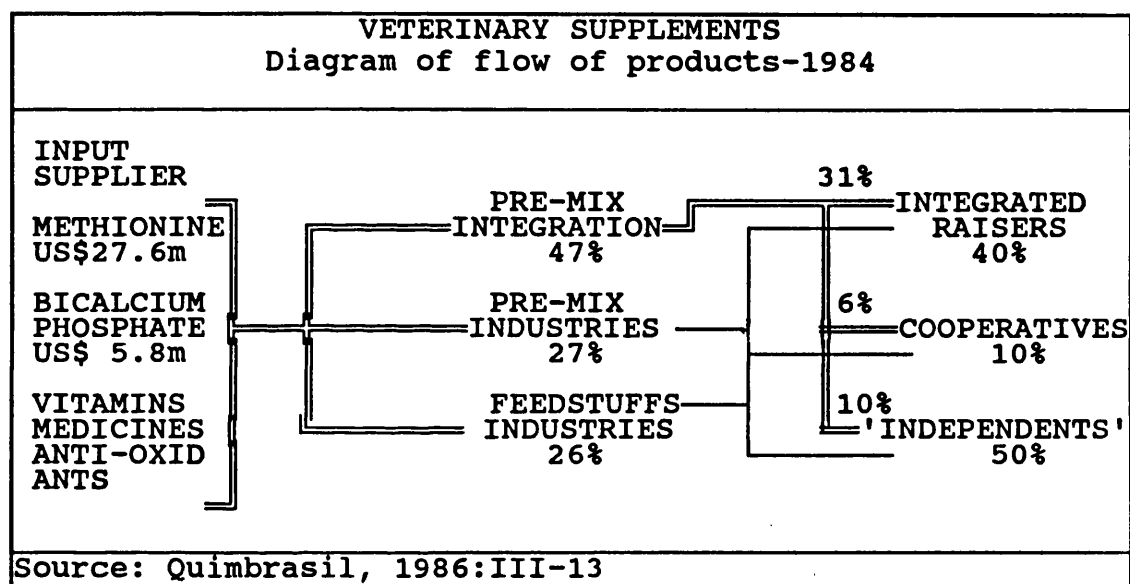


Figure 4 - Flow of veterinary supplements.

The second factor affecting the specialised system was the conversion of a complex set of chemicals, including vitamins, amino acids, antibiotics, artificial colouring, flavourings, hormones and medicines, into a single homogenised product known as *premix*, or mineral supplements. Mass production of *premix* simplified enormously the formulation of the compound, permitting a more flexible structure of production. Its production was also dominated by multinational companies, among them, the European ROCHE and BASF and the Japanese MITSUI and SUMITOMO (Ortega, 1989:71). The leading

individual company, however, was the Brazilian TORTUGA. The size of this market (only poultry) was between US\$ 50 and US\$ 70 million in 1981-1984, led by antibiotics (Quimbrasil, 1986:III-18). With MERCK-SHARP-DOHME, TORTUGA shared 26 per cent of the Brazilian market of veterinary products and supplements, which totalled about US\$ 240 million in 1984 (Quimbrasil, 1986:IV-52). For these industries, the 'pre-mixed' system of distribution freed them from an oligopsonistic relationship of supplying a few powerful agro-industries - be they the horizontally integrated system or the specialised feed industries. Pre-mixing became an independent industry supplying the feed industries, the whole direct integration system as well as numerous 'independent' poultry raisers, thereby breaking the monopoly supply position previously held by the large feed industries (Quimbrasil, 1986:IV-1; Trocolli and Barata, 1987:17-18)). In 1984, 47 per cent of the total mineral and vitamin supplements were processed by the direct integration system, 27 per cent by pre-mixing industries, and only 26 per cent directly by feed industries (Figure 4).

The third factor contributing to the decline of specialised industries was the rise in the costs of transporting raw materials and the processed compound itself. These industries were clustered near the metropolitan areas of São Paulo and Rio de Janeiro, and the production of raw materials shifted to regions as far away as the Centre-West. Furthermore, the poultry raising segment itself moved away to be nearer to sources of raw material. Raisers of egg laying hens, for example, dispersed to Bastos and Marília in São Paulo state, and to Apucarana, Castro, and Ponta Grossa in

Paraná state. In real terms, the price of diesel oil was twice as much in the 1980s as in the early 1970s, whilst prices of feed remained almost static throughout the period (Table 5.2).

Table 5.2
Brazil - Real average price indexes of diesel oil,
chicken-meat, eggs and compound feedstuffs.
Period 1970-1985 (1970=100).

Year	Diesel Oil	Chicken meat	Chicken Feed	Eggs	Egg Feed
1970	100	100	100	100	100
1971	105	93	98	91	105
1972	110	93	102	93	105
1973	106	120	115	122	124
1974	123	107	102	114	115
1975	147	97	108	102	115
1976	160	93	106	104	107
1977	166	86	100	99	95
1978	157	90	100	97	100
1979	266	96	113	89	115
1980	222	79	113	75	115
1981	264	71	108	70	107
1982	197	60	90	61	90
1983	199	71	125	70	124
1984	200	74	113	84	115
1985	199	74	104	61	105

Source: FGV; IEA/SP; ORTEGA (1988:89)
Deflated by IGP-DI/FGV.

The prices of feedstuffs were controlled by the State through the *Conselho Interministerial de Preços* - CIP (Interministerial Price Council) which was concerned with price stabilisation. These stable feed prices must have had an effect on the consumer price of chicken, which decreased significantly from the mean of Cr\$ 3.6 per kilogram in the 1970s to Cr\$ 2.7 per kilogram in the first half of the 1980s, that is, 25 per cent in real terms. This reduction in chicken prices explains why chicken substituted other meats in the

market. Regressions adjusted to farm output "live chicken" prices resulted in an accentuated downward slope trend. This has been interpreted as an outcome of impressive technological gains, and rising productivity, which therefore afforded the reduction in prices (Agroanalysis, FGV, January, 1987:5). Price stabilisation of feed required decisive State intervention in the supply of strategic raw materials, the maize and soyameal. As discussed in Chapter II, State investment in storage capability in the frontier zones, mainly in the Centre-West, and the national unification of minimum prices, contributed to the reduction of transportation costs of those agricultural raw materials. According to Gasques and Villa Verde (1990:20), this reduction was as high as 30 per cent of the minimum prices, cushioning the effects on costs of the rise of diesel oil prices (Table 5.2). Therefore, the effect of rising transportation costs to the specialised feed industries was minimised by indirect State subsidies.

Finally, the peculiar relationship between processing agro-industries and petty commodity producers in the direct integration system developed in the South region, and possibly the locational advantages enjoyed by this system, strengthened its competitive power in this oligopolistic poultry market structure. Ortega (1988:111-116) considered the following points as assets of the vertically integrated system:

- a) the monopoly-monopsonistic relationship;
- b) the non-requirement of stocks;
- c) the reduced distance between industrial plant and farming site;
- d) the use of by-products such as bones, blood, and feathers as raw materials for feed;

- e) the elimination of costly feed packing bags; and
- f) the proximity of essential raw materials - maize and soyameal.

From these vantage-points, the increased production of compound feedstuffs and consequently of poultry itself (even in the context of the economic crisis which Brazil's economy underwent in the 1980s) illustrate the competitiveness of the integrated system in the South. Due to the clear regional specificity of production systems, a straight comparison in production trends between São Paulo and Santa Catarina, illustrates the above assertion (Table 5.3). The feed production of leading São Paulo state dropped from 44 per cent of the Brazilian total in 1978, to 26 per cent in 1985, when it was overtaken by Santa Catarina state, which produced barely 12 per cent in 1978.

The next section will examine in more detail these points, paying particular attention to the case of the poultry industry in Santa Catarina.

Table 5.3
BRAZIL - Compound feedstuffs^a production by main producer states
Period 1978-1985 (percentage of total)

State	1978	1979	1980	1981	1982	1983	1984	1985
São Paulo	44.2	38.3	37.9	31.3	29.6	28.9	27.8	26.0
Paraná	14.3	15.4	16.4	16.8	14.8	15.0	17.1	18.8
Santa Catarina	11.8	12.7	13.9	19.6	21.5	23.3	26.9	28.2
Rio Grande do Sul	11.0	13.1	11.9	11.0	12.0	11.0	9.9	9.1
Pernambuco	5.8	7.7	6.7	6.0	6.0	4.6	3.4	4.1
Rio de Janeiro	5.6	5.5	5.1	3.8	3.0	3.2	2.5	2.9
Minas Gerais	4.4	4.4	5.2	7.6	7.3	8.2	7.8	6.6
Goiás	0.4	0.5	0.6	1.5	2.8	3.2	2.8	2.6
Others	2.5	2.4	2.4	2.3	2.4	2.7	1.9	1.8
BRAZIL	100	100	100	100	100	100	100	100

SOURCE: SINDIRACOES/ Agroanalysis, January, 1987:19

(*) Includes converted concentrated feed; refers only to the industries affiliated to SINDIRACOES.

5.2 Integrated Production System: the Case of Santa Catarina

The direct integration of petty commodity producers with agro-industrial enterprises and co-operatives is a peculiarity of the poultry production system in Brazil, prevailing in the rural social structure of the South. In Santa Catarina, the state where poultry production is concentrated, 96 per cent of chicken raisers (in 1977) were directly integrated into agro-industries, and growth reached the impressive rate of 50 per cent per year during the period 1972 to 1978 (Giulietti et al. 1981:187). Technological efficiency of the system was the same as that achieved in advanced industrial countries, from where high yielding lineage 'grandmothers' were imported from the same major breeders which dominate the world's poultry matrix market. However, unlike most advanced industrial countries, the Brazilian poultry system reinforced the competitiveness of petty commodity producers through vertical integration with agro-industries and which appeared particularly resilient in the period of economic crisis, eventually outcompeting the formerly vigorous specialised feed industries in São Paulo. The main concern of this section is the relationship established between agro-industries and petty commodity producers within the dynamic dictated by the industrial strategy of growth and its adaptation to the rural social structure.

5.2.1 Social conditions of farming in Santa Catarina.

The direct integration system of poultry raising is concentrated in the western zone of Santa Catarina, although

scattered industrial plants may be found in the South and the North.

The West of Santa Catarina is a zone characterised by the hilly topography. Formerly it was covered with sub-tropical vegetation. The latter grew on a kind of soil that had developed from basaltic rocks (Uruguay Basin) and which was therefore relatively rich in plant nutrients, although sometimes patches of acid soils occur. For the most part, the plateau was covered by the valuable native pine-tree (*Araucaria angustifolia*) and the native tea-plant - the *erva-mate* which is consumed in the southern cone of South America - Brazil, Argentina, Paraguay, Chile and Uruguay.

The settlement of the zone began in the early 20th century, with the timber business. The Southern Lumber and Colonization Company, a subsidiary of the American Brazil Railway Company, first installed saw-mills in the zone and started lumbering for export (Campos, 1987:70). Another subsidiary of the Brazil Railway Co. received a large concession of public lands - 569,000 hectares. Other companies, like Bertaso, and Maia & Cia., colonised about 224,000 hectares. The concessions were divided into small plots of 25 hectares, or one *colônia*, in the hilly and more densely forested areas and into larger plots, ranging from 100 to 1000 hectares, where cattle ranching was possible (Campos, 1987:71). These small plots were sold to landless peasants or people with insufficient land from Rio Grande do Sul - mostly constituted by former European migrants of Italian and German origin. This process of organised colonisation took place mainly in the 1920s, but migration from the southern state continued until the 1970s, when virgin lands became exhausted

(Campos, 1987:76-82). In fact, the most impressive subdivision of land occurred in the 1950s, as the lucrative land settlement industry, responded to the modernisation process in the most densely populated areas of Rio Grande do Sul, and the accelerated the expulsion of colonos. Colonisation companies transformed large idle farmland into land resettlement projects and sold these to the migrant colonos. This process explains why the number of farms trebled in a decade (1950s) and why the average farm size fell from 61.7 hectares to 26.1 hectares in the same period (Table 5.4).

Table 5.4
Santa Catarina - Farm distribution and average size in the MRH^a
Colonial Oeste Catarinense by Total Area Group
Period 1940-1980

Total Area Group (ha)	N u m b e r o f F a r m s (establishments)					
	1940	1950	1960	1970	1975	1980
Less than 10	312	1235	9508	19628	21572	26869
10 - 50	2053	6787	16850	31112	32399	36410
50 - 200	436	1070	1685	2128	2372	2373
Greater than 200	115	136	129	202	245	322
TOTAL	2967	9228	28172	53072	57285	65977
Total Area (ha)	267836	569432	735757	1036167	1119399	1243301
Average Size (ha)	90.3	61.7	26.1	19.5	19.5	20.2

Source: CAMPOS, 1987:88 / IBGE Agricultural Census.

(a) MRH - Homogeneous micro-region, a regional sub-division used by FIBGE.

The 1960s also continued to register a substantial increase in the number of farms. Between the two decades the 1950s and 1960s saw the creation of almost 31,000 farms, of which 30,000 averaged less than 50 hectares in size, corresponding to 56.5 per cent of total farms existent in 1970

(Table 5.4). The activities of these farms usually consisted of subsistence production due to the importance of the self-consumption component. Campos (1987:114) reported that a family workforce and natural fertility based system of production included a constellation of crops and livestock species with different functions in the household. Rice, haricot-beans, wheat and manioc, as well as vegetable garden and small animal production, were mainly consumed by family members, meeting most of their food needs. Maize and some other crops were used as feedstuffs for their livestock, including horses which were used in crop mechanisation and transportation.

Nevertheless, this apparent natural economy production contrasted with the increasing need to establish commercial relations to meet the reproduction requirements of the family and the means of production. The municipality of Chapecó in the 1930s traded not only timber and *erva-mate*, but tobacco and lard were also listed among the main marketed products (Campos, 1987:115). Tobacco was produced by migrants of German origin who settled in the Uruguay Basin, and established commercial links with industries located in Santa Cruz do Sul (RS), where SOUZA CRUZ, an Anglo-American company, set up its first plant in 1919.

With tobacco market crisis of the 1940s, small household producers switched over to pig raising thereby also meeting the growing demand of the São Paulo and Rio de Janeiro markets. By then, some pig traders had converted into meat processing companies, among them SADIA, PAGNONCELLI and PERDIGAO (Campos, 1987:135). Pig trading was also very active by the turn of the century in the South of Santa Catarina.

Lard and salted pork were produced with simple equipment in an almost handicraft fashion. After packing in appropriate containers (tin and wood boxes for lard, and bamboo baskets for salted pork) they were shipped to Rio de Janeiro, first on the back of mules to the railway station connected to the port of Laguna, and then carried by boat to the final destination (Paulilo, 1990:47). At the time, the dynamic of production was dictated by commercial capital, which operated in two ways (purchase and sale) transaction for the rural household producers. This subordinated relationship was occasionally contested by rural producers, for example, in the case of the boycott of sales at the beginning of the century (Paulilo, 1990:48-49).

In summary, the process of commoditisation of household production intensified the re-structuring of local commercial capital, lending greater emphasis to tobacco and pig products. This in turn created the conditions for capital accumulation and the emergence of abattoirs and pig processing industries in the 1940s.

5.2.2 Agro-industries - accumulation and the integration with petty commodity producers

The accumulation of capital based on petty pig production was the decisive element for the establishment of an industrial structure in Santa Catarina. Two of the leading agro-industries in Santa Catarina, the SADIA and PERDIGÃO conglomerates, emerged in the 1940s from the process of concentration and diversification of commercial capital along with the vertical integration of industrial branches. Three other processing companies installed their plants in the 1950s

and 1960s, *S.A. Indústrias Chapecó - SAIC; Frigorífico SEARA;*
and *Cooperativa Central Oeste Catarinense - COPERCENTRAL.*
These complete the list of the five major companies operating
in Santa Catarina which were together responsible for almost
the total of commercial chicken and 87 per cent (SIF) of pigs
slaughtered in 1988 (Tables 5.5 and 5.6).

