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The Farm/Non-farm Interface with Special Reference to Rural Brazil

INTRODUCTION

This paper reviews the interface of the farm and non-farm sectors in Brazil, and the extent to which this interface has facilitated or impeded agricultural development both in the aggregate and within certain regions of the country. The farm and non-farm sectors are interrelated through a number of markets. In this paper agricultural output, purchased inputs, labour, capital and land markets are specifically discussed. Recent changes in the manner in which the sectors interface, especially as related to government policies, and their effect on the development process, are presented.

In order to understand the farm/non-farm interface in Brazil, it is essential to keep in mind that various market imperfections exist – some of them induced by government policies – which prevent the equalization of factor prices and real income in each sector in each region.

As suggested by Schuh[15], as an economy develops the agricultural sector tends to experience a relative decline in farm income. This is a result of the particular shifts in the demand and supply relationships that are imposed on the agricultural sector during the development process. Consequently, markets tend to be in disequilibria as development occurs.

BACKGROUND: THE DEVELOPMENT STRATEGY[1]

Until the 1920s agricultural exports (mainly coffee) represented the most dynamic sector in the Brazilian economy. Between 1920 and 1928 the annual growth rate for agricultural export products was 9 per cent while that of agricultural production in general was 4.5 per cent and of industrial production only 3.9 per cent. Economic expansion, based on the growth of agricultural exports, lost its dynamism with the onset of the

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1929/33 World Depression which severely reduced Brazilian exports, particularly coffee.

In the 1930s industrial production began to replace agricultural exports as the dynamic sector in the economy. The total recovery of the Brazilian economy from the Depression was not achieved until the 1940s, but then further expansion of the economy was prevented when World War II cut off trade routes. During the war period, the difficulties in obtaining foreign goods resulted in an unsatisfied domestic demand and stimulated an import-substitution effort, particularly for industrial goods.

The import-substitution process, however, had a timid beginning. At first, because of import difficulties, it was based primarily on the more intensive utilization of the existing production capacity. Later, after the war was over, incentives for industrialization were given second priority relative to policies intended to alleviate internal inflation. The exchange rate was significantly overvalued throughout most of the postwar period. This tended to encourage imports and discourage exports.

It was not until the 1950s that an explicit industrial development policy was formulated. However, the existing tariff system did not provide effective protection for the domestic industry and the overvalued exchange rate gave an implicit subsidy to imports. Initially the import-substitution development strategy was largely an effort to reduce the balance of payments difficulties that Brazil was facing rather than to encourage industrial development as a dynamic source of growth in the Brazilian economy.

In the mid-1950s Brazil's industrial development policy was based on: (1) import-substitution, protected by tariffs on imports and foreign exchange subsidies for the importation of capital goods; (2) a foreign exchange policy, which acted as a mechanism for the transfer of resources from the agricultural sector to the industrial sector; (3) an inflow of foreign capital, which was given incentives for direct investment, and (4) inflation, which in so far as it provided a mechanism for resource transfer from the private sector to the public sector and an income transfer from labour to the entrepreneurial class.

The result was an accelerated rate of growth in the period 1957 to 1961. While the industrial sector grew at an annual rate of 12 per cent, the agricultural output grew at only 4.9 per cent. This generated a series of distortions in the 1960s: (1) oversized plants, with idle capacity and a high unit cost of production; (2) a low level of investment in social services, and (3) a high rate of inflation, which finally led to a slow-down in growth and a recession. In 1963 industrial production declined 0.5 per cent and the gross national product grew only 1.6 per cent, which implied a decrease in per caput income, since the population grew 3 per cent. The rate of inflation reached 81 per cent in 1963 and 92 per cent in 1964. From 1964 to 1967 the government adopted stringent policies to check inflation.

It was not until 1968 that recovery began. Again, difficulties with the balance of payments dictated the industrial development strategy. With minor exceptions, import-substitution was no longer the dynamic centre of industrial development. An expansion of exports became the primary policy objective. A system of flexible exchange rates was introduced and fiscal incentives for exports were granted.