Table 5.5

SSanta Catarina - Chicken slaughtering by establishment. Period 1977-1988 (per thousand heads - SIF)

ESTABLISHMENT	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
SADIA CONCORDIA SA	27742	33096	37922	42980	50898	50304	54236	57609	58824	59761	61135	59974
SADIA AVICOLA SA	12060	15050	16409	12891	19808	20602	21409	28578	32703	33462	34223	35811
Total SADIA	39802	48146	54331	55871	70706	70906	75645	86187	91527	93223	95358	95785
PERDIGAO SA IND C	13560	19301	27594	36740	37870	39243	37764	40892	42031	41461	40343	39928
PERDIGAO OURO SA				1820								
PERDIGAO AGROIND Capinzal					19861	37225	39466	42925	51016	58694	55887	55558
Total PERDIGAO	13560	19301	27594	38560	57731	76468	77230	71301	93047	100155	96230	95486
CHAPECO AVICOLA SA	5294	7183	9711	14114	20871	28576	26402	30409	33279	35270	35928	32544
SEARA INDUSTRIAL SA Seara					12639	16352	18046	18374	18499	18632	17172	17573
FRIG. SEARA SA	8161	8532	10216	11056								
SEARA INDUSTRIAL SA Jaraguá do Sul								4464	5273	4745	4503	7379
SEARA INDUSTRIAL SA Itapiranga								9013	10719	11039	11163	
Total SEARA/CEVAL	8161	8532	10216	11056	12639	16352	18046	22838	32785	34096	32714	36115
COPERCENTRAL	-	-	-	-	-	-	-	-	-	-	-	18982
AVICOLA ELIANE SA	474	2799	3471	3666	5723	6522	7252	7725	7528	7791	9092	10718
CIA. JENSEN A.I.COM	2431	2866	3225	3103	725	298	...					
CIA. PLANALTO FRIG.	-	-	-	-	-	-	46					
C.I. PAGNONCELLI SA	3734	4068	2067									
I. REUNIDAS OURO SA	1253	1625	1767	446								
SA FRIG ITAPIRANGA	3854	3627	3512	4837	5522	7028	7705	8835				
FRIG RIO DA LUZ SA		375	852	1617	2508	3321	3062					
SUB-TOTAL (SIF)	78562	99522	116747	133178	176426	209471	215389	239784	258165	270535	270487	289630
SUB-TOTAL NON-SIF and SELF-CONSUMPTION(*)...	...	...	...	...	...	...	...	31049	41356	46936	56293	53828
TOTAL (*)	...	...	...	...	...	...	...	270833	299521	317471	326780	343458

Source: *Associação da Indústria de Carnes e Derivados do Estado de Santa Catarina.*

(*) CEPA/SC (1989)

TABLE 5.6
Santa Catarina - Pig slaughtering by establishment. Period 1977-1988 (per thousand heads)

ESTABLISHMENTS	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
SADIA CONCORDIA SA I CO	413	516	582	695	685	634	749	692	762	765	856	730
PERDIGAO TOTAL	231	423	478	753	762	799	937	919	944	819	941	951
PERDIGAO SA IND COM	231	343	385	443	447	478	567	525	540	457	618	645
PERDIGAO VELOSO SA		80	93	126	122							
PERDIGAO CATARINENSE SA				111								
PERDIGAO OURO SA				73								
PERDIGAO AGROINDUSTRIAL SA Oeste					193	203	226	249	290	271	323	306
PERDIGAO ALIMENTOS SA (Veloso)						118	144	145	116	91		
SA IND COM CHAPECO	200	232	289	10	340	340	415	390	420	475	534	547
SEARA TOTAL	94	145	162	208	225	257	412	429	469	461	530	542
SEARA INDUSTRIAL SA Seara					225	257	284	299	330	322	367	374
FRIGORIFICO SEARA SA	94	145	162	208								
SEARA INDUSTRIAL SA Itapiranga							128	130	139	139	163	168
COPERCENTRAL	67	176	213	312	319	423	535	526	578	639	813	704
AVICOLA ELIANE SA										150	166	166
FRIG RIOSULENSE SA	12	19	24	39	52	57	61	47	53	66	114	141
AGR COM FRIG GUMZ LTDA	2	-	26	31	45	62	65	47	52	73	85	93
FRIG CANOINHAS SA	29	53	72	105	87	63	66	48	59	75	85	83
WEEGE IND. ALIMENTOS SA	13	14	13	11	12	11	10	7	8	8	8	7
FRIGORIFICO CEMIN LTDA	0	4	4	6	8	8	9	6	8	9	8	7
FRIG SUL CATARINENSE SA	41	66	85	126	164	165	167	150	154			
SA FRIG ITAPIRANGA	53	51	86	101	84	110						
CIA JENSEN AGR IND COM	74	113	102	78	26	8						
FRIGORIFICO CHAPECOZINHO				20	68	47						
FRIG PEPEPI SA IND COM				37	110							
CI SAULLE PAGNONCELLI SA	74	128	115	37								
IND REUNIDAS OURO SA	62	61	57	15								
AGR INDUSTRIAL ZINK SA		25	15	2								
UNIFRICO SA IND COM	27											
TOTAL	1391	2025	2324	2925	3018	2986	3424	3261	3508	3541	4141	3972

Source: Associação da Indústria de Carnes e Derivados no Estado de Santa Catarina

MEAT INDUSTRIES IN SANTA CATARINA - POULTRY, PIG AND BEEF CATTLE SLAUGHTERING

[illegible]

Source : Associação da Indústria de Carnes e Derivados no Estado de Santa Catarina

LEGEND: Poultry Pig and Poultry *****
Pig 000000000 Pig and Beef cattle XXXXXXXX
Beef cattle >>>>>>> Pig, Poultry and Beef cattle _____
Taking over companies (in brackets)

In the process of capital concentration, many other companies emerged since the 1940s and were incorporated by others in the process of competition, among them, *Comércio e Indústria Saulle Pagnoncelli, S.A. Frigorífico Itapiranga, Indústrias Reunidas Ouro S.A., Companhia Planalto, Agropecuária e Industrial Zink Ltda., and Frigorífico Rio da Luz (Box 3).*

Other small firms still manage to keep in operation, by supplying specific markets. This process was accompanied by the modernisation of pig raising through the introduction of

imported breeds, on a massive scale - principally Duroc-Jersey, Large White and Landrace which became the dominant genetic materials in Santa Catarina. Agro-industries and State policies also fostered the modernisation of pig raising by encouraging the adoption of genetic materials according to new industrial needs. These included the requirement that a pig carcass should have a low fat content. This was partly because lard consumption slumped rapidly in the 1970s since it had been substituted by cheaper vegetable oil which, in turn, had been boosted by growing soyabean production. The new imported breeds introduced in the zone demanded quality feeds, and adequate installations, all of which necessitated capital investments and additional nutritional knowledge. Whatever its importance in self-consumption or in supplying local household and catering business needs, there was no significant commercial scale poultry raising. Thus, unlike pig rearing, modern poultry raising was totally transferred to the zone from outside.

The process of industrial concentration and integration.

All major poultry processing firms at first were pig slaughtering companies. As such, the poultry industry is part of the meat industry in Santa Catarina, and necessarily includes pig-meat because of the particular process of capital accumulation in this state, which at first derived from the trade in pig products.

In Santa Catarina, pigs slaughtered industrially increased fourfold from 1970 to late 1980s, while chicken increased 93 fold in the same period (Table 5.7). Although these figures refer to industries registered in the *Serviço Federal de Inspeção* - SIF (Federal Inspection Service), which

is responsible for official sanitary control, they do cover about 85 per cent of total chicken slaughtered by the end of the 1980s (Table 5.5).

Table 5.7
Santa Catarina - Pig and chicken slaughtering (SIF).
Periods: 1945-1985 (Pig) 1970-1985 (Chicken).

Year	P I G		C H I C K E N			
	1000 heads	INDEX	1000 heads	Tonnes	INDEX	Average weight
1945	480000	51				
1950	440000	47				
1960	617000	65				
1970	943822	100	3322	4650	100	1.40
1971	1086583	115	5779	8091	174	1.40
1972	1050799	111	9437	13211	284	1.40
1973	1108042	117	15537	21821	469	1.40
1974	1114577	118	26518	37125	798	1.40
1975	1335182	141	49687	69561	1496	1.40
1976	1552318	164	62000	84150	1810	1.36
1977	1449589	154	81557	111733	2403	1.37
1978	1999346	212	98984	139047	2990	1.40
1979	2297505	243	115911	162275	3490	1.40
1980	3045446	323	136025	197749	4253	1.45
1981	3018000	320	182340	244500	5258	1.34
1982	2951793	313	216359	354773	7630	1.64
1983	3494641	370	224349	356659	7670	1.59
1984	3260641	345	244813	369913	7955	1.51
1985	3519341	373	263981	394916	8493	1.50
1986	3541000	375	270535	405803	8727	1.50
1987	4141000	439	270487	405731	8725	1.50
1988	3972000	421	289631	434447	9343	1.50

Sources: 1- M.A./SIPA/CAMPOS, 1987:158 - 1945-85 (Pig)
2- Instituto CEPA/SC and CAMPOS, 1987:273 - 1970-85 (Chicken)
3- Associação das Indústrias de Carnes e Derivados Estado de Santa Catarina 1986-1988.

Table 5.8
Brazil and Santa Catarina - Poultry meat production, exports and consumption.
Period 1970-1988.

Year	B R A Z I L					S. C A T A R I N A		
	Production ^a	E x p o r t s ^b		Consumption ^a		E x p o r t s ^b		Share of
	(1000t)	(1000t)	(US\$million)	(1000t)	(kg/cap) ^c	(1000t)	(US\$million)	SC (%)
1970	217.0	-	-	217.0	2.3			
1971	224.0	-	-	224.0	2.3			
1972	294.0	-	-	294.0	3.0			
1973	401.0	-	-	401.0	4.0			
1974	484.0	-	-	484.0	4.7			
1975	519.0	3.5		515.5	4.9			
1976	604.0	16.6		584.4	5.4			
1977	698.0	32.8		665.2	6.0			
1978	858.0	50.8		807.2	7.1			
1979	1096.0	81.1		1014.9	8.7			
1980	1306.0	170.4	209.3	1137.3	9.5	68.2	83.7	40.0
1981	1490.0	290.0	350.9	1196.1	9.8	100.2	121.2	35.0
1982	1604.0	301.8	285.5	1302.2	10.4	146.8	138.8	49.0
1983	1584.0	289.3	242.2	1294.7	10.1	167.6	140.3	57.0
1984	1398.0	281.2	264.1	1161.0	9.0	156.8	147.2	58.0
1985	1530.0	270.0	235.2	1260.0	9.6	145.2	127.1	54.0
1986	1680.0	224.7	220.3	1455.3	10.8	119.1	116.8	53.0
1987	2031.0	213.8	211.8	1817.2	13.2	112.9	111.6	53.0
1988	2030.0	225.0	220.5	1805.0	12.9	125.0	122.5	56.0

Sources: a) IBGE, APINCO (1970-1988).

b) ABEF, CEPA/SC (1980-1988).

c) Per capita kilogram consumption.

For poultry, the 1970s was the decade in which a modern, internationally-standardised technology production structure, was consolidated. The 1980s, on the other hand, represented the decade of exports (Tables 5.7 and 5.8). Santa Catarina was responsible for about a half of the total exports, and about one quarter of total Brazilian production, which itself was nearly two million tonnes, in 1987 and 1988 (CEPA/SC, 1989:228).

Table 5.9
SAO PAULO - Nominal and real prices of chicken and beef, and minimum wage.
Period 1970-1985

Year	C H I C K E N			B E E F			M I N I M U M W A G E		
	Nominal Cr\$/kg	R e a l Cr\$/kg 1970=100		Nominal Cr\$/kg	R e a l Cr\$/kg 1970=100		Nominal Cr\$	R e a l Cr\$ 1970=100	
1970	4.0	4.00	100	4.05	4.06	100	192	192	100
1971	4.3	3.57	89	5.02	4.17	103	232	193	101
1972	4.96	3.51	88	5.97	4.23	104	292	207	108
1973	6.76	4.17	104	8.91	5.49	136	330	204	106
1974	8.41	4.03	101	10.97	5.26	130	387	185	96
1975	9.49	3.56	89	13.94	5.22	129	525	197	103
1976	13.22	3.51	88	16.89	4.48	111	754	200	96
1977	16.96	3.15	79	22.53	4.19	103	1086	202	104
1978	26.31	3.53	88	40.61	5.45	135	1539	206	107
1979	43.63	3.80	95	76.84	6.69	165	2387	208	108
1980	72.66	3.16	79	140.86	6.13	151	4500	196	102
1981	133.39	2.77	69	234.48	4.86	120	9144	190	99
1982	227.37	2.41	60	433.03	4.59	113	18172	193	101
1983	686.00	2.86	72	1265.83	5.27	130	39524	165	86
1984	2103.00	2.73	68	3889.60	5.07	125	109268	142	74
1985	6602.00	2.64	66	11646.00	4.65	115	372080	149	78

Source: Central Bank of Brazil, IEA-SP/Agroanalysis, Jan. 1987:8

(1) Deflated by IGP-DI/FGV, for 1970 prices.

(2) The minimum wage includes 13th Salary.

Except two years of contraction (1984 and 1985), domestic consumption increased steadily throughout the 1970s and 1980s. One factor explaining growing consumption was that chicken prices decreased consistently in real terms, thereby outcompeting beef-meat, the preferred meat in Brazil (Table 5.9). During the same period in the 1970s, beef prices were higher relative to chicken prices and minimum wages. As a consequence, domestic consumption of beef declined, although this was compensated by an increase in exports, especially in the 1980s. It seems that the mass production system based on the integration of petty commodity producers and rising productivity and declining industrial costs, might have contributed to sustaining the pace of production in spite of the declining prices in the domestic market, especially in the 1980s. Exports were only part of the answer, for having peaked in 1982 (with 300 million tonnes) exports slumped thereafter,

reflecting the effects of the international food crisis, i.e. more severe competition, especially in the disputed Middle East market.

In summary, the conspicuous production growth and competitive capacity achieved by the poultry system in a period of economic crisis, characterised by the reduced supply of investment credit at subsidised interest rates, low prices in both domestic and world markets, and domestic price controls, suggest two possible explanatory factors. One, the strategies of agro-industrial capital concentration and two, the particular form of production of integrated petty poultry raisers. The next two sections will deal with these two factors.

5.3. The strategies of large meat industry in Santa Catarina.

From among the five largest agro-industrial groups referred to above, and in operation in Santa Catarina, I will examine COPERCENTRAL, SADIA and PERDIGÃO.

5.3.1. COPERCENTRAL

This enterprise only started slaughtering chicken in 1988, as part of a strategy to diversify and reduce its exposure to risks arising from frequent price crises experienced by pig raisers. As a central co-operative, grouping 32 single farm co-operatives, COPERCENTRAL initiated its activities in 1969 by absorbing a small failing abattoir. In 1980, COPERCENTRAL incorporated two other abattoirs. Between 1985 and 1988, the firm slaughtered 18 per cent of

total SIF production of pigs. COPERCENTRAL entered the chicken market strongly, slaughtering 6.6 per cent of total SIF production. According to the managers²⁸, this arrival (albeit late) in the chicken market represented their initiative for rural diversification to create an alternative activity for the smaller farmers. The minimum size of aviaries was reduced from the standard 12,000 bird lot capacity to 6,000 and even 2,000 bird lot capacity. These smaller aviaries were intended to reach smaller farmers, thus enlarging the social basis of production, although this meant assuming the risks of increased transport and other costs. However, it was argued by management that these shortcomings could be offset by the organisation of community groups, which would reduce the distance from farm to slaughterhouse, and so on. In addition, it was suggested that new battery system aviary to be introduced would lower the costs of production. For COPERCENTRAL, as a newcomer in the poultry business, the question of genetic management was not raised, the company preferred instead to maintain its supply contract for chicks with *Agrocere Avícola*. This decision was mainly due to the fact that the enterprise was still struggling with the genetic improvement of pig herds. In this field, their project was designed to obtain a tri-cross hybrid using Duroc-Jersey male, Landrace and Large White matrices within a five to ten year time-scale, with new carcass specifications. Other than improvements in feed conversion rates, the targeted hybrid was expected to have the fat content reduced from 16-18 kg to 9 kg per head. The key point is that, although COOPERCENTRAL is a

²⁸ Three top managers, including the president were interviewed during a field visit in 1989.

small farmer co-operative enterprise, its technological strategy had to address industrial efficiency and the structure of demand. For example, a high fat content in pig carcasses (the source of lard) reduced industrial efficiency and the quality of meat products. Another technological problem for carcass specification was that the standard weight of 90 kg per head was often exceeded, thereby increasing the amount of unwanted fat. Strictly speaking, this is a problem for industry, not for farming. That is why all companies pay an extra premium for a pig carcass with a low fat content and penalise, through low prices, any excess fat content. These technological factors, which directly affect the efficiency of industrial production, pushed COPERCENTRAL to reinforce direct integration.

However, if in pig raising technological modernisation faced such protracted and difficult obstacles, the integration of poultry raisers was rapid. Although integration of poultry raisers began only in 1988, this co-operative enterprise was already slaughtering 125 thousand chicken per day in 1989, with the prospect of trebling this in the medium term.

5.3.2. SADIA

This group pursued its strategy through the vertical and horizontal integration of regional capitals and became the biggest meat firm in Santa Catarina. SADIA was created by the association of a group of local commercial capitals in 1943 (Campos, 1987:135) for the purpose of pig-meat processing. In 1953 boldly entered civil aviation transport in order to fly its perishable products to major markets such as São Paulo and Rio de Janeiro. In the 1960s, the SADIA air company became

TRANSBRASIL, which is now a leading commercial aviation company. In 1964, a technical department was created to assist the technological transformation of pig raisers. This was in association with the *Associação Rural de Concórdia* and the municipal government. The strategy for the diffusion of innovation was to select a number of small household farmers, introduce genetic, nutritional and rearing innovations, and use them as model farms (Sorj et al, 1982:33). This first stage of the intensification of technical assistance (initially with 100 farms) was the basis upon which future contract integration relationships progressively developed (Sorj et al, 1982:34).