The period 1968 to 1973 was characterized by a high level of economic activity. The annual rate of growth of the gross national product was over 10 per cent and, due to favourable international market conditions, coupled with fiscal incentives, the rate of growth of agricultural export production was increasing. At the same time, the rate of inflation was declining. This period came to be known as the "Brazilian economic miracle". However, by late 1973 the world oil crisis shocked the whole system, raising the external prices of imported goods relative to those of exported goods. As a results, new difficulties with the balance of payments emerged, coupled with rising rates of inflation and concern regarding an adequate food supply for the domestic market *vis-á-vis* the need to increase the export of agricultural products. This is the situation currently faced in Brazil.

The discussion thus far of Brazil's development strategy, which emphasized the industrial sector, does not adequately account for the role played by the agricultural sector in Brazil's total economic development process. As will be seen below, the particular set of development policies pursued in both the farm and non-farm sectors has exacerbated the relative income problem in the agricultural sector while at the same time giving it a rather unique regional dimension. The result is that the bulk of the poverty in Brazil is concentrated in its agricultural sector, especially in the Northeast, and most of the agricultural sector has not shared in the post-World War II development of the economy on a scale anywhere near that of the non-farm sector.[2]

THE AGRICULTURAL SECTOR IN THE DEVELOPMENT PROCESS AND THE PRESENT FARM/NON–FARM INTERFACE[3]

Despite all efforts directed towards the expansion of the industrial sector – based fundamentally on a policy of import-substitution – the agricultural sector still accounts for a substantial share of employment (44.3 per cent in 1970) and exports (61.2 per cent in 1976) but accounts for only 14.6 per cent of the national income (in 1970).

From 1920 to the present, the agricultural sector has provided a substantial part of the resources required for industrialization through the transfer of the agricultural surplus[4] to the industrial sector. Growth in agricultural production came largely from the expansion of the agricultural frontier and use of the readily available labour supply and not from government sponsored investment in modern agricultural practices, except in the case of the state of São Paulo.[5]

The agricultural sector has been the major source of labour for the non-farm sector, even though the observed transfer of labour has not been sufficient to diminish the gap in labour income per caput between the two sectors.

It is becoming apparent that the possibilities for extracting surplus from agriculture and the transfer of labour to the non-farm sector are gradually being exhausted. This is due, in part, to the past low levels of public investment, especially in agricultural research, rural education, rural extension, and basis infrastructure. As a consequence of inadequate levels of public investment in the agricultural sector, the possibilities of increasing agricultural productivity in the short run are reduced and thus limit the amount of the agricultural surplus and labour available for transfer.[6]

Efforts to increase agricultural exports to help improve the balance of payments via special incentives such as subsidized credit, coupled with favourable international prices, have led to a reallocation of resources from food production (for domestic consumption) to the export sector. This reallocation of resources coupled with the policy of protection of urban consumers (through price controls) has led to the present situation, i.e., the rate of growth in food production – aggravated by adverse weather conditions – is declining or not growing and thus cannot satisfy the domestic and foreign markets at constant or declining real prices.

This has helped fuel the current rate of inflation. However, it should be remembered that food price increases have contributed only in part to the current high rate of inflation. Credit policies, wage increases, and fiscal policies have also contributed.

One of the key policy issues Brazil faces today is to determine the extent to which it can increase agricultural production via further technological advances.

In the following sections the current farm/non-farm interface is examined. Some of the major forces which are likely to favour or to hamper the agricultural process in the future are identified.

PRODUCT MARKET

1 *The subsistence sector*

The domestic food supply is basically provided by small producers (small landowners, sharecroppers, and renters). Available data show that in 1970, 79 per cent of the cassava, 73 per cent of the edible beans, 64 per cent of the corn and 44 per cent of the rice production were supplied by producers with an area less than 50 hectares. It should also be noted that 83 per cent of all producers in Brazil may be classified as small producers (less than 50 hectares). Even though these small producers are located in all parts of the country, the major concentration is found in the North-eastern region, a poverty stricken and drought prone area of Brazil.

Given the importance of small producers as a source of food for domestic consumption, the linkage between the small producers and the non-farm sector is extremely important. On the one hand, they demand relatively few inputs produced by the non-farm sector. Moreover, a considerable share of their production is consumed on the farm where it is produced in order to guarantee the family subsistence. Studies have shown, however, that small producers are price responsive.[5] But their ability to increase production in response to a product price increase is limited, given their low resource base (land) and limited access to credit. Without adequate resources, it is difficult for them to satisfy both their consumption needs and still to have resources available to purchase current inputs. Furthermore, the use of new inputs and new technologies is often perceived as a very high risk undertaking.[21]

Given these conditions, which prevail throughout most of the subsistence agricultural sector, and which are aggravated in the Northeast by climatic uncertainties, it is very likely that price incentives alone will not suffice to mobilize a larger share of production for the market. A considerable portion of the food products (e.g. edible beans, corn, cassava) which enters the market for the urban food supply is the residual of production minus farm family consumption.