In poultry raising, SADIA established a small enterprise in 1950, raising its own chickens, which worked as a research and development centre supporting the process of technological transfer to directly integrated family farmers. In the build up of an advanced system of production, technical visits to *Granja Guanabara*, then a leading matrix producer in the 1960s and later to the United States were included (Campos, 1987:271). In 1971, *SADIA Avícola* was created, inaugurating the first stage of integrated small family farmer production and, by 1977, 96 per cent of all chickens slaughtered in Santa Catarina were raised under this system (Sorj et al, 1982:34). Integration contracts were not confined to the adoption of a modern technological package but also imposed certain other obligations on rural farmers. For example, the on-farm production of maize, and eventually soyabean, the main raw materials for the compound feed was required, representing a major bonus to SADIA. This practice avoided the importation of voluminous feedstuffs from outside the region, thus reducing

the costs of transportation. The process of integration led SADIA to develop links with the Canadian Hybrid Co. in order to produce matrices of chicken and turkey to supply integrated farmers (Campos, 1987:162). The expansion of investment by the SADIA group which basically specialised in the meat industry, was successively directed to vertically integrate soyabean crushing plants in order to produce its own soyameal - the essential raw material for compound feed - in a separate enterprise, *SADIA Avícola*. Horizontal expansion of capital included investment in other areas such as FRIGOBRAS - with processing plants producing chicken and pork in Toledo (PR) and São Paulo. In Mato Grosso, *SADIA Oeste* slaughtered beef cattle for export to EEC countries, the United States, and the Far East (Gazeta Mercantil, Intern. Weekly Ed. 10/8/1987). However, in its growth strategy, SADIA also invested in many other sectors of activity as diverse as civil aviation (TRANSBRASIL), hotels (*Hotel Alvorada*), and insurance (*SADIA Corretora de Seguros*) (Sorj et al, 1982:36), thus giving it the characteristics of a conglomerate involving 25 enterprises scattered in 15 Brazilian states (Campos, 1987:167). Another revealing point in the analysis of SADIA's strategy of accumulation is that although it pioneered the horizontal integration of petty commodity producers in Santa Catarina, it preferred to integrate vertically in the massive chicken and turkey production project in Goiás.

5.3.3. PERDIGÃO

The second largest meat processing group in Santa Catarina, *Perdigão Agroindustrial*, followed growth strategies very similar to its major rival, SADIA. Centred on pig and

poultry, it vertically integrated by acquiring many other meat processing enterprises, among them *Saulle Pagnoncelli* (Herval D'Oeste), *Indústrias Reunidas Ouro* (Capinzal), *UNIFRICO S.A. Indústria e Comércio* (Salto Veloso) (Box 3), *Granja Suely* (Criciúma), and *Borella S.A. (RS)* (Campos, 1987:163-164). The Perdigão Group like SADIA, also invested in other sectors such as saw-mills, hotels, printing, communication (radio and television) and oil distribution (Sorj et al, 1982:36), although the main emphasis was upon the "Fordist" food sector.

Both SADIA and PERDIGÃO made remarkable progress in terms of their position amongst the 500 biggest enterprises in Brazil, and particularly in terms of the food sector from 1980 to 1988. *Sadia Concórdia S.A. Ind. Com.* held the 148th position the top 500 in 1980 and improved to 49th in 1988, with US\$ 199.6 million in sales²⁹, while *Perdigão Agroindustrial* improved from 221st position to 88th with US\$ 138.8 million. The period of economic crisis of the 1980s was, in fact, beneficial for these two conglomerates in Santa Catarina, and also for another strong competitor - the *CEVAL Alimentos* which reached 57th position in volume of sales in 1988. In fact, food was the biggest single sector in sales in 1988, with US\$ 13.8 billion coming from companies with over US\$ 90 million in sales (Exame-Melhores e Maiores, 1989). At each period of crisis in the pig sector, 1972', 1976-77', 1981-82' and so on, the financial difficulties of the smaller enterprises rendered them easy prey for takeover by bigger companies - that was certainly the case for PERDIGÃO. The worst years of recession, 1981-84, combined with the sectoral

²⁹ US\$ 1.00 = NCz\$ 0.75655 in 31.12.1988
NCz\$ = New Cruzados.

crisis in the pig industry, almost wiped out small enterprises in Santa Catarina. By 1988 only six large companies remained in the poultry sector, representing 100 per cent of slaughtering capacity for chickens and 92 per cent for pigs. These companies were the SADIA Group, the PERDIGÃO Group, SEARA Industrial (CEVAL Group), S.A.I.C. Chapecó, COPERCENTRAL (Aurora products), and Avícola ELIANE S.A. (Tables 5.5 and 5.6). The concentration of industrial capital in poultry left no space for small firms, while in pig processing some small companies, such as *Frigorífico Cemin S.A.* and *Weege Indústria de Alimentos S.A.*, still survived in 1988 (Table 5.6). This difference might possibly reflect the degree of industrial mastery achieved in the productive process - in the case of poultry, ensured by the monopoly control of genetic material. The relative technological 'autonomy' enjoyed by pig raisers, unlike poultry raisers, allowed small abattoirs operating in local or specialised markets to survive.

5.4. The Integration of Petty Commodity Producers

As we have observed, the integration of pig raisers, was founded on a deep-rooted and traditional process of production entirely dominated by the family producer. In the case of chicken, however, the whole process, from the supply of day-old chicks, feed, and medicines, to the method of rearing under strict technical norms, and the size of the aviary³⁰, was introduced as a complete 'package' from outside of the farm. The high degree of appropriation of the productive

³⁰ Standard size of aviary had a capacity for 12,000 birds.

process by agro-industry left little room for manoeuvre for petty commodity producers. That is, in the direction of a more 'autonomous' system of production. In the small farming integrated system, high yielding hybrid breeds of chicken converted anything from 2.66 to 2.94 kg of compound feed into 1.4 Kg of meat in 45 days (Campos, 1987:276) matching the achievements of producers in the advanced industrial countries. These technological achievements were more or less reproduced in other producer states, leaving little difference between these states and the state of São Paulo where the modern poultry system was first introduced (Table 5.10).

Table 5.10
Brazil - Technological indicators of chicken production,
by selected states (1977)

State	Feed Conversion Rate. (kg)	Mortality Rate (%)	Days of Age at Slaughter	Weight at Slaughter (kg)
São Paulo	2.52:1	3.75	62-65	1.81
Minas Gerais	2.51-2.33:1	3.0-2.0	60	1.80
Santa Catarina	2.3:1	2.0-2.5	56	1.80
Espírito Santo	2.3:1	3.0	60	1.80
Ceará	2.41:1	4.0	63	1.73
Pernambuco	2.3:1	...	60-65	1.80
R.Grande Sul	2.35-2.6:1	2.0-5.0	56-62	1.76-2.00
Paraná	2.5:1	4.0	58-60	1.80-2.00

Source: Giulietti et al (1981) IEA/SP.

In order to achieve this level of yield, the family labourer had to follow rigid norms of production under the strict control exerted by the company and its technical staff. The chickens, as live creatures need constant attention, as they are very sensitive to environmental changes, whether in climatic conditions (wind, rain, heat or cold) or in nutritional aspects. Complex diseases such as coccidiosis, influenza, and New Castle disease need to be carefully treated, using preventive medicines and vaccines as their

rapid spread could easily decimate the whole chicken flock. The outbreak of an epidemic disease is always a threat, and one of the safety measures taken is to isolate the aviaries from one another. The distribution of these aviaries in thousands of small family farms complied with these safety requirements. In spite of the progress in genetics and ecological adaptation in chicken-raising these risks persist, although the mortality rate remained relatively low (Table 5.10).

Agro-industries in the South of Santa Catarina considered three per cent as an acceptable rate of mortality (Paulilo, 1987:200). Sanitary precautions and constant surveillance for any climatic changes or signs of diseases which may rapidly contaminate the whole chicken flock are still the price paid by the family labourers for their success. In fact, these hours of vigilance are usually not counted as working hours. A small sneeze means the need for cold relief medication (generally added to the water), a change in wind direction requires the position of curtains to be changed, or, in the case of young chicks, a special heater must be lit when the temperature falls. In the summer, the heat must be dealt with by a combination of big fans, curtain regulation, and shading with trees or artificial devices. Chickens in the final stage of growth are particularly sensitive to high temperatures, especially when the heat rises suddenly leaving no time for adaptation and widespread deaths can result (Paulilo, 1987:202). The increase in stress on these genetically-modified chickens can be so high that their hearts sometimes burst. Thus, despite the high level of industrial appropriation and productivity reached in the poultry system,

the risks of production still remain very high. In the case of integration, the losses are entirely borne by chicken raisers. This constitutes the risk-sharing element of the integrated system of production.

Returning to the issue of working hours, these depended upon the degree of automation which the chicken raiser could afford to invest in, such as the automatic feeder and automatic water supply device. In 1978, working hours were still high. According to Sorj et al (1982:39), 88 per cent of family workers were on duty nine to sixteen hours a day! One can argue that this is not a hard form of work and the most of the tasks can be done by women or children who otherwise would simply not do anything. This was one of the reasons why family labour became so attractive to industrial capital. Much of this hidden labour would have to be paid in a wage labour capitalist enterprise, and would therefore enter the costs of production.

The extension of working hours in the integrated system is also applicable to tobacco production (Munguia P., 1987). This represents the intensification of absolute surplus labour which is provided by the family operator and his/her members, incorporated in the product, but not taken into account in the calculation of costs of production either by the agro-industry or by the farmer. In Santa Catarina, the average cost of labour was estimated at 2.5 per cent and, even so, chicken raising was considered a non-lucrative activity, according to Sorj et al (1982:39), who drew their conclusion from the CEBRAE/CEAG/SC survey in 1978. Similar calculation was made by IPARDES (1989:17) indicating absence of profit in the case of Paraná. However, if that was so, how can one explain the

expansion of the system and the queues of small family farmers applying for an integration contract? Certainly there are no simple answers, and the 'non-lucrative' conclusion must be nuanced and qualified since, after all, in terms of commercial accountancy, hardly any small family-labour enterprise would be considered 'lucrative'. That is, there is no surplus when all elements of costs, from payments of inputs, and other means of production, including depreciation and remuneration of fixed capital, interest payments on borrowing, land rent and the remuneration of labour force at the market wage, and discounting taxes and charges, are duly met. Even in advanced capitalist countries, the profitability of small family-labour farms is only brought about by huge State subsidies.

The most common, and to a certain extent easier, explanation is that "there was no better alternative", due to the conditions of production prevailing in the region, including the oligopolisation of the market. In Santa Catarina, for example, with the exhaustion of new fresh land and population pressure in the 1970s, there was no possibility of horizontal growth. The region was not suitable for heavy mechanisation and therefore the investment in tractors for the production of soyabean was not attractive, in contrast to Southeastern Paraná, where the social conditions of production were very similar.

In practice the eligibility criteria used in awarding an integrated contract for chicken production (in the form of a technological package proposed by the industry) enhance the family character of production. As SADIA put it, the eligible farmer must (a) be "minifundist" working with his/her family; (b) produce maize; (c) be located within a reasonable distance

from the abattoir; (d) have a certain 'tradition' as a rural producer; and (e) have some financial reserve for investment (Sorj et al 1982:41). The family members' labour is relevant not only because they work without necessarily being remunerated, but also because it is believed that they would be more 'reliable' than wage labour. The commitment of family labour in pursuing the strict technological norms of production, together with all the surveillance needed during the whole biological cycle, would be more successful than a system run by an absentee landlord supervising a group of wage labourers. Besides, in such a system one can hardly engage women or children in their spare time, unless paid.

The production of maize for the industry not only avoids reliance on imports from other regions, at higher prices, but also is a means of reducing the return of empty lorries. The farmer's traditionalism is also a sort of guarantee that the integrated producer will not very easily quit the activity in difficult times. Outsider opportunistic investors tend to shift or abandon poultry raising when prices are not sufficiently rewarding. As for the traditional family farmer, the lack of an alternative investment option will force him/her to accept a squeeze on prices. Furthermore for the farmer who has invested in equipment and installations, very often the fact that he/she is still repaying the investment credit prevents him/her from simply quitting. On the other hand, these investments can constitute the farmers' actual strength in price disputes with these companies which are in a position to determine prices.

Already in 1979, in the wake of a price dispute, the first petty commodity producer organisation with economic and

political purposes emerged - the *Associação dos Avicultores de Santa Catarina* - ACRAVE (Campos, 1987:288). When the bulk of aviaries possessed by poultry raisers is considered, the magnitude of capital investment in installations and equipment is sizeable. The sum of these individual investments, and therefore the capital held by poultry raisers, put them in direct competition with processing companies. If industrial firms had decided to raise their own chickens, and absorb the farming segment, they would have had to sizeably increase their capital, bear all the risks inherent in the biological nature of production, and possibly work with higher costs than those incurred by petty commodity producers. According to Sorj et al (1982:43) there are additional costs to bear such as the payment of social security charges, which is normally exempted for family workers. These additional costs favoured the integration of family farmers with agro-industrial firms, for chicken and pig raising in Santa Catarina.

The social conditions of struggle between the processing companies and petty commodity producers (in the case of poultry raisers) were established by the oligopolistic position of the industry, which on the one hand controlled the supply of key raw materials, including fresh supplies of chicks, compound feed and the necessary technical assistance. On the other hand, poultry raisers were in the position to respond with their productive structure, including the total investment and risk-taking involved in the installation and aviary equipment, their increasing knowledge of how secure high productivity, and the flexibility of family labour combined with other economic alternatives.

The centre of the disputes revolved around the prices of

the product and the pricing of inputs. As an indication of just how crucial the pricing system can be, a complex method of price determination has been developed by different agro-business firms. A system of scores was reported by Paulilo (1987:209) who examined the case of the *Avícola ELIANE* company in the South of Santa Catarina, where technical efficiency in the process of production, measured by mortality rates, and feed conversion rates was the determinant factor of price variation. Two other methods of price calculation are described by Campos (1987:298-299) in western Santa Catarina. The first method use of a table which crossed feed conversion rates and the mean weight of the chicken flock, and applied these to the market prices of the chicken, producing the total price of the lot payable to the chicken raiser. The second method, used more variables to calculate a so-called Economic Efficiency Index (IEE), including the mean weight of the lot and the feed conversion rate, the age and the survival rate. The index corresponding to each lot of chickens differentiated the prices for the chicken raiser.

These sophisticated methods of price determination by different agro-business companies represented a sort of shield in their price negotiations with farmers, and an objective instrument of pressure to follow the strict technological procedures of production. Bad performance in production, be it the result of a climatic disaster or an epidemic disease, still left the onus on the integrated chicken raisers to pay related costs. In this sense, it is difficult to view these producers as household workers, remunerated by piece of produce; rather, they should be seen as small enterprises assuming all risks of production, albeit subjected to rigid

technical norms of production devised by agro-business firms and subject to their coercive monopolistic power. This 'rapport de force' evidenced in price disputes would be different in another social context of production as, for example, if only a few large enterprises produced the bulk of the output.

Given that the average cost of an equipped aviary was US\$ 17,000 in 1986³¹, the 650 chicken raisers integrated in *SADIA Concórdia* who between them owned 960 aviaries accounted for a total US\$ 16.9 million dollars; that is, about 10 per cent of the enterprise's net equity. The 1,240 chicken raisers integrated in *PERDIGÃO*, owned 1,389 aviaries totalling US\$ 24.4 million dollars, or about 19 per cent of the net equity of the company³². As chickens are not the only raw material for these firms, the strict magnitude of fixed capital invested in aviaries conferred a reasonable bargaining power on the petty commodity producers when they acted as a corporate body. The creation of the *Associação dos Criadores de Aves* (ACRAVE) in Chapecó, excluding the agro-business firms (Campos, 1987:292) illustrates, not only that poultry raisers were capable of autonomous corporate actions, but also that they had achieved a considerable level of political maturity. This was entirely new in rural movements in Santa Catarina. Campos (1987:293) contends that the price rise of 1979 was an outcome of the farmers' struggle, and the creation of ACRAVE.

³¹ Estimated from the average cost of an aviary at Cz\$ 240 thousand in May 1986 (Campos, 1987:301), divided by the official exchange rate of the dollar of Cz\$ 13.65.

³² Net equity values taken from EXAME-Melhores e Maiores, August 1989:64-66. Sadia Concórdia US\$ 70.7 million and Perdigão Agro-industrial US\$ 126 million.

This at first had provoked hostile attitudes from agro-business firms, but these subsequently moved towards a process of accommodation or a legitimised settlement. The crisis in the 1980s seems to have normalised relations, as the companies evolved more conciliatory forms of negotiation, in an attempt to ensure their profits.

Contracts prevailing in the 1980s were of a different nature. They were called 'share-raising', whereby part of the output entered the agro-industrial firm's 'current account' and part was remunerated according to market prices. The share of this free priced output depended upon individual performance (Campos, 1987:297). Poultry raisers gained some freedom from the bilateral relationship in the determination of individual prices, thereafter mediated by the market. Even so, this oligopolistic structure of the market restored to the agro-industrial companies the 'lion's share' of the surplus product. Therefore, the dispute between ACRAVE and agro-industrial firms occurred only over the question of the non-free or "current account" part of production, dictated by the vagaries of the technological indicator.

With the crisis in the world market reflected in the domestic market, which was already depressed by the low wage policy and thus the low purchasing power of consumers, the alternative was to produce more in an attempt to maintain farm income. This may be part of the explanation why production actually rose, in a period of crisis and low prices. Evidently, arguments pointing to the remarkable gains due to technological advances cannot be ruled out. Gains in productivity incorporated in the system of pricing used formerly and in the system freeing part of the produce to

market pricing, made them the main concern of the dispute between chicken raisers and agro-industries. Unlike Campos's view (1987:306-7), the corporate organisation - ACRAVE does not appear to have resulted from "*the chicken raisers' own relations of subordination [to agro-industries] (...) bringing about the basic contradiction of capitalism (...) [t]he contradiction between capital and labour*" but essentially from the contradictions between capitals. Although these external relations were essentially capitalist, internal relations remained dominated by family labour, with internal contradictions yet to be examined.

Integrated farming, such as chicken raising, as well as in tobacco and wine, creates a demand for absolute surplus labour, which otherwise would be expelling family members away from farming. The acceptance of an agro-industrial contract was determined by alternative social conditions for family labourers'; that is, conditions of a 'free' labourer in search of land who joined, for example, the landless movement. For integrated farm as an enterprise, its competitiveness comes from unremunerated family labour and/or the ability to increase automation technology and expand their aviaries.

In conclusion, I am arguing that in the social conditions (concentration of small farmers) prevailing in the South, especially in Santa Catarina, agro-industrial firms may include family labour as a strategy of growth. Relying on advanced high yield breeding technology, processing companies and petty commodity producers established a particular production relation known as 'integration'. This form of production appeared particularly resilient in the period of crisis, eventually outcompeting the formerly vigorous specialised feed industry - 'independent' producers form.

Mass fowl production with rising productivity and declining industrial costs, by squeezing petty commodity producers, might have contributed to sustaining the pace of production in the 1980s. The monopolistic position of industrial companies based on concentration of capital and the mastery of technology might have assured them the 'lion's share' of the surplus production in relation to integrated petty commodity producers. However, the productive capacity of the latter, with their risk-taking and knowledge of the production process, and their corporate organisation (e.g. ACRAVE) might equally well have conferred on them some bargaining power in the disputes with agro-business companies, which revolved around prices of the product and the pricing of inputs. These features refute arguments that petty commodity producers are disguised homeworkers, paid by piece. Rather, they might be seen as petty bourgeois producers investing capital and assuming the risks of production, albeit using family labour and being subjected to rigid technical norms devised by the agro-industrial firms. Therefore, these characteristics essentially suggest relations between capitals.

In the next chapter, I will discuss the contrasting case of bean production. Long viewed as a traditional peasant crop, bean producers were marginalised from the mainstream policy of 'conservative modernisation' and their production stagnated thereafter. Technological shortcomings were one of the main explanatory factors of this stagnation (Homem de Melo, 1982). The dominant commodity relations established between commercial capital, the State and petty commodity producers, will be discussed in the particular case of the Irati zone of Paraná.

CHAPTER VI

COMMERCIAL CAPITAL, STATE AND PETTY BEAN PRODUCERS

Recent transformations in the rural structure

Introduction

Unlike the soyabeans and poultry systems examined in the two previous chapters, the beans system is dominated by commercial capital, engendering forms of organisation with little space for industrial appropriation of rural labour. In the Brazilian case, beans and manioc seemed to be the crops which present most obstacles to industrial appropriation, resulting in technological gaps and undermining their capability to compete with soyabeans, for example. Petty beans producers were ousted by the 'green revolution' modernisation process, from the dominant soyabean/wheat system lands to less fertile and sloping lands in the southern region (Chapter IV). As a result, yield per hectare decreased, production stagnated and domestic supply of beans declined from 13.62 kilograms per inhabitant in 1973-75 to 11.58 in 1984-86 (FGV/IBRE/CEA, 1988:31).

A recent household spending survey (POF)³³ carried out by FIBGE, in 1987/88, revealed that the weight of food in the *Indice Nacional de Preços ao Consumidor* - INPC (National Index of Consumer Prices) fell from 42.81 per cent in the previous 1974/75 survey, to 33.10. The weight of beans in the composition of INPC, fell from 1.78 per cent in 1974/75 to 1.02 in 1987/88 (Exame, 31/05/1989:139). This might express a decreasing rate of consumption.

³³ POF stands for *Pesquisa de Orçamentos Familiares* (Household spending survey) (FIBGE/POF, 1989).

However, overemphasis of the possibly gloomy prospect for demand should not be allowed to overshadow or marginalise important changes which have taken place in the structure of beans production. These changes include further commoditisation, regional specialisation and increasing State intervention. In the 1980s, changes in market structure were distinguished by the following features: a) the transformation of the wholesale segment into a packing industry, integrated with the huge oligopolistic supermarket network; (b) the national unification of the bean market; and c) the increasing participation of co-operatives in the distribution of beans, encouraged by State price policy. In the structure of rural production, the apparent stagnation of beans output overshadowed the social differentiation of petty beans producers through commoditisation and technological changes in specialised zones. These topics are discussed in this chapter, using the case of Paraná, and more specifically the leading production centre of Irati. This zone specialises in the production of black beans for the Rio de Janeiro market - both as a centre of consumption and re-distribution.

6.1. Bean market structure.

The output of beans in Brazil stagnated at around 2,200 thousand tonnes per year from the triennial 1973-75 to 1985-87, and rose abruptly by 17 per cent in 1988-89. Regionally, the picture is very much the same, except in the North, where the increase was consistent. However, the two most recent frontier regions (the North and Centre West) were minor suppliers of beans, having barely produced nine per cent of

the total production in 1988-89 (Table 6.1). This long period of stagnation in the period of conservative modernisation has been interpreted by Homem de Melo (1983:226; 1985:275) as resulting from the discriminatory character of State policies, creating an *"unbalanced pattern of technological innovations"* between export crops and domestic consumption crops. Indeed, unlike soyabeans and chicken, yields per hectare of beans decreased throughout 1970s and 1980s, except for Southeast, where irrigation brought beans into a new technological and therefore competitive position (Table 6.2).

6.1.1 The emergence of modernised and specialised zones

The increasing modernisation of bean production and commoditisation led to the concentration of beans production and marketing in specialised zones.

In Irecê, for example, a bean production centre located in the *latifúndio* dominated Northeast, Wilkinson (1986:166) identified an enclave in which

"conditions for the commercial production of food crops by a small scale farming sector were improved by analog involvement of medium and large farms, which guaranteed concentration of infrastructure (...) and services (...) as well as a strong presence of agro-industrial capitals in the area (...)".

Encouraged by cheap, State-subsidised credit, commoditisation occurred in this specialised beans producer zone, more in the form of the use of casual wage labour and some industrial inputs, than in full mechanisation, which is limited to large producers, due to the low farm income prevailing among small producers (Wilkinson, 1986:195). Like the soyabean/wheat system in the South, land concentration accelerated with the intensification of mechanisation, which

replaced the manual labour force and favoured large tractor owner producers.

Table 6.1
Brazil - Bean output by region.
Period 1973-1988, triennial means. (in 1,000 tonnes)

Triennial	BRAZIL	North	Northeast	Southeast	South	Centre-West
1973-75	2248.5	25.2	736.2	509.4	839.3	138.5
1976-78	2108.1	33.0	600.9	510.7	803.4	160.1
1979-81	2164.3	34.2	544.8	660.0	813.1	112.2
1982-84	2367.8	60.2	603.1	680.0	886.4	138.0
1985-87	2257.6	77.6	702.7	629.3	710.4	137.6
1988-89 ¹	2613.5	98.3	914.0	724.5	724.5	131.5

Source: IPEA/IPLAN (1989)
(1) Biennial.

Table 6.2
Brazil - Bean yield in kilograms per hectare by region.
Period 1973-1988 triennial means.

Triennial	BRAZIL	North	Northeast	Southeast	South	Centre-West
1973-75	580	1129	426	436	514	568
1976-78	478	200	323	498	693	505
1979-81	468	557	298	558	649	368
1982-84	464	582	299	525	660	408
1985-87	423	583	289	546	548	419
1988 ¹	487	577	342	697	636	410

Source: IPEA/IPLAN (1989)
(1) Only one year.

In Itararé, in the state of São Paulo, Graziano da Silva et al. (1982) noted an intensification of capital together with technological modernisation, as the major factors causing social differentiation among categories of beans producers.

In the southern state of Paraná, several zones became specialised in bean production, and saw the emergence of a

semi-modernised category of commodity producers³⁴ in Irati (Munguia P., 1988:1), as well as in other specialised bean producer zones like Ivaiporã and the Southeast. Nevertheless, amidst traditional shifting cultivation zones, a commercial or market-orientation emerged as the prevailing dynamic of production, as, for example, in the Irati zone.

These specialised zones comprise three regions in Brazil, the South, the Southeast and the Northeast. They accounted for more than 90 per cent of production in 1988/89, and exhibited an intense process of commoditisation and social and technological change. In short, it was no longer the subsistence production of the agricultural frontiers which supplied urban markets, but the commercial production of specialised zones in the Northeast, Southeast and South.

This specialisation of producer zones also was accompanied by the modernisation of the marketing system, including infra-structural investments in roads - such as the *Estrada do Feijão Irecê-Salvador* - (Wilkinson, 1986:169), telecommunications (*Discagem Direta à Distância* - DDD linkages), storage facilities, and other public services, as well as the concentration of commercial and agro-industrial capitals which engendered the national unification of the bean market (IPARDES, 1990:73,197).

6.1.2 Bean market unification.

The structuring of a unified bean market in response to the demand from supermarket chains compelled regional

³⁴ Referring to the prevailing farming system, Munguia P. (1988:1) named these producers as 'mechanised family enterprises of beans and maize'.

wholesale sector to convert their assets into packinghouses and more efficient distribution facilities. The absence of industrial processing, in the sense of transforming the product, made beans packing - that is, converting the raw material into merchandisable goods - the key operation.

Table 6.3
Paraná - Destination of black and *rajado* bean by state.
Period 1983-1985, mean.

State	Black bean		<i>Rajado</i> bean	
	Tonnes	(%)	Tonnes	(%)
Acre	6.9	0.0	93.8	0.2
Alagoas	284.9	0.4	497.5	0.9
Amapá			5.0	0.0
Amazonas	135.6	0.1	206.7	0.4
Bahia	393.4	0.4	2738.1	5.2
Ceará	54.2	0.1	528.1	1.0
Distrito Federal	770.4	0.8	1241.5	2.4
Espírito Santo	2664.6	2.8	63.0	0.1
Goiás	1693.9	1.8	1280.5	2.4
Maranhão	76.4	0.1	33.1	0.1
Mato Grosso	158.1	0.2	1680.4	3.2
Mato Grosso Sul	631.3	0.7	1497.1	2.8
Minas Gerais	5094.4	5.4	5469.1	10.4
Pará	203.3	0.2	369.9	0.7
Paraíba	790.7	0.8	424.8	0.8
Pernambuco	2629.3	2.8	3705.1	7.0
Piauí	12.4	0.0	66.2	0.1
Rio de Janeiro	57905.2	60.8	268.2	0.5
Rio Grande Norte	2280.7	2.4	1266.9	2.4
Rio Grande Sul	4448.9	4.7	62.1	0.1
Rondônia	97.2	0.1	578.2	1.1
Roraima			23.8	0.0
Santa Catarina	3191.6	3.4	225.2	0.4
São Paulo	11445.8	12.0	29778.7	56.5
Sergipe	76.5	0.1	607.6	1.2
Fernando Noronha			6.4	0.0
Others	459.0	0.5		
TOTAL	95164.7	100.0	52667.1	100.0

Source: CLASPAR/IPARDES, 1990:47

TABLE 6.4
Brazil - Bean harvests by region.
1987/88 and 1988/89 harvests. (In 1,000 tonnes)

REGION	H a r v e s t s 1987/88				H a r v e s t s 1988/89			
	1st	2nd	3rd	Total	1st	2nd	3rd	Total
North	0.9	102.2	0	103.1	0.9	102.0		102.9
Northeast	60.6	814.5	0.3	875.4	49.0	751.1	27.0	827.1
Centwest	16.9	103.3	19.0	139.2	15.4	89.2	32.6	137.2
Southeast	278.1	323.7	127.4	729.2	239.1	259.9	174.0	673.0
South	831.1	72.6	8.1	911.8	518.5	118.8	7.4	644.7
BRAZIL	1187.5	1416.4	154.9	2758.8	822.9	1331.0	211.0	2364.9

Source: CFP, *Mes Agrícola*, June 1989.

One consequence of this unified national market has been the varying effect of different harvest seasons of specialised regional production centres on national prices. The latter, furthermore, are regulated by the *Bolsa de Cereais* (Cereal Stock Market) located in São Paulo and Rio de Janeiro, the destinations for *rajado*³⁵ and black beans produced in specialised zones in Paraná (Table 6.3).

However uneven in terms of the quantities produced in different seasons and regions, these multiple sources of supply worked in favour of government price policy (Table 6.4). Due to regional pattern of rainfall, since the bulk of the production comes from non-irrigated systems, production from the South is concentrated in the first harvest (January-February), Northeast output in the second (April-May) and supplies from the Southeast in both first and second harvests. In spite of the seasonal distribution of harvests, the third season harvest is small enough to create supply shortages, which begin about July. In the South, this is generally the month when government stocks are generally sold in the market to discourage price speculation.

In addition, State policy in the 1980s concentrated upon

³⁵ *Rajado* - brownish stripped beans characteristic of *cariquinha* variety.

price intervention in the wholesale market, using the minimum prices in conjunction with co-operatives, which increasingly strengthened their position in this market. This seemed to be particularly true in the period immediately following the food shortages in 1978 and 1979.

6.1.3. State policies and the market structure.

In the 1980s, food policy was implemented mainly through minimum prices. Price stabilisation, using price instruments like guaranteed minimum prices for producers, and price controls for consumers, does not appear to have been effective as prices remained unstable both in the long and short term. According to IPARDES (1990:37),

"to the succession of seasonal and off-seasonal harvests, complex climatic and agricultural policy interventions may occur".

Indeed, constant climatic hazards, such as the 1981-83 frosts in the South and the lasting drought in the Northeast (1979-83), aggravated what was already an unstable production and price situation. Thus, for example, in Irecê, the 1983/84 harvest was 80 per cent short and the 1985/86 harvest was reduced by 50 per cent, and the extreme price fluctuations experienced by producers and consumers suggested that State intervention in the market was ineffective, except for the short period of Cruzado Plan (IPARDES, 1990:37).

Because of the high susceptibility to environmental changes, beans were ranked as the third riskiest crop (following wheat and dry-land rice) for the purposes of insurance premiums paid to farmers (PROAGRO). The long run instability of black bean prices can be seen in Figure 4, with producer and consumer prices peaking in 1973 and 1981.

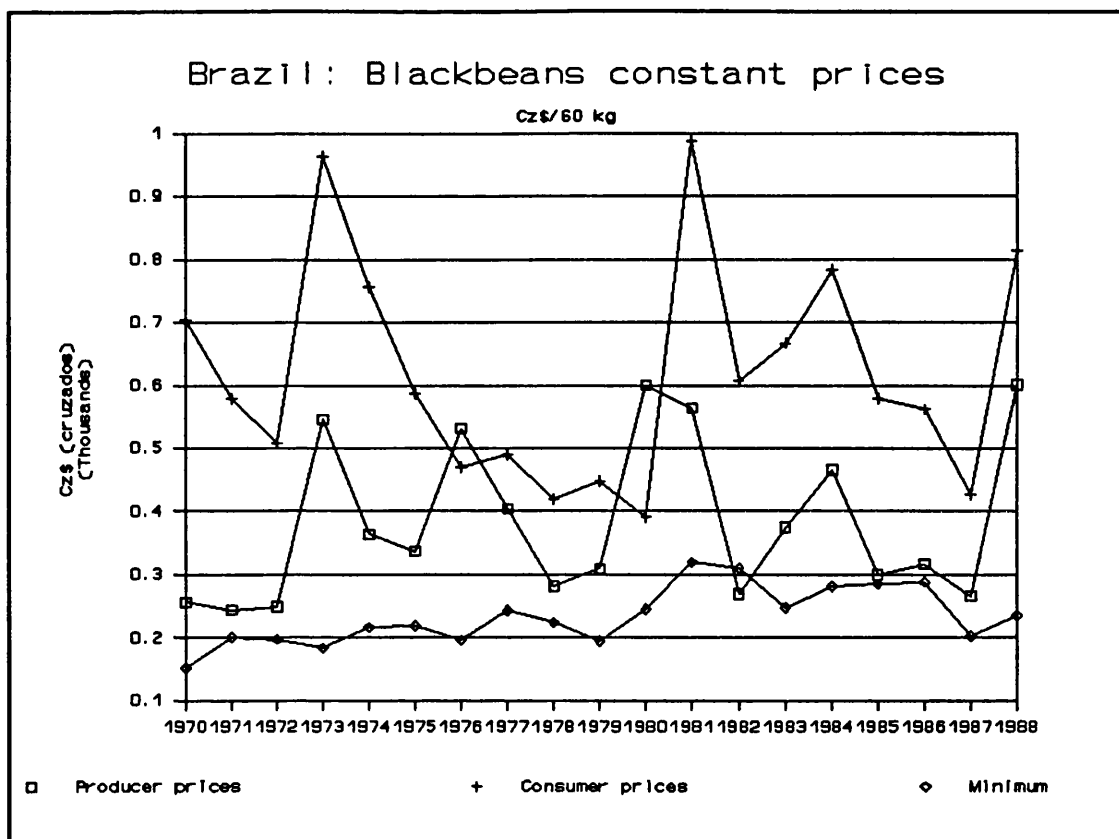


Figure 5 Brazil: black bean producer, consumer and minimum constant prices. Period 1970-1988.

Minimum prices in the 1980s, especially in the first half, stayed closer to producer prices, leading the government to make frequent purchases. State purchases occurred more significantly in 1982, 1985 and 1986. Not only the prices were volatile, but Romão (1982) suggests that the monetisation and rising costs of production were followed by decreasing yields (Table 6.2) engendering rising prices. Romão also suggested that this rise in prices of beans forced a reduction in consumption by the poorest segment of the population. Elsewhere (*Agroanalysis*, November, 1981:7) it was suggested that these price rises provoked the substitution of cheaper foods, either rice or pasta for beans. The same conclusion was drawn by the *Comissão de Financiamento da Produção - CFP/SEPLA* (1981:45) by comparing the price elasticities of demand of beans and wheat estimated by Ordinary Least Squares regression

methods.