To reverse this situation efforts should be directed towards: (1) the development and diffusion of land saving technology with low yield risk, and (2) access to institutional credit for small producers. This policy prescription, however, needs some qualifications. First, assuming that suitable technological packages and funds for credit are available, the problem still remains of how to provide credit to a large number of small farmers scattered throughout the country. Secondly, it is doubtful whether the existing market infrastructure (especially in the Northeast) will be sufficient to handle efficiently the expected increased output and transfer the corresponding gains to producers and consumers. Thirdly, as pointed out by Schuh,[15] if both of these policies are pursued, those small producers with entrepreneurial talents will realize significant income gains and will experience internal growth. Those who do not have such entrepreneurial potential will be expelled from the sector, and their problems will have to be handled by other means. Fourthly, there remains the problem of how to produce and distribute suitable technology and provide access to credit for small producers who do not own land, such as sharecroppers and renters.

In the short run it seems plausible that, given adequate incentives, medium-sized farmers can expand corn, edible beans, rice, and cassava production. The rates of return on investments of such a policy may be high. However, this policy prescription does not imply neglecting the subsistence farm sector. Given the present state of the subsistence sector – as characterized by relatively low income levels and involving a considerable fraction of the population – the opportunity to make it an important market for output of the growing industrial sector, both for agricultural inputs and for consumer goods, should not be overlooked.

2 *The agricultural export sector*

While the domestic food supply is mainly produced by a large number of small producers, the production of export products, such as coffee, cocoa, sugarcane and more recently soybeans, comes primarily from large producers. This sector enjoys a close interrelationship with the non-farm sector, through product, input, capital and foreign exchange markets.

Because of its importance as a foreign exchange earner, it has been relatively more favoured in terms of public investments in research and infrastructures as well as by credit and fiscal policies. Although penalized by overvalued exchange rates, favourable international prices in recent years have encouraged a transfer of resources from food to export production, especially from edible beans and corn to soybeans in the southeastern and southern regions.

This development has contributed to a relatively higher rate of increase in the price of domestically consumed foods. This has become an important source of pressure for modernization of the food producing sector, which in the Brazilian context means a higher rate of use of land-saving technologies. This may seem contradictory since Brazil still has a large land frontier. However, the increasing cost of bringing new land into production, the large distances from these areas to the major urban centres, and inadequate storage facilities, make it cheaper to increase productivity on the old lands rather than on the new ones.

3 *Beef cattle: a special case*

So far the discussion has been dichotomized in terms of food crops versus export crops. However, it should be noted that beef cattle production is also an important enterprise in Brazil. It is characterized as a land extensive activity and has expanded over time. Beef cattle production provides a secure and profitable form of savings under inflationary conditions and provides a high degree of liquidity relative to other assets.

The expansion of beef cattle production has been observed in both old (Northeast) and new areas (West and North). In the former, it has aggravated the food supply problem since cultivated areas have been transformed into pasture. This is particularly evident in the Northeast where areas cleared and cultivated by sharecroppers and small renters are often planted to grass as a partial land rental payment. Consequently, subsistence crops production, has tended to move into new areas in the agricultural frontier, reproducing the same type of structure found in the old areas.[7]

LABOUR MARKET

Imperfections in the labour market in Brazil are regarded as a major reason for the low income level of a large portion of the Brazilian population.[15,17]

Available data indicate[17] that agricultural incomes were substantially lower in 1970 than those in the non-farm sector, but also that they experienced a relative decline during the preceding decades. From 1960 to 1970 the average income per member of the labour force in the agricultural sector increased by 14 per cent while in the non-farm sector it increased by 38 per cent. In reality, the average income per member of the labour force in agriculture declined by 17 per cent as a proportion of the national average over the decade. In 1970 income was more equally distributed in the agricultural sector than in the non-farm sector. Schuh and Singh[17] suggest that the basic problem in the agricultural sector is not so much the distribution of income within the sector, but the absolute poverty of people in the agricultural sector relative to the non-farm sector.

The data also reveal that the labour market has experienced a structural transformation of some significance in recent years. The relative role of agriculture as a source of employment has decreased and all regions have experienced an upward movement in their rural/urban wage structure. However, persistent wage differentials for different categories of farm workers among the regions, and for rural/urban wages, imply that sufficient structural adjustments are not occurring in the labour market.

A widely accepted hypothesis[15] is that the low level of skills and education of the workers in the agricultural sector is a major barrier to their mobility from farm to urban employment or even to agricultural employment in other regions. This hypothesis is supported by empirical evidence which reveals that out migrants tend to be the healthier, the younger and the better educated.

It must also be noted that agricultural workers generally are not "pure" wage employees. This is particularly true in the Northeast and East where a substantial share of the labour force is composed of sharecroppers, small renters, squatters, and small landowners who derive part of their income from the cultivation of a small plot of land which they own or which is under some type of contractual arrangement. This creates additional institutional relationships (to landlords, for instance) which tend to retain the worker in that geographic location or occupation.

In the last decade some distortions in the wage/capital price ratio have been induced by government policies. The wage/capital price ratio was distorted through the simultaneous application of two policies: subsidized credit (at substantially negative real rates of interest) for acquisition of farm machinery and the extension of minimum wage and social security benefits to farm workers financed by a payroll tax. The result was a rapid rural-urban migration. The agricultural sector of the southern region, in general and in São Paulo, in particular, has experienced a rapid rate of modernization[16] involving an increase in the capital/labour ratio through the adoption of labour-saving technologies (mechanization).

Estimates provided by Martin[8] indicate that in the period 1950/70 the economically active labour force in São Paulo, which alone accounted for 22 per cent of Brazil's economically active labour force in 1970, increased 86 per cent, for an annual growth rate of 3 per cent. The agricultural labour force declined by 12 per cent in the same period at an annual growth rate of -0.7 per cent. In fact, the absolute number of agricultural workers in São Paulo has been declining in recent years due to both the mechanization of existing crops and a change in the crop mix towards less labour-intensive crops.

Unemployed rural workers tend to move to large cities or to the outskirts of urban areas where many of them cannot find employment – partly because of the type of industrialization pursued. However, since not all agricultural practices can be mechanized at the present time – particularly harvesting, – a new class of urban-based itinerant workers has emerged (known in Brazil as "volantes" or "boias frias"). Most are former agricultural workers who were displaced by mechanization.[18 & 20]

In areas such as the poverty-stricken Northeast, the agricultural sector has remained a major source of employment. However, real agricultural income per caput in the Northeast has not risen. Increases in incomes per caput are only possible if there are some major structural transformations (e.g. changes in the crop mix which are highly dependent upon improved technology for arid areas, successful adjustments to adverse climatic conditions, etc.). Otherwise there will continue to be a large migration from the agricultural sector to the non-farm sector in the Northeast and South and to the farm sector in the South.

The perceived probability of finding high-paying jobs elsewhere encourages outmigration from the Northeast. In reality, the perceived probability of finding a better paying job seldom materializes. In general, the migrants are absorbed in low-paying occupations in the service sector, often as construction workers, or they simply do not find a job. It appears that potential migrants are receiving inadequate information on the availability of jobs in non-traditional areas, other than in São Paulo and Rio de Janeiro.

The heart of the question is that the solution to poverty problems through the labour market is highly dependent upon the availability of alternative employment opportunities and a massive programme of public investment in human capital in rural Brazil to provide potential migrants with saleable skills, particularly for the next generation. This could contribute to the long run reduction of labour market imperfections in Brazil.

The policy question Brazil faces now seems to be how to increase in the short run income per caput while maximizing agricultural employment with the current land base. It appears that there is little room for adjustments in the short run.

The only hope of achieving income parity, especially in the Northeast given its land/labour ratio, is through the provision of off-farm employment opportunities in the agricultural regions. This calls for a policy which has been virtually ignored in Brazil: incentives for the development of rural non-farm activities.[24]

Available data show that small farmers in Brazil are tending to become part-time farmers. For example, it is estimated that at least 20 per cent of the family income is generated in off-farm employment in the eastern and southern regions. One study based on a large sample, covering seven states, showed that off-farm employment was as important as the sale of farm products (38 per cent each) as a source of family income for small farmers.