Bean prices were particularly high in the 1980/81 harvest season, which encouraged some soyabean farmers to cultivate beans. The decreasing trend in per capita consumption of beans (which fell from 13.62 kg in the period 1973-75 to 11.58 in the period 1984-86) corroborate the high relative prices hypothesis and the substitution effects (already discussed in Chapter III). High relative bean prices, along with the downward pressures on international soyabean prices affecting local soyabeans producers, and in the context of a contraction of credit, were other factors encouraging capitalised farmers to produce beans.

6.1.4 State policies and the integration of co-operatives.

The 1980s saw the consolidation of a new structure of distribution of beans, through the transformation of regional wholesalers into beans packers, a change forced by the predominance of the oligopolised supermarkets in the retail market (Romão, 1982). In 1965, supermarkets held 10 per cent of this market but their share reached 51 per cent in 1981. Consequently, street markets and small retail shops, which were responsible for 70 per cent of retail sales in 1965, saw their share drop dramatically to 28 per cent in 1981 (Romão, 1982). These changes required a new packing system. Instead of distribution using 60 kg standard bags, which required an assistant to measure out quantities on a scale, the supermarket shopping system required a one kilogram packet of ready-packed beans, stamped with a quality standard and a brand. To meet these new requirements, wholesalers converted

their bag-filling units into packing plants. In this process of restructuring, the vertical concentration of commercial capital reduced the role of weaker agents (such as the local communities' small shopkeepers (*bodegueros*) or the itinerant truckers (*camioneros*), in the marketing chain.

A second characteristic of the beans market in the 1980s was the growing participation of co-operatives, boosted by the interventionist character of State price policy (IPARDES, 1983). As part of the process of restructuring the beans market, co-operatives were converted into tools of State intervention, especially in the implementation of EGF, AGF and Pre-EGF. This point will be shown in the next section.

6.2. Organisation of the market in Paraná.

6.2.1. Schemes of bean distribution

The distribution of beans from petty commodity producers to consumers follows two main operational schemes: Firstly, (Scheme I) there was the process led by wholesalers, who purchase beans directly from producers, or other intermediary traders, and then pack and ship the beans to consumer centre. The second scheme (Scheme II) consists of the government price regulation scheme of credit and purchase (including pre-EGF, EGF and AGF), storage, and distribution through commodity market auctions, or directly to the supermarket, mainly operating in the off-season (See Figure 6). The privileged operational agents in this case are the co-operatives, but large merchants owning registered storehouses were equally entitled to participate.

A variant of the wholesaler-led scheme encountered in

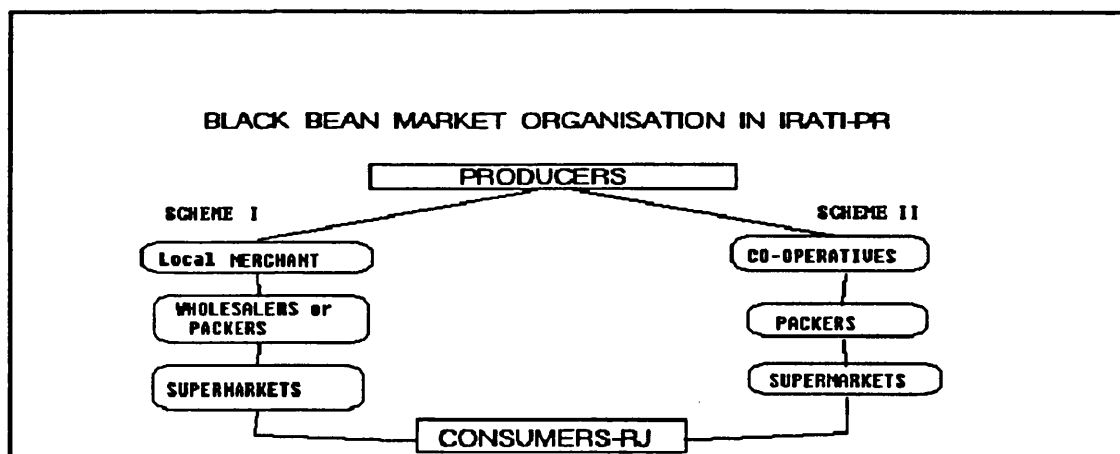


Figure 6 Black Bean Market Organisation in Irati - PR

Paraná entails the shipment of unpacked 60 kg bags to the Santa Rosa wholesale market (*Bolsinha*) in São Paulo from the Southwest and Ivaiporã (IPARDES, 1990:70).

Apart from these two schemes, beans marketing is marginal. For example, transactions with itinerant truckers, formerly important agents, have become occasional. In the market structure, a variety of agents operate the chain, from the direct producer to the regional packinghouses. Nevertheless, as the transportation infrastructure improved, small community shopkeepers (*bodegueiros*) eventually lost their role as bean traders. The extension of the co-operative structure (local storehouses) and a more effective system of purchasing tended to eliminate traditional relationships in most rural communities.

6.2.2. The effects of the State-co-operative scheme.

Government intervention worked either in order to regulate producer prices when the market prices fell below the minimum prices, by purchasing directly at these prices, or to regulate consumer prices by unloading its stocks (held in registered storehouses) directly to the supermarkets or to

public auctions. At these auctions, wholesalers of all kinds, have access to government stocks and become the major source of supply in the off-season, that is, from August to December in the case of Paraná³⁶. The effectiveness of intervention can be seen in the massive government purchase of the 1984/85 harvest. About 200,000 out of a total of 450,000 tonnes of beans were stockpiled by the *Comissão de Financiamento da Produção* - CFP, a State marketing agency³⁷, in Paraná alone.

From the perspective of a small family producer, the procedure for a sale in this government scheme looks rather intricate and long. It takes about 10 days from the first step of going to the bank (*Banco do Brasil*), which instructs the producer to deliver the merchandise to an authorised storekeeper who cleans, dries, bags and stock-piles it. Then, a classification officer is called to take a sample from the lot and seal it. The sample is analysed and the classification is completed by the issue of a certificate. The storekeeper issues a deposit certificate. With these two documents, the producer returns to the bank, and finally cashes in at least at minimum prices. However if the producer decides to leave open the alternative of taking the beans lot back for future business, at prices higher than the minimum, then the process proceeds as a loan (EGF).

The producer has up to four months to decide whether to convert into an AGF without any additional charge, or to repay the loan, with monthly interest and other charges, and sell

³⁶ Source: Author's interview with a wholesaler in Curitiba, interviewed in January 1986.

³⁷ Information from CFP, Paraná branch, 1986.

the beans elsewhere.

In conditions of high inflation, and with minimum prices rather closely aligned with market prices prevailing in the 1980s, most petty commodity producers opted for straight conversion to AGF. This was especially true in the years of good harvests, when market prices came down, triggering the government's minimum prices scheme of intervention. However, this intervention did not seem to have any effect on producer prices, at least in the short term. According to merchants in Irati, for example, this was what happened in 1982 when the market price at the beginning of the January harvest was Cr\$80.00, and then fell to Cr\$ 75.00 and remained there until April³⁸. In Irati, these months are the busiest period of commercial transactions in beans.

The procedure was just the same for co-operatives or individual storekeepers. However, insofar as the pre-EGF programme is concerned, co-operatives were the one-sided beneficiaries, as it provided operating credit to purchase small quantity-lots of beans from small farmers, associated or not with co-operative. The one per cent commission on the volume of credit used, later increased to two per cent (BACEN/DERUR-Com.1061, 29/6/87), was in itself an encouragement to take the credit but, above all, it boosted the co-operative's capacity to operate in the beans market. For example, *Cooperativa Agrícola Mista de Irati Ltda - CAIL*, for many years a discredited co-operative, with frequent crises, was able to restore its credibility by using the government scheme to operate in the beans and maize markets.

³⁸ Source: author's interview in 1985, Irati.

In the heartland of the best quality black beans - Types I and II zone - the CAIL managed to take up 234,000 bags (60 kg) of beans in the 1984/85 harvest, which meant about 35 per cent of total regional output³⁹. That particular harvest favoured the minimum price-takers (via Scheme II purchases) as market prices remained depressed during most of the harvest season. Nevertheless, significant business was made with the central co-operative - COCAP - to which CAIL was affiliated.

COCAP was the single largest supplier of black beans to the Rio de Janeiro market, with monthly deliveries of 320,000 to 360,000 bags (60kg), that is, around eight per cent of the total. COCAP began trading beans only in 1979 and in 1983 installed a packinghouse in Curitiba (PR)⁴⁰. This particular co-operative is an example of how competitive co-operatives became in the 1980s, even under the Scheme I operation of direct trading. All the largest supermarkets in Rio were supplied by COCAP. Again, the dominance of supermarket chains in the bean market was estimated by merchants as being between 70 and 90 per cent⁴¹. These estimates were close to a survey carried out by IPARDES in 1984 (IPARDES, 1990:23), which concluded that:

"in Curitiba, supermarket chains were considered the preferred commercial establishment by 64.7 per cent of shanty town dwellers, 54 per cent of poor areas (areas carentes) and 87 per cent of the middle class".

³⁹ Information given by the then vice-president of the co-operative in an interview to the author in December 1985.

⁴⁰ Information obtained in an interview with the manager of the COCAP Beans Department, in December 1985.

⁴¹ Among the merchants interviewed included beanpackers, bean dealers and co-operatives (December, 1985).

Therefore, the overwhelming encroachment of supermarkets, even in the most impoverished urban areas, seems evident.

In 1985, COCAP also supplied 40,000 bags a month to the expanding social programmes in Rio, which included school catering. This was a significant breakthrough for co-operatives, which were not taken as serious competitors because of the merchants' longstanding marketing links and almost captive clients nurtured in long years of business.

6.2.3. New marketing system for beans.

The introduction of brands and types was another new facet of the commoditisation process of the beans system which reinforced the regional specialisation of production. Due to the absence of industrial processing of the raw material, beans, the quality characteristics of the merchandise depend upon the state of the bean. That is to say, moisture content, the question of attack from insects and fungi, the time spent in storage which affects the cooking time, the degree of homogeneity, and so on. Beans are classed by type, ranging from the best - Type I - with higher prices, to type V with the lowest. The Irati zone was reputed to produce the best types, I and II. Conversely, *carioquinha* beans, from Ivaiporã and shipped to São Paulo, were often outclassed because of the high content of *grãos chuvados* (or beans damaged by excessive rain in the harvest season).

Packers' brands became a quality characteristic, which raised two major issues. Firstly, the emergence of an increasingly demanding market in terms of bean quality; and secondly, the dependence of bean quality on ecological and regional differences.

These quality aspects increasingly attracted retailers' attention. If under the previous system of non-identified merchandise, the origin of the beans was barely known, in branded marketing, quality became the packer's liability. One of the packers in Irati admitted that a shipment to a supermarket in Belo Horizonte (MG) had to be returned because of consumer complaints regarding mould infestation. This is not surprising as these beans were packed with a high moisture content - 17 to 19 per cent, as all the packers interviewed in 1985 and 1986⁴² admitted. The recommended moisture content for long storage is 15 per cent, and it is part of the code for all government purchasing schemes to restrict traded merchandise to that index. Differences in moisture content are the single most significant aspect in price negotiations for producers and wholesalers in the scheme I purchase. In the case mentioned here, this problem was transferred to the consumers, who bought beans with a higher moisture content. The risk of a mould problem is not so frequent, because normally the product is quickly consumed. In marketing terms, for the consumer, the higher water content meant a product which was easier to cook and fresher in appearance.

Second, the wet and dry harvest seasons of beans (*safra das águas* and *das secas*) normally extends from January to June, when commercial transactions between wholesalers (now transformed into bean-packers) and petty beans producers mostly occurred in the Irati zone. The merchant who specialises in a small number of commodities, in many cases only beans, in the off-season must rely on government stocks,

⁴² Author's notes from the interviews.

released in the commodity market (*bolsa de mercadorias*), where transactions are conducted through public auction. Usually bean-packers are represented in these auctions by an authorised dealer. The bean-packers establish their price limits and set out the possible storage location to the dealer. The managerial difficulties for bean-packers only concern the quality standard and the harvest year because of the constant transfer from one storehouse to another.

More importantly, State market price regulation by the above described mechanism was not entirely effective.

Consumer prices continued to fluctuate, and State intervention only mitigated price instability in the short term (IPARDES, 1990:32-38). In the commodity market, the government stockholder set the floor prices for the auctioneer well under the minimum prices, aiming to reduce consumer prices⁴³. However, once on auction, prices rose or fell under the pressure of the usual market mechanisms which normally entail price speculation and the constraints of retail prices control (*tabelamento*).

For the private sector (wholesale enterprises and co-operatives), the government's intervention in the off-season wholesale market represented, on the one hand, a guaranteed source of raw material to meet its sales deals, and, on the other, an impediment to speculative stockpiling. In a context of high inflation and high interest rates, the wholesale sector operating in the scheme I, has an interest in ensuring that the turnover of beans is as rapid as possible. This is in order to roll-over costly operating capital. Thus, for

⁴³ CFP/Regional Curitiba, December 1985.

example, according to the manager of the biggest bean-packer in Irati, in 1985 the firm was paying 12 per cent a month interest which was included in the costs⁴⁴. It follows that black bean prices in the speculative market must rise at a higher rate than the interest rate in order to make it a worthwhile business alternative. The point to emphasise here is that, in the new beans market structure, medium term stockpiling of beans became the government's burden. The wholesale and the retail sectors, constrained by government intervention and the context of high inflation and high interest rates, tended to turnover the merchandise as fast as they could. Likewise, commoditised family producers, tended not only to increase the share of marketed output but also to deliver to the market earlier.

6.3. Irati (PR): Modernisation of petty bean producers.

Irati is located in the Centre-South region of Paraná (South) in the so-called 'Traditional Paraná', where the extractive activities of pine timber and *erva-mate* once dominated the economy. Land was concentrated for centuries in the hands of a small number of landlords, and was inherited from the early colonial system of *sesmarias*, becoming particularly relevant for the late 19th century up to fourth decade of this century (Munguia P., 1988:8). These extractive activities, however, relied on family labour integrated into a *faxinal* communal system, and consisted of the common use of grazing land under the pine and *erva-mate* forested area

⁴⁴ Manager of the firm interviewed in January 1986.

(Chang, 1988:40-67). Enclaves of European, especially Polish, migrant family farmers producing foodstuffs were scattered throughout the region. The outcome was a polarised landownership structure, which ranged from landlords with cattle raising and extractive activities to small, family-based food producers (Munguia P., 1988:8). Ecological conditions discouraged extensive tractor mechanisation and conversion to the modern soyabean-wheat system, apparently leaving the farming system untouched. Combined with the *faxinal* animal rearing, subsistence crops were grown in shifting cultivation systems on the hillsides, most commonly with three to five years' fallow. Intercropped beans and maize were the main crops in this system. This extensive farming system involved harsh working conditions, beginning with the cutting down of fallow vegetation with a sickle and axe, followed by burning and sowing without ploughing. One or two periods of weeding and the harvest complete the whole production cycle. This is a system entirely based on family labour and naturally regenerated land fertility.

6.3.1. Technological changes in Irati zone.

In the 1970s, modernisation policy and the resulting capital intensification which marked Paraná and other southern states, affected the Irati zone differently. Migrant family producers expelled from intensely mechanised zones found space in Irati for their reproduction. Population pressure on land, and the growing commoditisation of household production and consumption, led to the reduction of fallow and therefore to the degradation of the shifting cultivation system. The limiting factor for intensification was the labour-intensive

operation of manual land clearance which, in fact, determined the size of the crop. Tractors and horse-drawn mechanisation of ploughing and harrowing, together with the credit system disseminated other elements of industrial production techniques, especially fertilisers. In this zone of particularly high acidic soil, lime powder dressing was essential in order to restrict soil degradation caused by the reduction of fallow.

In terms of genetic materials, or new varieties of black beans, the *Rio Iguaçu* and *Rio Tibagi* cultivars are widespread in this zone. These materials originated from the *Instituto Agrônômico de Campinas* (SP), and were adapted to this part of the specialised production zone, replacing old local varieties, although with seeds replicated year after year. As in any other case of genetically modified varieties, the best yield potential of these cultivars can only be achieved in tandem with those elements and conditions for which they are designed, that is, chemical fertilisers, chemical treatment of pests and diseases, good soil preparation (which implies mechanisation) and good rainfall distribution. When the required conditions were met the yield were usually higher than those previously achieved using local varieties. However, the risks have increased. Diseases such as Anthracnose (*Colletotrichum lindemuthianum*) and halo blight (*Pseudomonas phaseolicola*) can easily decimate the entire crop, and drought during the blossoming stage of the cycle can abort the flowers.

With the expansion of soyabean cultivation, another virus disease, called bean golden mosaic virus (*BGMV*) has attacked black beans. It is spread by the whitefly (*Bemisia tabaci*) and

is a common pest for soyabean. This specific virus attack can be tolerated by soyabeans but proves fatal for beans. In 1985, IAPAR (*Instituto Agronômico do Paraná*) recommended a new cultivar called *Rio Negro*, a high yield and higher pod insertion black bean cultivar designed to be harvested mechanically. In fact, the features of this cultivar were more appealing to large farmers. Indeed, some of them tried to integrate this cultivar into the modern cropping system by adapting the combine harvester's frontal platform (normally used in wheat-soyabean harvests) to black beans. For example, a large producer in Rio Azul did not manage to adapt the frontal platform, and preferred to use casual labour to manually cut and thresh his 60 hectare *Rio Negro* crop⁴⁵. The effect of the severe drought that year (1986) spoiled the yield, leading the farmer to submit a claim for crop insurance (PROAGRO). In this case, therefore, even the most advanced technology in beans production, recommended by the State research service, did not ensure the desired yield in the attempt to elevate black beans into the ranks of large-scale modernised production. In fact, the bulk of the Irati zone bean output is produced by a myriad of differentiated petty family producers. In the next section, the conditions of reproduction of categories of family producers will be examined.

⁴⁵ From the author's interview with the farmer in January 1986.

6.3.2. Differentiation of petty bean producers: the IAPAR/EMATER-PR survey.

In 1987, IAPAR and EMATER-PR carried out a cross-section survey which sought to characterise the predominant farming systems and social categories of farmers in four ecologically homogeneous areas⁴⁶ within the Irati zone⁴⁷. Geographical division and ecological characteristics of this zone are described in Figure 6 and Box 4. The size of the sample was 569 farms out of an assumed population of 17,500 (Munguia P., 1988:4).

Two of these Areas (A and C) possessed farming systems which specialised in black bean production, normally intercropped with maize. Indeed, in 1987, beans and maize accounted for 51 per cent of total gross output value in Area A, and 61 per cent in Area C (Table 6.5). In spite of these similarities, these two Areas differed significantly in terms of intensification, as exemplified by the use of industrial means of production and commoditisation. The other two Areas (B and D) were also highly distinctive. Area B specialised in large-scale soyabean production, and Area D, in large-scale extractive timber production.

⁴⁶ An ecologically homogeneous area was defined as a function of soils, climate, topography and cropping systems which were taken as homogeneity variables (Munguia P., 1988:10). Henceforth, for the sake of simplicity it will be simply referred to as an Area.

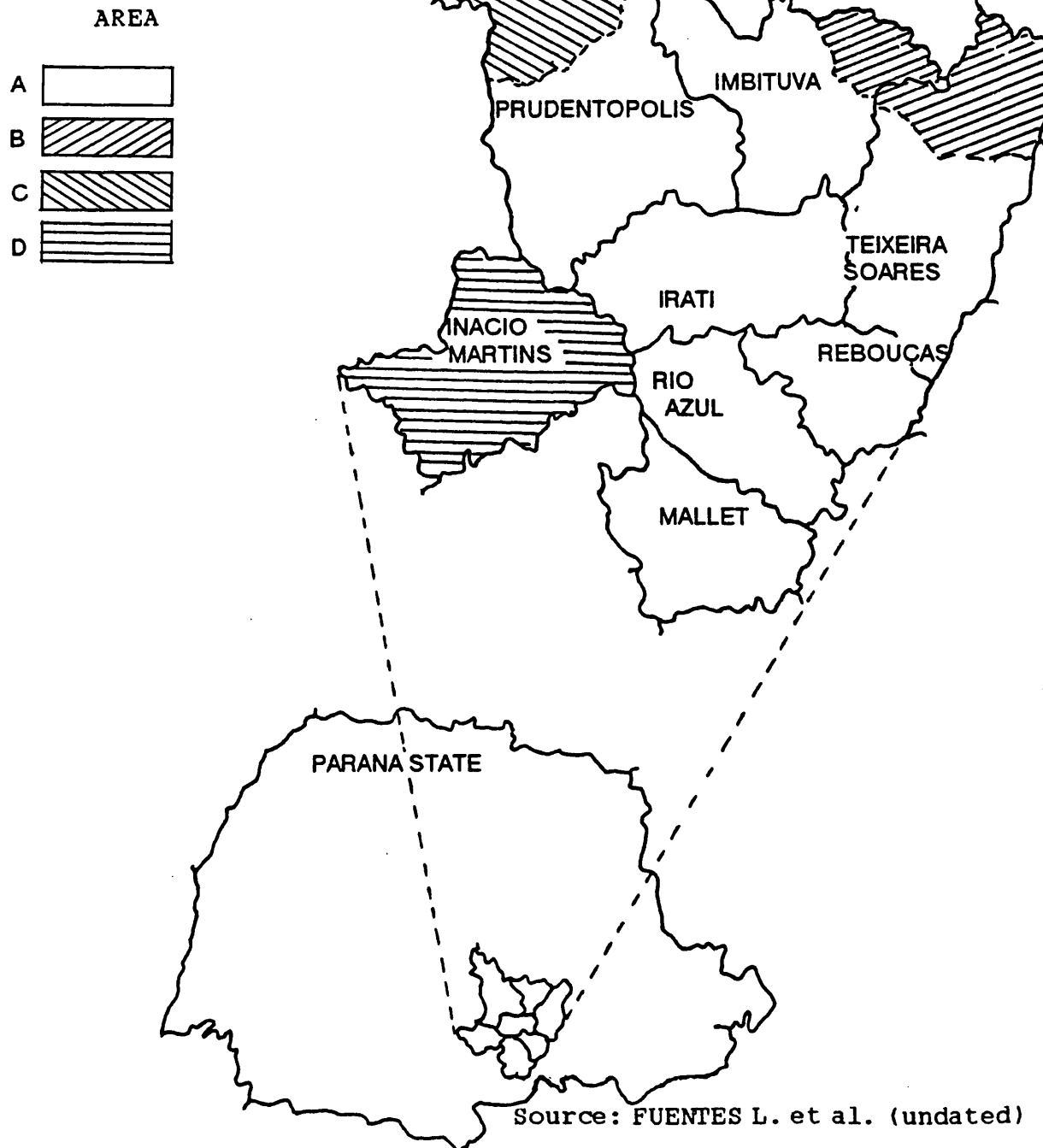
⁴⁷ For the purpose of the survey the Irati zone included eight municipalities covered by the extension service (EMATER-PR) unit centred in Irati. These municipalities were: Imbituva, Inácio Martins, Irati, Mallet, Prudentópolis, Rebouças, Rio Azul and Teixeira Soares (Fuentes L. et al, n/d).

Figure 7

IRATI ZONE: Ecologically Homogeneous Area

Group of farms	Number of farms
<50 ha	15,307
50-200 ha	1,956
> 200 ha	260
Total	17,523
Total Area (km ²)	8,293

Source: IBGE, 1980.



Box 4

MAIN ECOLOGICAL CHARACTERISTICS OF THE IRATI ZONE

Predominant Characteristics	Area A Irati, Mallet, Rebouças, Rio Azul, Imbituva, Prudentópolis South, T. Soares	Area B Imbituva North T. Soares North	Area C Prudentópolis North	Area D Inácio Martins
LOCATION	Second Plateau	Second Plateau (Campos P. Grossa)	Serra da Esperança (Transition between 2nd. and 3rd Plateau)	Third Plateau
NATURAL COVER	Sparse <u>Araucária</u> Wood	Native grassland	Tropical Forest	<u>Araucária</u> Wood
SOIL TYPE	Red-yellow dystrophic podzolic; Alic cambisols; and Alic brune earth.	Alic cambisols; Alic dark-red latosols.	Euthrophic lithosols	Alic cambisols; Alic brune earth; Alic lithosols.
CLIMATE	Cfb	Cfb	Transition Cfa/Cfb	Cfb
TOPOGRAPHY	Gently-undulated/ undulated.	Plain/gently- undulated.	Highly-undulated/ mountainous.	Undulated/highly- undulated.
FALLOW	Present	Absent	Present	Present
<i>FAXINAL</i>	Present but in desegregation	Present, but in desegregation	Absent	Present, but in desegregation
PREDOMINANT TRACTION FORCE	Animal	Tractor	Manual	Manual/Animal
MAIN ACTIVITIES	Beans, Maize, Pig and tobacco	Soyabean, Beef cattle and maize	Maize, beans and pig	Re-forestation and ' <u>erva mate</u> '

Source: FUENTES L. et al. (n/d) IAPAR.

Table 6.5
Irati zone: crop specialisation in different Ecologically
Homogeneous Areas, in percentages of gross output value.

OUTPUT	Ecologically Homogeneous Areas (Areas)			
	A	B	C	D
Bean	26	1	16	7
Maize.....	25	9	45	14
Soyabean	2	69	...	...
Timber	...	...	...	46
Pig	9	1	13	4
Poultry	7	...	4	...
Tobacco	7	1	...	...
Erva mate.....	5	1	...	16
Cattle	3	12 (Beef)	2 (Dairy)	8
Wheat	1	3	...	...
Rice	3	1	5	...
Potato	4	...	2	...
Onion	3	...	...	...
Honey	...	...	6	...
Other.....	...	...	...	...
TOTAL	100	100	100	100

Source: Elaborated from Munguia P. (1988:32, 52, 70, 90)/IAPAR-
EMATER/PR.

With regard to the social category of producers, the IAPAR/EMATER-PR study considered the existence of four farm categories based on the peasant unit concept, taken from Piñeiro and Chapman (1984:30), who state that:

"a form of establishing this difference [between peasant units and capitalist units and among peasant units themselves] is to take as a benchmark for the characterisation of peasant unit the concept of production unit based on family labour with direct access to land, whereby land and family labour are essential resources used in the productive process. In this way, the upper limit of peasant units, i.e. when these units are no longer peasant units, is given by a situation in which wage labour has a certain importance as a percentage of total labour, or the degree of capitalisation has reached the point at which constant capital is an important component of the means of production. Equally, the lower limit is given by a situation in which an important part of family labour is hired outside the farm unit of production and in this way takes the characteristics of semi-proletarian".

This approach used in the context of Irati zone resulted in the identification of the following categories:

- a) a peasant unit called the 'simple producer unit';
- b) a semi-proletarian unit which resulted from the downward decomposition of peasant units (lower limit);
- c) a family enterprise which resulted from the expansion of a hired-in labour force and/or constant capital (upper limit);
- and
- d) a capitalist enterprise, with no reliance on family labour (Munguia P., 1988:16-20).

These categories are similar to those used by Kageyama and Bergamasco (1989) and discussed in Chapter III.

The problems of this approach begin with the implicit assumption that the social differentiation of farmers leads to a polarised structure, with owners of the means of production and a labour force. This implies that, apart from the capitalist units, all other categories are transitional, fated to disappear as the differentiation process deepens through capital intensification. The results of the study themselves suggest, for example, that the prevailing large soyabean capitalist enterprises, with 97 per cent of the land in Area B, did not emerge from the upward differentiation of small peasant units, but from the extensive cattle ranches (Munguia P., 1988:59). The same applies to the large timber extraction enterprises in Area D, which from the beginning were integrated with timber industries. Other examples discussed in the preceding two chapters, also evidenced the persistence of modernised family farmers. Agro-industrial capital expansion in Santa Catarina, diffusing a highly technologically elaborated chicken production system, reproduced numerous integrated family units of production.

For the purpose of the analysis in this section, I will

adopt the same approach as used in Chapter III. Family units of production will essentially be categorised according to the relevance of wage labour. As mentioned by Wilkinson (1986:195), in the case of beans production system, the use of hired labour was the only form of commoditisation for those unable to fully mechanise their production system. I am considering that these social categories are produced by the particular form of capitalist development in Irati, without any necessary or pre-determined trajectory in the differentiation of peasant units of production.

a. Farm categories and marketed output.

When total marketed output is taken as a defining variable, distinctive ecological areas in the Irati zone correspond to distinct categories of farmers or producers.

Area A includes the city of Irati, to where most of the beans and other major products converge. Large bean-packers and the co-operative CAIL operate from this regional centre. In this Area, the category of family farmer with hired labour predominated, and accounted for 66 per cent of total marketed output in the 1986/87 harvest. A further 30 per cent of marketed output was produced by family farmers without hired labour. Clearly, other categories of farmers had little significance in the foodstuffs market (Table 6.6).

In Area C, which covers the North of Prudentópolis, a distant Area with poor communication facilities and public services, family farmers without hired labour predominated, with 63 per cent of marketed output. The remainder of marketed output was produced by family farmers with some hired-in labour, and by family farmers who hired out the family labour.

Those who hire out labour were designated as pluriactive farmers, because of their multiple sources of income. For these impoverished family farmers, short of productive resources, especially land and equipment, the labour market is as important to the farm as marketed output. Marketed output produced by this category was a significant seven per cent of production of the Area C, in the 1986/87 harvest.

Table 6.6
Irati zone - marketed output by ecologically homogeneous areas
and according to farm categories, in percentages.

Categories	Ecologically homogeneous areas (Areas)			
	A	B	C	D
1. Pluriactive farm ¹	2	0	7	1
2. Family farm without hired labour ²	30	2	63	10
3. Family farm with hired labour ²	66	0	30	11
4. 'Capitalist' farm (without family labour)	2	98	0	78
TOTAL	100	100	100	100

Source: Elaborated from Munguia P., (1988:34, 53, 72, 91) / IAPAR-EMATER/PR.

(1) Includes farms which hire out family labour, and farms whose income comes from outside the farm, except for capital investment income.

(2) In the source reference, these two categories were designated as 'simple producer farm' and 'family enterprise'. I have avoided these designations because of their possible confusion with similar categories already used in Chapter III.

In Area B, soyabean farmers, who mostly relied on hired labour dominated the rural economy, producing almost the totality - 98 per cent - of the marketed output. This Area is ecologically more suitable for heavy tractor mechanisation, favouring the development of technically more advanced systems

of production. These large farmers combined highly mechanised soyabean production with beef cattle raising, generally in plots not suitable for intensive mechanisation. Pluriactive farmers in this Area, however numerous, produced a negligible quantity of marketed output. The farm unit itself was reduced to subsistence gardens and a dwelling. Most of family income was derived from the urban or rural labour markets.

Finally, in Area D, forestry farms extracting timber and *erva-mate*, and integrated with agro-industries, dominated the rural economy. Family farmers in this Area were mostly directed towards *erva-mate* extraction and the cultivation of maize, consumed on the farm as a feedstuff.

For a more detailed analysis, I will focus on Area A and C, which specialise in bean production and are entirely dominated by family farmers.

b. Characterisation of beans production systems⁴⁸.

Basically two types of production system dominate Areas A and C: in Area A, the family farm with hired labour and specialising in beans and maize is dominant whilst in Area C, it is the family farm without hired labour, also specialising in beans and maize, which is dominant. In Area C, the pluriactive type of farm also has some significance in terms of marketed output. For the sake of convenience I will refer to them as Type I, Type II and Type III systems respectively. For the characterisation of these producers, I have selected

⁴⁸ Production system designate here the type of farm organisation defined basically by the nature of labour force and the product specialisation. Munguia P. (1988:35) in his report included other defining factors such as landownership, mechanisation, and source of income. In this analysis, we are using the stricter definition.

three sets of indicators. These indicators are related to: a) the farm size; b) the production or labour process; and c) the measures of economic efficiency (Table 6.7).

The results of the study summarised in Table 6.7 are generally consistent in terms of the characteristics of different farm types. First of all, the contrast in farm size between bean producing family farm types (75 hectares for Type I, 60 for Type II and 26 for Type III) and 'capitalist' soyabean farms in Area D (with a mean of 1040 hectares), reinforces the identity between family farm and small farm. The second identity is between the family farm and the production of traditional foodstuffs. This characterisation of family farms is still widely accepted. However, my aim is to focus upon the dissimilarities or the distinctiveness of family farm types, the relationships they establish among themselves and with agro-industrial and commercial capital. In the commoditisation process observed in the Irati zone, key social relations were mediated by the labour and farm output markets.

Table 6.7
IRATI ZONE - Characterisation of beans production systems - Selected indicators.

INDICATORS	Family Farm With Hired Labour (Area A) (TYPE I)	Family Farm Without Hired Labour (Area C) (TYPE II)	Pluriactive Family Farm (Area C) (TYPE III)	'Capitalist' Soyabean Farm (Area B)
01. Average farm size in hectares . . .	74.9	59.7	26.3	1040.2
02. Percentages of producers with hired land . . .	28	-	57	31
03. Cultivated area (temporary crops) in hectares . . .	31	9.1	5.8	167.7
04. Cultivated area in hectares per labourer . . .	8.3	2.8	1.9	21.3
05. Percentages of family labourer in total labour-force	89	98	99	19
06. Family size in man-equivalent . .	4.5	5.4	4.6	4.3
07. Percentages of producers using official credit . . .	64	3	0	54
08. 'Constant capital'-'Variable capital' ratio in minimum wages . . .	5.07	0.4	0.19	31.26
09. Mechanisation : 7.1 Animal draught -(per cent) . . .	-	3	-	-
-Plus hired tractor -(per cent) . . .	14	9	-	15
-Plus producer's tractor (per cent) . . .	73	-	-	-
7.2 Producer owned tractor (per cent) . . .	-	-	-	85
10. Percentages of producers purchasing industrial inputs	100	47	21	100
11. Shifting cultivation system: -Percentage of producers	55	97	50	15
-Area under fallow in hectares . . .	17.8	32.1	20.3	39.8
-Period under fallow in years . . .	3.2	4.7	3.6	5.5
12. Gross output value per labourer, in minimum wages (VBP/UTHE) . . .	42.6	16.9	10.5	128.6
13. Gross output value per hectare, in minimum wages	6.9	9.8	8.4	17.4
14. Disposable monthly income per labourer in minimum wages	2.37	0.63	0.57	8.37
15. Share of the system in total marketed output in the Area (per cent)	67	44	59	91
16. Main trading agents	Merchants, Co-operatives, "Camioneiros"	"Bodegueiro" ²	Neighbours, Merchants	Agro-industries Co-operatives, Merchants

Source: Munguia P. (1988:37,56,74,94), IAPAR/EMATER-PR.