The spectrum of rural non-farm activities is widespread and diverse. They include construction, commerce, service, processing, and manufacturing. The public policy priorities for non-farm activities should be based on their labour absorbing capability. It appears that agro-industries for the processing of regionally produced agricultural goods such as fruits, cassava, etc. should rank high on the list of priorities.

Another policy question is related to the potential for using land reform to expand employment in agricultural areas. Brazil has had no formal nor large experience with land reform. *Ex-ante* evaluation studies[3] have shown that in certain areas (such as in the Northeast) and under some specific schemes (such as subdivision of large land holdings) such a policy can have a positive effect on labour absorption. However, these studies did not provide good estimates of costs and other adjustments required or implied by land reform. This issue merits additional empirical research.

Along the same lines there also exists the alternative of resettling farmers in new areas (controlled colonization).[6] Brazil's past and present colonization efforts, however, have not been very successful.[4]

CAPITAL MARKET

1 *Capital transfer and economic policy*

Historically, as mentioned at the beginning of this paper, the agricultural sector has performed an important role in transferring the agricultural surplus to the industrial sector, particularly from coffee production. Currently, the persistence of a policy of an overvalued exchange rate has also been a mechanism through which capital has been transferred from the agricultural export sector to the non-farm sector by implicitly taxing all exports of which agriculture contributes the largest share.

From a regional point of view, it is important to mention that, according to estimates provided by Martin,[8] from about 1950 until 1961 the Northeast, and in fact the entire country outside the state of São Paulo, experienced net capital outflows as a result of shifts in the terms of trade. In the 1950s approximately one to two per cent of the gross product of the Northeast was transferred to the rest of Brazil, particularly into the state of São Paulo. Beginning in 1962, the resource flow through the terms of trade was reversed. In the period 1962 through 1973 there was a net inflow into the Northeast of approximately 2 per cent of the Northeast's gross product, and the flow became larger towards the end of the period. The factors associated with the reversal in the terms of trade were: (1) massive devaluation of the cruzeiro; (2) tariff reform and (3) increase in international commodity prices. It is useful to note that the government developed other programmes for the Northeast starting in the 1960s. Various development agencies (SUDENE, Banco do Nordeste and CEPLAC) began to invest substantial sums of money in industrial, agricultural, and general infrastructural projects in the Northeast. Special tax incentives were also provided to encourage investment in the Northeast.

2 *Agricultural credit market*

Recently the agricultural credit market has been an effective channel for transferring income or wealth from the non-farm to the farm sector through subsidized interest rates. The problem is that this income transfer has largely benefited the large landowners. This has contributed to the aggravation of the income distribution problem within the agricultural sector since it discriminates against the small producers. It was observed that most of the credit has been directed to agricultural export products and to beef cattle. The rationale has been that large producers can make better use of the credit, given their lower marginal propensity to consume and higher rate of capital accumulation. In addition, costs of delivering credit are lower and risks are smaller from a lender's point of view. No doubt a credit policy which favours large producers provides a greater response in terms of increased production in a relatively short period of time. However, this must be weighed against the distortions it imposes in terms of income redistribution and reallocation of resources such as (1) shifts to capital-intensive crops which reduce labour employment and (2) shifts in the locational pattern of production, which lead to artificial comparative advantages.

Subsidized credit and fiscal incentive policies have also generated income transfer to the farm sector through investment by large industrial and commercial interests, both multi-national and national. Given these policies, these firms are buying large land holdings in newly opened areas. Forestry and/or beef cattle are the main production activities. The occupation of new areas, under this system, is likely to reproduce there the same land tenure and modes of production found in many old areas.

Even though these policies have caused resource reallocation in Brazil in many instances, the application of price support, and input price subsidies (e.g. on fertilizer) have helped to minimize some of the undesirable effects.

Given its importance as a source of the domestic food supply, credit policies can no longer afford to ignore the small farm sector. Thus, it is expected that in the near future new credit policy guidelines will be announced. According to government authorities, it is expected that small and medium sized farmers will be the priority recipients of subsidized credit and large landowners will have to pay interest rates closer to market interest rates. Again, it is necessary to weigh the expected gains against the implied adjustments associated with this change in credit policy. The question is one of determining the appropriate credit mix.