(1) 'Constant capital' - includes only inputs, draft animals and tractors; 'Variable capital' includes the total labour force valued at minimum prices, which were Cz\$804.00 or US\$ 13.84 in the survey period - 1986-87 (Munguia P. 1988:21).

(2) Bodegueiro is a term which refers to the rural community shopkeeper who trades farm produce, and supplies farmers with consumer goods.

(3) Camioneiro is a itinerant trucker who buys farm produce and sells it on the wholesale market.

i. The Type I system.

The distinctive feature of the Type I family farm system is, by definition, its ability to hire an additional labour force. From this, two main variants are particularly relevant: a) mechanised and b) non-mechanised systems. My emphasis will be upon the mechanised system, which accounted for 60 per cent of total marketed output in Area A. The additional labour force and mechanisation were the key elements for the expansion of farm business, which means in this case the

expansion of cultivated area. This identity proved to be constant as so-called 'land productivity' did not rise in the mechanised system. Indeed, comparison of gross output value per hectare does not differentiate Type I system from others. They are very much the same in all the family farm types (Table 6.7, Indicator 13). This is probably part of the explanation why beans yield per hectare did not increase in all Regions of Brazil, despite the increasing 'industrialisation' of the production process (Table 6.2).

The size of the family labour force was 4.5 man-equivalents⁴⁹, which is similar to other family farms, and it represented 89 per cent of the total labour force used in the system. Each family labourer in the Type I system managed to cultivate 8.3 hectares of temporary crops, which is three times the area cultivated by family labourers in the Type II system. This ability to cultivate a larger area was achieved by the mechanisation of farm operations. Access to official credit (for 64 per cent of Type I producers in the analysed year - 1986/87 farming year) enabled them to capitalise their production system. Capitalisation occurred in the form of investment in tractors and other industrial means of production, which corresponded to five times the value of the total labour force (Table 6.7, Indicator 08). 87 per cent of Type I farmers used hired, or even themselves owned, tractors in addition to the animal-drawn equipment. In the continuous cropping system, the commonest system in this type in Area A, soil preparation and the harvest are the most labour demanding

⁴⁹ Man-equivalent is a unit of labour force corresponding to a male or female adult (considered as men or women over 14 years of age). Children in this case (that is, less than 14 years old) were counted as 0.5 man-equivalent in the survey.

and therefore size limiting operations. Tractor mechanisation is crucial for soil preparation, but technological shortcomings still impede the complete mechanisation of the harvest, as is the case for soyabeans and wheat, for example. Bean plants have to be manually reaped within a short period of time in order to avoid any eventual climatic hazards which can easily result in a deterioration of the grain. These factors make harvest operations very labour demanding for a short period of time, which cannot be met by using only the farm's family labour. This is why the hiring in of labour in this period is crucial, especially for those in this category with large cultivated area.

Animal-drawn equipment is more flexible and efficient for certain operations than tractors in the ecological conditions prevailing in Area A. Steep hillsides can only be cultivated with horse drawn implements. In this case, even the hard ploughing operation has to be done with an animal drawn plough.

Industrial inputs, especially chemical fertilisers, were used on 100 per cent of the farms. This is the method of restoring natural fertility, (both absorbed by plants and lost in the process of soil erosion) in the continuous cropping system prevailing in Type I farms. Soil erosion is aggravated by the heavy mechanisation, reducing the efficiency of the system, which barely equalled the natural long fallow method. In spite of this low efficiency, chemical and mechanical production technology for this type were the response to the growing difficulties resulting from the reduction of fallow period. These technologies secured the fertility regeneration of soils and the control of weeds in the shifting cultivation

system. The period under fallow was 3.2 years on average, the lowest of the farm types, and 1.5 years shorter than the Type II system in Area C. Although 55 per cent of Type I farms still had temporary crops under the shifting cultivation system, the trend was, nevertheless, towards abandonment.

One result of this production process was a higher rate of labour productivity than other family types. Indeed, gross output value per labourer was 42.6 minimum wages for Type I, whilst for Type II, the same index was only 17 minimum wages. These differences in productivity affected disposable income, which still contained a high self-consumption rate. For the most commoditised family types, one-third of consumption came from their own production. The main market relation was established with wholesale merchants and co-operatives, which means direct contact with the dominant capitals in the beans sector. It also means that State policies addressed to bean producers were at their fingertips, through those commercial agents. The survey results highlighted this type as the only commercial partner for co-operatives, which implemented most of the State policies in the foodstuffs sector, as discussed in section 6.3.

In summary, this modernised type of farm is similar to those found in Irecê (BA) by Wilkinson (1986:166) and Itararé (SP) by Graziano da Silva et al. (1982). Although in different objective conditions of production, dictated by the ecological constraints, the reorganised structure of markets and State policies created this modernised type of production system. However, persistent technological shortcomings hindered the rise in land and labour productivity, and consequently reduced the ability of beans producers to compete, for example, with

soyabeans producers.

ii. The Type II System.

The average size of the Type II farm is a little smaller than for Type I, but apart from this similarity, all other characteristics are distinctive.

By definition, this type relies entirely upon an internal labour force, neither hiring in nor hiring out labour, thus there is no relationship with the rural labour market. The inability to hire labour precluded one of the methods of expanding cultivated area, which stood at less than one-third of the Type I cultivated area (9.1 and 31 hectares respectively). This reduced cultivated area was not due to the size of the labour force, which was the same size as the Type I.

The lower cultivated area had more to do with the constraints of the cropping system on which this type relied upon. Only 12 per cent of the farms used animal-drawn equipment, of which 75 per cent could also hire tractors for heavy works. This incipient mechanisation is consistent with the overwhelming reliance upon a shifting cultivation system. Indeed, this cultivation system characterised 97 per cent of farms which had the biggest area under fallow among the family types - 32.1 hectares compared to the 17.8 hectares for Type I farms. Moreover, the average 4.7 fallow years were long enough to obtain effective soil fertility regeneration and weed control, which made the system sustainable. If the advantage of this system of cultivation was the possibility of using steep hillsides, which otherwise were of no value for farming, then the shortcomings are its strenuousness and

labour intensiveness, its need for long fallow periods requiring extensive farmland, and the impossibility of mechanisation. As a consequence, labour productivity in this system is very low and was reflected in the small cultivated area per labourer, of 2.8 hectares.

The above production process also explains the small gross output value per labourer of 16.9 minimum wages and in consequence, the low disposable income per labourer - only 0.63 of a minimum wage per month⁵⁰ - which indicates the level of poverty of these farm producers. In other words, family labourers did not meet the minimum wage allowed for urban workers. From a commercial standpoint, if the minimum wage were paid to all family labourers, the Type II farm would be making losses. This economic weakness precluded this type from increasing investment in machinery and chemical inputs and shifting to a continuous cropping system; in other words, converting to Type I farming. The only option in these circumstances is recourse to official subsidised credit which would enable landed farmers to intensify capital and transform the production process. In terms of market relations, this type was the most 'autonomous' of the family systems, with only 44 per cent of the total output being marketed. Its relations were mediated by the *bodegueiros*, local community shopkeepers, who frequently work as commercial agents for larger merchants in regional centres. This was the typical

⁵⁰ This indicator was calculated by summing gross output value, received land rent, and other income, such as off-farm job wages, and subtracting spending on inputs, land rent and hired in labour, and dividing by the total man-equivalent. This value was then converted into a monthly figure and regional minimum wage (Munguia P., 1988:30).

situation of farmers located in isolated areas such as Area C, which is badly served by roads and from which production very often could only be transported by animal drawn vehicles. Frequently these *bodegueiros* were also the main consumer goods suppliers, establishing personal links of dependence through indebtedness.

iii. The Type III System: Pluriactive Family Farms.

Land resources constituted the main constraint for this Type of farm. Of the average 26.3 hectares farm size, only 5.8 hectares were cultivated with temporary crops. The corollary of limited access to land was the reduced fallow period, which combined with the dearth of other resources, such as mechanised equipment resulted in the smallest cultivated area per labourer (1.9 hectares). Capital investment was barely 20 per cent of the value of the labour force, and there was no use of official credit. Some 50 per cent of farms used a shifting cultivation system, but the pressure on land reduced the period under fallow, resulting in additional hours of labour for the same final product. This is because the shorter the period under fallow, the lower the soil fertility and more difficult it is to control weeds. Consequently there is an increase in the amount of labour time devoted to weeding. The recourse to rented land, which occurred in 57 per cent of farms, was one alternative to the land constraint. The other alternative was off-farm employment, frequently in neighbouring farms, as temporary wage labourers. These pluriactive Type III farmers were the main source of the labour hired by Type I farmers. These labour relations are at the heart of the reproduction process of these two types of

family farms. These relations are also associated to others, including sharecropping and the dependence of Type III farmers on transport facilities provided by Type I farmers. Indeed, the survey indicated their neighbours as the main commercial partners for Type III farmers.

In summary, different family systems of bean production are integrated by labour, land and output market relations. In the case of family farms in the Irati zone, farm differentiation according to the nature of the labour force proved consistent. In this case, business size can be measured by using cultivated area as a proxy. This conclusion results from the similar performance in efficiency shown by mechanised and non-mechanised Type I farms (Table 6.8). The cultivated area is similar, as well as the economic results, and is evidenced by the disposable income per labourer - 2.37 minimum wages per month for the mechanised farm and 2.49 for the non-mechanised. The absence of mechanisation is compensated by greater availability of land which enabled the non-mechanised variant of Type I farms to maintain a long fallow period, and enlarge the cultivated area.

Table 6.8

IRATI ZONE - Comparison between mechanised and non-mechanised Type I systems, selected indicators.

INDICATORS	Family Farm With Hired Labour (TYPE I)	
	Mechanised (Area A)	Non-mechanised (Area C)
01. Average farm size in hectares	74.9	159.6
02. Percentage of producers with hired land	28	-
03. Cultivated area (temporary crops) in hectares	31	27.7
04. Cultivated area in hectares per labourer	8.3	6.0
05. Percentage of family labourer in total labour-force	89	75
06. Family size in man-equivalent	4.5	5.0
07. Percentage of producers using official credit	64	10
08. 'Constant capital' - 'Variable capital' ratio in minimum wages ¹	5.07	1.11
09. Mechanisation :		
7.1 Animal draught (per cent)	-	-
- plus hired tractor (per cent)	14	-
- plus producer's tractor (per cent)	73	-
7.2 Producer owned tractor (per cent)	-	-
10. Percentage of producers purchasing industrial inputs	100	80
11. Shifting cultivation system:		
- Percentage of producers	55	100
- Area under fallow in hectares	17.8	105.6
- Period under fallow in years	3.2	4.7
12. Gross output value per labourer, in minimum wages (VBP/UTHE)	42.6	36.0
13. Disposable monthly income per labourer in minimum wages	2.37	2.49
14. Share of the system in total marketed output in the Area (per cent)	67	61
15. Main trading agents	Merchants, and Co-operatives	Merchants and Camioneiros ²

Source: Munguia P. (1988:57,56,74,94), IAPAR/EMATER-PR.

(1) 'Constant capital' - includes only inputs, draft animals and tractors; 'Variable capital' includes the total labour force valued at minimum prices, which were Cz\$804.00 or US\$ 13.84 in the survey period - 1986-1987 (Munguia P. 1988:21).

(2) Camioneiro is an itinerant trucker who buys farm produce and sells it on the wholesale market.

In conclusion, compared to the two previous systems examined in Chapters IV and V, the bean system has some contrasting features such as (a) exclusive market connection (domestic market); (b) domination of commercial capital; and (c) technological shortfalls. Unlike the two previous systems, beans and other traditional foodstuffs were marginalised by the 'conservative modernisation' policy: production stagnated, yields per hectare decreased, and domestic per capita consumption declined. However, despite this decline, significant changes have been taking place in the structure of beans production, including further commoditisation, regional specialisation and social differentiation. Specialised zones such as Irecê in the Northeast, Itararé in the Southeast, and

Irati in the South, accounted for more than 90 per cent of total output in the 1988/89 harvest, largely replacing the subsistence production of agricultural frontiers in the supply of major markets. The 1980s saw the consolidation of a new structure of marketing, whereby traditional wholesale merchants were transformed into bean packers, a change forced by the predominance of the oligopolised supermarket chains. State intervention intensified in the 1980s, reinforcing co-operatives in the implementation of market regulation policies, although failing to reduce price fluctuations effectively.

The Irati case examined illustrates the social differentiation among petty commodity producers, with a diversity of forms of production, intertwined with land, product and labour markets. Among these forms, modernised family producers emerged as a predominant category of farmers in the supply of the bean market. The key element in the process of social differentiation was the ability to hire additional labour in the periods of high labour demand (soil preparation, harvest) which limit the expansion of cropping area, rather than industrial technology alone. Persistent technological shortcomings still hamper a rise in productivity, undermining the capacity of bean producers to compete with soyabean producers, for example. Mechanisation and the use of industrial inputs are technological elements which helped to enlarge the cropping area and therefore the business size. Nonetheless, yield per hectare remained similar to that of traditional shifting cultivation system, which is based only on natural fertility regeneration and intensive use of family labour.

CONCLUDING CONSIDERATIONS: POLICY IMPLICATIONS
FOR PETTY COMMODITY PRODUCERS

The focus of recent debates, both in the Brazilian and the international literature, on petty commodity production has moved from the process of decomposition towards emphasis on a process of constant adaptation.

From this initial assumption, the question of their conditions of reproduction becomes meaningful. These conditions are regulated by the basic relation of capitalism, and satisfied when producers are totally subordinated to the dynamics of generalised commodity production. Under these conditions, petty commodity producers or family farmers are reproduced under the same laws of competition and contradictions of capitalist commodity production. Some individual enterprises may be destroyed, others maintained or transformed into capitalist enterprises, creating diversified forms of commodity production.

Functioning under the same laws of capitalist competition, petty commodity producers are not intrinsically an exploited class. Their petty bourgeois way of controlling the means of production, albeit relying predominantly on family labour, entitles them to benefit from certain relations with other capitals and the State, in order to appropriate institutional rent arising from subsidised credit and other forms of rent transfer. If the terms of trade or relative prices move in favour of the farming sector, large and small producers benefit alike. From this standpoint, the emergence and competitiveness of capitalised family producers are not difficult to explain.

Conversely, because of their weakness, petty commodity producers are subject to all forms of extortion and 'squeezing' by different capitals and the State. For example, during the period of the 'conservative modernisation' policy, the expansion of capital in agriculture resulted in thousands of farms going out of business, expropriated in the process of competition: massive contingents of expropriated farmers flowed out of farming or were pushed towards marginal lands or to new frontier regions.

In Brazil, the diffusion of the 'green revolution' technology model was at the centre of the agro-food production policy. A particular conservative alliance based on large multinational companies, latifundists and the State implemented a technology-policy model of production and consumption, maintaining the concentrated land structure, which justified the expression 'conservative modernisation'. In this model of growth, subsidised credit was the key policy tool used both to consolidate the emergent agricultural capital goods industries and to transform the rural labour process.

Modernisation or 'industrialisation' of agriculture supported by subsidised credit was selective by regions and crops, as well as by markets and farmers. The model tended to privilege 'Fordist' products, in high demand in the international market and characterised by a high degree of industrial appropriation, such as soyabean and chicken. Conversely, products technologically less tractable to industrial appropriation such as beans, lagged behind, marginalising poor family producers.

The outcome of this process of social differentiation

engendered by the diffusion of industrially-based production systems, neither homogenised forms of production nor did it completely 'industrialise' the whole rural labour process. Rather, it created a diversity of forms of production, which includes family labour-based farms. The three cases examined in this study, soyabean, poultry and black beans, engendered the emergence of a capitalised form of family farming, illustrating the ability of the family farms to adapt to the conditions determined by the dynamic led by industrial capital and underpinned by State policies.

a. State policies in the 1980s: towards further internationalisation and price mechanisms of market regulation.

In the 1980s, the macroeconomic crisis associated with external indebtedness, balance of payments deficits and inflation led to the exhaustion of the subsidised credit-based modernisation policy. The prevailing orthodox approach to the crisis gave priority to the generation of trade surpluses in which the agro-food sector has been a vital component. The agro-food trade surpluses accounted for the payment of about 75 per cent of the gross interest due on Brazil's foreign debt in the mid-1980s. This positive trade balance in the agro-food sector resulted from exports to the 'Fordist' consumption sector in developed countries, the reduction of imports, and was also favoured by the reduction of domestic demand.

Policy changes began with the reform of the rural credit system, phasing out many internal and external sources of cheap credit. Concomitant measures of macroeconomic adjustment sought to eliminate the burden of subsidies on the public

deficit and the expansion of the monetary base. The reform also attempted to deal with the growing criticisms of rural credit, which questioned the efficacy of subsidies in promoting production growth and stressed the distortion of rural income distribution. It was argued also that low or negative interest rates stimulated credit substitution because of the interchangeability of financial resources.

The alternative to credit incentives took the form of price intervention mechanisms. This policy relied essentially on real increases in minimum prices (PGPM), including the ancillary tool of subsidised insurance coverage (PROAGRO) in order to reduce the risks of price and production fluctuations; that is, to stabilise the market.

The alternative policy of market liberalisation for agro-food commodities, discussed throughout the decade, was rejected because of the instability of the international market, with sustained low prices. Thus State intervention in the market had to be reinforced in order to handle production and price fluctuations. Frequently, price incentives for producers through higher real minimum prices led to upward pressure on consumption prices, which had to be cushioned by State spending. Indeed, government spending to support the PGPM and PROAGRO programmes increased in the period. Thus compensation payments to cover harvest losses cost US\$ 1,236 million in the 1981-1987 period (Table 4.10).

In the case of soyabeans, the unification of the market - export/domestic consumption - exposed the contradictions in the forms of State regulation, generating strong opposition, sometimes involving mass protests.

Specifically for petty commodity producers, the

subsidised credit policy worked effectively as a crucial instrument for capitalisation, but credit supply was reduced in the 1980s, especially for investment purposes. Access to this longer-term credit had played a vital role in the incorporation of new technologies, which enabled petty commodity producers to accompany the mainstream dynamic of modernised production.

The direct impact of minimum price policy on farm income is more difficult to assess, especially for petty commodity producers. Evidence provided by the survey carried out by CFP (Chapter II), referring to the access of small farmers to Minimum Price Guarantee Programme (PGPM) instruments, that is, AGF, EGF and Pre-EGF, indicated little beneficial impact. The access of small farmers to these policy instruments was poor, even in the modernised South, due to the inadequacy of these instruments in dealing with problems presented by small operational scale, the intricate structure of local markets, and poor means of communication.

Cases such as those of bean producers in the Irati zone reveal that PGPM instruments channelled through co-operatives caused differentiation among family producers as they were applied principally to the modernised fraction of petty commodity producers. These were not the largest group of producers numerically, but they were the largest suppliers of the black bean market in this zone. IAPAR/EMATER's survey in Irati showed that the poorest categories of bean producers had no access to marketing policies at all. This form of direct state intervention did not prevent price instability in the market. Against the interest of consumers, relative prices actually increased in the period, inducing substitution of

rice and wheat derivatives. This partly explains the decline in the per capita consumption of beans in a market skewed by the squeeze on the purchasing power of the working class, the main consumers of beans. Again, State policy worked for selected modernised producers, leaving behind a mass of resource-poor commodity producers. So, if the effects of State policies were minimal or marginal, what explains the upsurge of small farms and family labour in the first half of the 1980s?

b. The discussion on the upsurge of small farms.

The reversal of the former trend of diminishing numbers of small farmers revived the debate on agrarian transition by questioning whether it was a temporary effect of the macroeconomic crisis and the slowing down of the modernisation process or, alternatively, a more long term structural change.

Changes in employment (*pessoal ocupado*) and in farm units during the period 1980-1985 as discussed in Chapter III tend to favour interpretations which stress the macroeconomic crisis and conjunctural change, rather than any new structural trend. Most of the changes occurred in the poorest regions - the North and the Northeast - where the number of farms with precarious land tenure increased, as well as the number employed, more particularly casual and family labourers. As the growth was concentrated in the *microfúndio* farms (less than five hectare farms), the two phenomena seem to be related. That is, family labourers squeezed on *microfúndio* are forced to hire out their labour force. This explains the increase in the numbers of casual workers, together with those of family labour. Therefore, the integration of these

producers seems to have occurred through the labour market rather than through product market. As shown in the case of beans, changes in the labour market were the essence of the commoditisation process, not technological innovations. These movements suggest an increasing marginalisation from the mainstream process of agricultural accumulation, characterised by a policy of export promotion and trade surplus generation, rather than an active though minor participation in it.

In contrast, the pace of modernisation slowed down in the South and the Centre-West, reflecting the economic crisis, but without transforming the 'conservative modernisation' model. Closer integration into the dominant agro-industrial system made the capitalised category of family producers more capable of appropriating a share of eventual institutional rents and competing in the agro-food market. In sum, the crisis hit the poorest farmers and wage-labourers most severely.

c. Strategies of agro-industrial capital: the mastery of technology, capital concentration and diversity of forms of integration of petty commodity producers.

Soyabean expansion in Brazil arose from the diffusion of a peripheral variant of the 'Fordist' model of agro-food production and consumption, based on 'green revolution' technology. Soyabeans provided one of the most effective vehicles for the diffusion of industrial technology in agriculture. This diffusion process was also an element of capital concentration in the oilseed processing industry, at first reinforcing multinational capital inflows and later accompanied by investment by national capitals, including co-operatives. Specialisation and mass production of soyabeans to

the exclusion of other oilseeds, facilitated the introduction of giant crushing plants, and the modernisation of methods of extraction. Farm production, however, was left to the farmers, without any attempt at direct vertical integration.

In the poultry system, the strategy of agro-industrial capital revolved around the genetic control of the production of hen matrices by breeding industries. Large international capital converted technological mastery of genetics into the cornerstone of the 'industrialised' poultry system. The high level of industrial appropriation and homogeneous technology production achieved in this system, allowed rapid diffusion worldwide. The association of international breeders and national hen matrix-raising industries, maintaining the external dependence on 'grandmothers', facilitated capital concentration in this sub-sector, later evolving into vertical integration with the meat processing industries.

In Brazil, the period of dynamic growth in production was championed by the compound feed companies. In the 1980s, the movement of capital favoured the meat processing industrial firms, which were concentrated mostly in São Paulo and southern Brazil. In São Paulo, the competitiveness of specialised feed companies was reduced because of new factors, such as technological advances in computer software, *premix* production, which enabled 'independent' farmers to produce their own compound feed. In contrast, and unlike the case of soyabeans, in the southern state of Santa Catarina, the strategy of growth in poultry production privileged the vertical integration of small farmers, which held the key to their success against the competition with 'independent' farmers in São Paulo, especially in chicken-meat production.

The adherence of the producer co-operative - COPERCENTRAL - to the high-yielding poultry raising system was explicitly intended to create business opportunities for the group of smaller farmers.

In the case of beans, concentration of capital occurred in the distribution sphere, that is, the wholesale and retail market. The process of 'industrialisation' of the commercial sector transformed raw material wholesalers into brand-name beanpackers, whilst the retail market was increasingly dominated by supermarket chains.

Capital concentration and oligopolisation was the common feature in the three commodity systems examined, but in relatively autonomous processes, implying distinctive dynamics of growth.

d. Dynamics of change and social differentiation.

From the cases examined in this study, changes in rural social structures in the 1980s reinforced the diversity of forms of production.

The technological gap between soyabeans and black beans contributed to the marginalisation of the latter, but without impeding technological change and internal social differentiation. The case of Irati discussed in Chapter VI illustrates this point, reproducing a rural structure similar to that described by Wilkinson (1986) in the case of Irecê bean producers. In both cases, the capacity to hire labour was the main element of social differentiation of producers, rather than farm size and mechanisation. In fact, mechanisation in this case would mean the replacement of hired labour, thus reducing employment.

Irati is an example of a specialised production zone and traditional supplier of black beans to the large urban market of Rio de Janeiro. Productive structures in this traditional zone underwent a process of modernisation, differentiating the dominant form of family production. As we saw in Chapter VI, this process engendered three major types of production systems, according to their labour relations. Production growth resulted mainly from the extension of the cultivated area, achieved either by mechanising the farming system or by increasing the number of labourers in the system, especially in the critical periods of weeding and harvest. This is illustrated by the similar characteristics of farms using hired labour, irrespective of the intensity of mechanisation in the labour process.

In summary, different family systems of bean producers were integrated by labour, land and product market relations. The nature of labour relations proved a consistent criterion to differentiate forms of production, and cultivated area a useful proxy to farm size.

The case of the poultry system in Santa Catarina was a homogeneous category of integrated commodity producers. The expansion of capital and farm production occurred as a result of the replication of standardised aviaries and technology, rather than capital concentration among farmers or agro-industrialists. In fact, family labour was one of the main factors explaining the competitive capacity of the poultry system which, together with gains in productivity, allowed declining real consumer prices and production growth in a period of economic crisis.

e. Social movements and land reform.

In the 1980s, rural social movements in Brazil were marked by the emergence of mass demonstrations of discontent by the capitalised category of commodity producers, which legitimised co-operatives as a powerful political mediator. The conditions of reproduction of these producers were greatly affected by State policies of production and consumption. On many occasions, their demands coincided with those of large capitalist farmers and agro-industries, such as the campaign to lift tax exemptions for exports. This identity of interest against State policies frequently united petty commodity producers, large producers and agri-business in joint demonstrations, such as those held in Rio Grande do Sul "*Grito do Campo*" and protests against the 13 per cent export tax. These events tended to obscure internal contradictions within the agro-food system. The other side of this process was the concomitant upsurge of expropriated family labourers arising from the transformation of the rural labour process. A combative mass of landless workers, noticeable in the modernised southern region from the late 1970s, constituted the most visible social base fuelling a renewed demand for agrarian reform, which had long maintained a low profile under the repressive military regime. Ironically, the revival of the agrarian reform issue occurred in the modernised South with the Landless Movement, not in the *latifúndio*-dominated Northeast and North, where the land conflicts victimise thousands of peasants and their leaders, as well as indigenous peoples.

Price disputes remain the most sensitive element of the relationship between integrated poultry producers and agro-

industry. Agri-business firms use sophisticated methods of price determination, which represent a sort of "shield" for agro-industries in price negotiations with raisers, and an objective instrument of pressure to enforce strict technological norms of production. Bad performance in production, be it the result of climatic disaster or an epidemic disease, still leaves the onus of paying the related costs on the integrated chicken raisers. This point reinforces the view that these capitalised raisers are not household piece workers as in the industrial putting out system.

In the case of the poultry system in Santa Catarina, petty commodity producers undertake production risks, albeit subject to the rigid norms of production dictated by the agri-business firms and which are thus subject to their coercive monopolistic power. The emergence of the integrated producer association - ACRAVE - illustrates the ability of chicken raisers to take autonomous corporate actions. The recent introduction of the "share-raising" method of integration gave greater 'autonomy' to these integrated producers, who accepted more risks, especially those arising from price fluctuations. A depressed market and low prices compelled farmers to further increase their production in order to maintain their income.

Different structures of production encourage new forms of social struggle, as we saw in the case of soyabeans and poultry. The vertically integrated poultry system in Santa Catarina produced an interesting case of a farmers' political organisation - ACRAVE - created during the price dispute with the agri-business firms. ACRAVE reveals the political and social identity of integrated poultry raisers in Santa Catarina, which was legitimised by their common opposition

against the monopoly power and control of technology. The legitimization of co-operatives as political mediators of petty commodity producers is a logical extension of their role as suppliers of industrialised means of production and as providers of farm marketing and processing services. The integration of petty commodity producers in movements which directly affected these conditions of production, and therefore the level of competition, were much in line with their capitalist demand for better prices for their produce, and therefore the reproduction of capitalist relations of production.

f) General remarks.

The strategies of industrial/commercial capital and the State policies are central 'external' factors determining the conditions of reproduction of petty commodity producers. That is, industrially-appropriated technologies underpinned by State policies were central factors in producing rural social change. However, the transformation of rural labour processes was partial, reinforcing the "natural constraints" thesis of technological change in agriculture. Even in a sector in which highly advanced, internationally-standardised technology is replicated, production was not transformed into an industrial-like process which undermines support for the 'real subsumption' thesis. The poultry system, for example, evolved into different forms of production, as in the case of 'integrated farmers' in Santa Catarina, and 'independent' capitalist farmers in São Paulo. Modern poultry farmers were practically 'invented' by agro-processing enterprises as a deliberate strategy of capital expansion in the social and

historical conditions of Santa Catarina. Yet technological monopoly exerted by the agro-industrial sector to some extent is undermined by the capacity of adaptation of petty commodity producers. That is, to increase their capacity of investment and organisation, to improve their knowledge about new technologies and therefore, increase control over the labour process. State policies to finance the acquisition of industrial capital goods, such as tractors, harvesters, aviaries and equipment, at subsidised interest rates certainly create an enormous market for industrialists, but also reinforce petty commodity producers' bargaining power. As a result, their identity as commodity producers becomes more visible within the commodity systems. In this sense, these producers frontally differ from the modern industrial homeworkers.

In contrast to the thesis of capitalist expansion creating new productive 'spaces' for petty commodity producers, the general effect of the economic crisis on resource-poor farmers and wage labourers in Brazil in the 1980s was one of marginalisation, obliging them to find refuge in tiny plots as a mechanism of survival. In the period of rural credit shortage, reduction of urban real wages and unemployment, dispossessed labourers are subject to all sort of pressures, including low rural wages and stricter land use contracts. These labourers are mostly integrated with the 'industrialised' production process via labour market. Despite the implementation of integrated rural development projects and differentiated rural credit for small farmers and other initiatives, subsistence production never gained importance in the food market.

In sum, the reproduction of petty commodity production is a process resulting from constant competition which involves petty commodity producers themselves, the State and agro-industrial capitals driven by their social endeavour to dominate nature and transform agriculture.

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This thesis is basically aimed at two main objectives, that is:

- (a) to show the changes in the agro-food policies dictated by the macroeconomic crisis in the 1980s, and the possible consequences for petty commodity production; and
- (b) to show how petty commodity producers adapt to the changing conditions of reproduction determined by technological innovation, shifting State policies and the restructuring of agro-industrial capital.

This thesis is based chiefly on secondary sources. However, additional qualification is necessary to understand the research procedure. With regard to the first objective, the capturing of changing policies and the consequences for petty commodity production required data for the discussion of rural credit, minimum prices and structure of agricultural production. On rural credit, basic data were provided by the Statistical Division of the *Banco do Brasil* and the Department of Rural Credit of the *Banco Central do Brasil*. Basic data for prices were provided by the *Comissão de Financiamento da Produção* (CFP), a State executive organisation for agricultural price and marketing policies.

Changes in the structure of agricultural production in the 1980-1985 period were identified by using IBGE Agricultural Census data. As the full 1985 Agricultural Census is yet to be published, the analysis was only possible by using special tabulations, worked out by José Graziano da Silva and Angela Kageyama (UNICAMP), who have kindly made them

available to me. Their method of defining farms ('establishments' in Census terminology) according to labour relations, which I have adopted myself, provided a forceful explanation of the nature of the transformation in agriculture, especially the upsurge of small farms in the period 1980 - 1985. On this, further methodological details are offered in Chapter III.

The second objective was dealt with in three case studies namely, soyabean, poultry and bean systems. In the treatment of these cases, a considerable part of the discussion is based on my professional experience as an agro-economist in southern Brazil, particularly in Paraná. This experience comes mostly as a researcher at the *Instituto Agronômico do Paraná - IAPAR*, a state-run agronomic research organisation founded in 1973, during the period of euphoria of the capitalist expansion in agriculture under the conservative technological modernisation policy. Soyabean epitomised this process, as a powerful vehicle for the diffusion of industrial technology in agriculture. Adaptive research for the 'green revolution' model was very much a priority. The economic success of production expansion was at the expense of peasant expropriation and outmigration, apparently suggesting the triumph of the "Junker" road strategy. However, the countervailing emergence of capitalised family producers and the partial nature of the modernisation process, have made soyabeans and beans contrasting examples of adaptation of petty commodity production in the face of the high-technology policy model. The expansion of soyabean production and the transformation of agriculture in Paraná, was the subject of my M.Sc. thesis, submitted to the *Centre de Hautes Etudes*

Agronomiques Méditerranéennes de Montpellier (Shiki, 1983). For the purpose of the present thesis, relevant arguments were drawn from the field research carried out for the M.Sc. thesis, and updated with recent contributions on the subject, particularly Leclercq (1987), Brum (1988) and Ryff (1988).

The bean system illustrates a contrasting case of a marginalised product, always identified with 'backward' peasant farming systems, produced with traditional technology and the supply of basic foodstuffs to the poor urban population. As such, the Northeast would be the natural location for such a case study. However, John Wilkinson (1986) has already produced an excellent book examining the case of bean producers in Irecê (Bahia) and the impact of POLONORDESTE projects. Therefore, a comparative case in the South appeared more interesting. Supporting this last point, the selected Irati case (Paraná) would provide evidence of the other facet of the modernisation strategy, the marginalised producers ousted from their land or trapped on poor quality land, side by side, in the South. The existence of these economically depressed and poor areas in the modernised South became a concern which made IAPAR create a research programme called 'Production System Programme' in a context of a broader rural development project - PRORURAL, financially supported by Inter-American Development Bank and state fund. This programme, which I helped to formulate and carry out until my departure for England, provided information and personal experience for the beans case study. The Programme's multi-disciplinary research team included agronomists, veterinary physicians and social scientists, carrying out cross-section surveys, follow-up surveys and on-farm trials, mostly

concentrated in the Irati zone. My participation was on cross-section and follow-up surveys and studies on bean market structure, which formed my background knowledge for the understanding of the beans production process and farmers' relationships with commercial capital. My involvement in the programme was also a decisive factor which allowed me the benefit of using research reports, as for example, from Chang (1988), Munguia Payés (1988) and Fuentes Llanillo et al. (n/d).

Finally, the poultry system case was chosen because of the high level of industrial appropriation involved in farming, which would encourage capital concentration and the progressive demise of petty commodity production. Increasing mass production, especially in broiler production by small family raisers integrated with processing firms in Santa Catarina, is an interesting case of the adaptation of family farmers to the capitalised process of production, competing and contrasting with the large production system in São Paulo. The study of this case included field research in July-August 1989, consisting of interviews with farmers, industrialists, co-operative leaders and researchers at the *Centro Nacional de Pesquisa de Suínos e Aves - CNPSA* (National Research Centre for Pig and Poultry) and the *Empresa Catarinense de Pesquisa Agropecuária - EMPASC-Chapecó* (state agronomic research centre). These interviews complemented studies already available, especially those of Sorj et al. (1982), Campos (1987) and Paulilo (1987).

In summary, all the case studies involved direct contact with concerned social agents at various stages of the analysis, though not in a systematic fashion.