If the new guidelines in fact materialize there remains the problem of finding an efficient means of delivering credit plus technical assistance to a very large number of small farmers scattered over various parts of the country.

In addition to the provision of credit it is necessary to adopt an insurance policy which will absorb most of the risk faced by the small producers. There is some limited pilot experience in which credit and crop insurance have been provided through a scheme of "pre-planted purchase of production" by government agencies.

Finally, a comment should be made with respect to inflation and the land market. Inflation and the expectation that it will continue at high rates in the future has led to a transfer of capital into the farm sector. Land is being purchased not strictly for production purpose but as a hedge against further inflation. This is socially undesirable since it does not increase production. Moreover, because of land price increases it reduces the opportunities for the landless and the unemployed to purchase land for production purposes.

CONCLUDING COMMENTS AND POLICY GUIDELINES

This brief description of the development strategy pursued by Brazil in the last few decades as well as of the role played by the agricultural sector in the development process provides several insights into the interface between the farm and non-farm sectors. Government policies directed towards the farm and non-farm sectors have had a major influence in determining the pattern of resource allocation, both inter-sectoral and inter-regional.

The consequences of this particular set of policies resulted in a double squeeze on agriculture.[15] Relative agricultural prices were kept low by means of price and trade policies, thereby encouraging resources to leave the sector. At the same time Brazil's industrial development policies reduced employment opportunities in that sector.

The basic policy guidelines for the problems Brazil faces today should include the following: (1) extend the modernization process throughout the agricultural sector, taking explicit account of the large number of subsistence farmers; (2) develop a coherent policy which simultaneously increases agricultural exports and food production for domestic consumption; (3) increase agricultural income per caput in the short run while maximizing agricultural employment with the current land base and (4) in the long run, tackle the poverty problems in the agricultural sector by improving the quality of the labour force and eliminating existing market imperfections.

NOTES

[1] For details see: Almeida[1], Villela,[22] Pastore[12] and Weisskoff.[23]
[2] For an insightful discussion on this point see Schuh.[15]
[3] For a thorough treatment on the role of the agricultural sector in the development process see: Schuh,[14] Schuh,[15] Schuh,[16] Paiva,[11] Martin,[8] and Lopes & Schuh.[7]
[4] See Nicholls.[10]
[5] See Schuh,[16] Martin,[8] and Seixas Neto.[19]
[6] Empirical studies have shown that investments in agricultural research, extension and rural education in Brazil offer relatively high rates of return. Ayer & Schuh,[2] Monteiro,[9] and Patrick & Kehrberg.[13]
[7] See Dias[6] for an insightful discussion about the occupation of new areas in the frontier.

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DISCUSSION OPENING – TOM W. CARROLL

Professor Barbosa's paper is a broad brush picture of how governmental policy and trends in the larger economy can affect the development of the agricultural sector. Although most of the discussion is specifically related to Brazil, many of the issues and policies that are discussed are relevant to development strategies being formulated in other countries.

In the opening background section of the paper, Brazil's general development strategy over the past few decades is summarized as being oriented to industrial development with a shift in the late '60s from import substitution to export generation. It is noted, however, that in spite of this industrial emphasis, agricultural exports in 1976 still accounted for over 60 per cent of the total value of exports.

The farm/non-farm interface is characterized in terms of six "markets". These are the agricultural product market (including both domestic food and foreign agricultural exports), the factor input market, the labour market, the capital market, the land market and the foreign exchange market.

The Brazilian farm sector is heterogeneous, comprising at least four important subsectors: (1) large commercial enterprises primarily oriented toward the export crops of coffee, cotton, sugar cane, cocoa and, more recently, soybeans; (2) large scale beef cattle enterprises; (3) small to medium size, advantaged commercial farms located in the foodsheds of the urban centres and having a high percentage of owner-operators, with increasing levels of non-farm income; (4) small disadvantaged subsistence farms having a high percentage of sharecroppers, small renters and squatters, many of which are located in the Northeast.

Professor Barbosa's paper focuses on the nature of the interaction between the farm sector and non-farm sector at the extremes, namely, the strong interaction in the case of the large commercial farms and the weak interaction in the case of the small subsistence farms. This imbalance of interaction at the extremes contributes to the problems of efficiency in food production and equity in terms of farmers' access to productive resources.

With respect to the product market, there has been a shift of production away from basic food crops to export crops and livestock products as a result of the strong linkages between these products and the non-farm sector through the product, input, capital and foreign exchange markets. As a result, food production apparently is no longer keeping pace with the general population increase, thus contributing to the general inflation problem. Although research has shown small farm operators to be responsive to rising food prices, the supply response is constrained by the availability of low risk technology oriented to food crops as well as access to institutional credits. Because of high transportations costs, the availability of land on the frontier does not appear to be an important factor in supply response.

With respect to the labour market, it appears that labour is being both pushed and pulled out of the agricultural sector. In the large commercial farming areas, hired labour is being pushed out as a result of two government policies: highly subsidized credit for the purchase of farm machinery and the extension of the minimum wage and social security benefits to farm workers. Farm operators have shifted the crop mix to less labour-intensive crops. On the other hand, the higher incomes in the urban areas and the more affluent agricultural areas are pulling people off the subsistence farms in the Northeast where there has been no appreciable increase in real income. The actual probabilities of finding jobs, however, are much lower than reported back to the farming areas, resulting in high unemployment among migrants with low job skills. Thus the tough policy question in the Northeast is how to increase income per caput. The paper suggests consideration of programmes to promote the development of rural non-farm industries, particularly agro-processing industries, to provide off-farm income opportunities. Also, land reform in the Northeast should now be given serious consideration for the purpose of absorbing labour in the region. Resettlement schemes have not worked well in Brazil.

The paper also calls for a massive programme of public investment in human capital now resident in rural areas. The dilemma, of course, is how to design formal and non-farm education programmes that serve the needs of those remaining in agriculture as well as those migrating into the urban industrial sector. It would seem that basic training in literacy and mathematics and science skills oriented to the agricultural sector, with which the residents are already familiar, would serve both needs.

With respect to capital markets, it is noted that historically there has been a transfer from the agricultural sector to the industrial sector through explicit taxes and implicit taxes on agricultural exports. The implicit tax resulted from overvalued exchange rates. More recently, a subsidized agricultural credit market has opened up the transfer of capital from the non-farm sector to the large commercial farm sector. The problem, however, is that the channels of credit have bypassed the small farmers who produce basic food crops. It is argued that subsidized credit backed by an insurance scheme should be made available to the small farmer with the large farmer paying commercial rates.

With respect to the land market, Brazil, with its high rates of inflation, has not escaped the problem of the investment of non-farm capital in agricultural land, resulting in an increase in land values. This investment has had little effect on agricultural production and blocks access of the landless and underemployed to productive resources.

I hope that this short paper could form the basis for a longer monograph in which the observations are supported by data on the Brazilian situation. Nevertheless, even the short paper provides many leads for the discussion to follow. I have two specific questions to lead off:

First, I am puzzled by the statement that "the possibilities for extracting surplus from agriculture are gradually being exhausted", because I have seen no indication that Brazil intends to abandon support for the agricultural export sector still comprising some 60 per cent of total export. Secondly, is it correct to conclude, as I have done, that there are relatively fewer problems at the farm/non-farm interface for the small to medium size commercial farmers operating in the foodsheds of the urban centres?

GENERAL DISCUSSION – RAPPORTEUR: HERNAN ELIZALDE

The discussion initally revolved around the transfer of agricultural surplus to the industrial sector, particularly in the case of the agricultural export subsector. This did not make feasible the improvement of the socio-economic conditions in the rural areas.

Next, several of the solutions presented by the author to rural poverty problems were commented on, particularly for the Northeast region. Firstly, the proposition to deliver subsidized credit to small and medium size farmers was questioned in relation to the feasibility of supplying credit to such a large number of farms and the high cost involved in a programme of this nature.

The alternative of providing public incentives for the development of non-farm activities in the rural sector was also discussed in the sense of forcing the market allocation of resources.

Finally, efforts to develop appropriate technologies for small farmers as well as the selective use of land reform in order to improve rural conditions were also commented upon.

In reply, Professor Barbosa stated that he believed that although expensive subsidized credit was necessary in order to increase the supply of urgently needed food, he felt that the promotion of non-farm activities, especially home industries, would counteract previous policies which emphasized the industrialization of the urban sector.

Participants in the discussion included M. Igben, Louis F. Herrmann, Ralph Lattimore, Howard Osborn and Alberto Valdes.