

Structural adjustment and agriculture in Brazil: the experience of the 1980's

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Summary: 1. Introduction; 2. Sectoral policies in the context of macroeconomic adjustment; 3. Foreign exchange and trade policies; 4. Financial markets, inflation and agriculture performance in the 1980s; 5. Summary and conclusions.

1. Introduction

During the last decade the Brazilian agriculture has grown at an annual rate of 3.2 percent. This certainly represented a slowdown in comparison with the 5.6 percent registered during the 1970s, and may be considered a disappointing performance for a country which has such an immense territory and natural resources, and aimed to become the bread-basket of the world. However, in the context of the 1980s, characterized by a sharp deceleration of the country's economic growth and by the overall deterioration of the macroeconomic situation, the performance of agriculture in Brazil was considered remarkable by most analysts (Goldin & Rezende, 1993; Gasques & Villa Verde, 1990; FAO, 1992).

Agriculture growth was not steady throughout the decade. An examination of year by year results shows wide fluctuations in the level of output, which fell drastically in some years just to recover even more impressively in a subsequent period.

Even though weather can be held responsible, at least in part, for crop failures in some years such as 1986 and 1990, as well as for exceptionally good crop results in others (1985, 1987), economic variables or considerations are of no less importance to explain the succession of boom and crisis of agricultural production.

A simple examination of the data on purchase of variable inputs (fertilizers, pesticides and improved seeds) as well as on purchase of new machinery and other fixed capital goods, shows that changes in output levels were not merely random, but responded also to producers decisions to expand cultivated areas in some years and contract it in others.

Stagnation, growth and crisis of Brazilian agriculture during the 1980s show that performance of agriculture was highly affected by the overall economic environment, whose striking feature was the growing economic, institutional and political instability.

During the 1980s, Brazilian economy has undergone all types of stabilization and adjustment programmes, from the traditional IMF recommended package for balance of payment adjustment adopted in 1982 to the purely heterodox Cruzado Plan experience in 1986, not to mention the heterodoxy *cum* orthodoxy Bresser Plan of 1987, the short-lived Summer Plan in 1988, and finally the Collor Plan in 1990, which froze and confiscated financial assets and bank accounts and subsequently adopted typical WB/IMF structural adjustment

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liberalization and privatization policies. In spite of, and to some extent because of, these attempts, inflation rate has gone up and down several times, and since 1987 hyperinflation is around the corner. In 1993 inflation rate was 2,453 percent.

Inflation itself is not new to Brazilian development process; however, until the 1970s, as paradoxically as it may be, prices increases due to structural problems (fragile fiscal basis, inter-sectoral imbalances, etc.) followed a stable path, which was from time to time disturbed by external shocks (crop failure, oil shock, etc.). The new phenomena is not inflation itself, but its instability and the rapid flourishing of the public bonds market as the main shelter against inflation. We will argue that the linkages between public bonds market and agriculture is essential to understand the dynamics of agriculture production since the 1980s.

The increase in inflationary instability, and the accompanying macroeconomic and sectoral policies adopted by the government has led both to agriculture euphoria in some years (as in 1986) as well as to downward adjustments in investment levels in agriculture in other years (as in 1990/91). In this way, agriculture, which was able to grow during most of the 1980s driven by policy incentives, became a victim of both its own success and the failure of government's macroeconomic strategy to combat inflation and sectoral policies to foster agricultural growth.

2. Sectoral policies in the context of macroeconomic adjustment

Up to the eruption of the debt crisis, macroeconomic policies in Brazil were used primarily to foster growth rather than to ensure macroeconomic balance. Since the beginning of the 1980s, macroeconomic policy has been losing (lost) its flexibility (degree of freedom). Policy makers were forced to face macroeconomic constraints more seriously and to focus on fundamental macroeconomic balances. This change in the *nature* of economic policy had direct impact upon agricultural policies, which had so far been designed and implemented quite autonomously from macroeconomic policies constraints and seemed to be based upon a seemingly "unlimited supply of resources". In addition to increasing resources constraints, the changing macroeconomic environment — particularly growing economic uncertainty — as well as imbalances within the agricultural sector,¹ induced changes in sectoral policies, from its objectives to instruments.

It is not easy to clear cut the decade into sub-periods according to different policy frameworks, as changes in agricultural policy, rather than follow a well defined sectoral development strategy, were mainly introduced as *ad hoc* measures in response to short term concerns of either macroeconomic or sectoral nature. However, in roughly terms it can be said that the period ending in 1987 was characterized by a high degree of government intervention in agricultural markets, through both sectoral and trade policy instruments. Notwithstanding the contradictions and unavoidable inefficiencies provoked by government *ad hoc* market interventions, until the 1987/88 harvest season sectoral policies provided an effective shelter to part of rural producers, and partially offset the potential negative impact of the increasing macroeconomic instability over agricultural production.

¹ These imbalances are mainly associated to the agricultural export-led growth and agricultural modernization pattern followed since mid-1960s. At the end of the 1970s, this distortions included recurrent food crisis; regional biased growth in the benefit of South and Southeast regions; intensification of rural-urban migration and pauperization of small producers (peasant farmers).

The period 1988-91 was marked by an attempt to deregulate and liberalize, first the domestic agricultural markets, and after 1990, foreign trade as well. While some sectoral policy instruments were deactivated, in particular those commodity oriented, such as coffee, wheat, cacao and sugar cane policies, other instruments such as minimum price policy were kept, but became virtually inactive or ineffective. The concurrence of a deteriorating macroeconomic environment with hardly consistent liberalization measures was not positive for agriculture, which stagnated and reduced its level of output. After 1991, while sticking to liberalization strategy defined in 1990, the government partially reactivated sectoral policy instruments to cope with the mounting agricultural crisis and its negative effects on the stabilization attempt.

3. Foreign exchange and trade policies

It is beyond the scope of this paper to assess how foreign exchange and trade policies have affected real agricultural prices, effective protection, producers incentives and therefore both inter and intrasectoral resources allocation (see Salazar & Carvalho, 1991). Analysts agree that both policies were fundamental for the positive performance of agricultural production (see Goldin & Rezende, 1993).

Foreign exchange policy certainly introduced a bias towards production of exportables which, in the absence of counterbalancing policies in favor of production for domestic market, would have aggravated the food crisis of late 1970s. While real devaluations have reduced the negative impact of declining agricultural prices at international markets on agricultural production of tradeable goods, the inflation indexed exchange rate has reduced the risk associated with the increasing monetary instability. Production for domestic market, which led growth during most of the decade, was partially compensated by minimum prices policy.

The sharp appreciation of rate of exchange in 1989-91 has certainly contributed to a downturn in agricultural production, particularly after 1990, when inflation indexed exchange rate was replaced by a managed floating foreign exchange market,² and producers of tradables had to face the rate of exchange risk without much possibility, at least initially, of hedging against it. Since 1992, the Central Bank has been intervening in foreign exchange market trying to harmonize its monetary goals with the stability of the real rate of exchange.

During most of the decade, trade policy has kept its traditional roles (protect and incentive local industry, including agroprocessing; ensure adequate supply of agricultural products — both food and raw materials — to the domestic market; increase and diversify exports) and instruments (trade restrictions and prohibitions, tariff barriers, export and import licensing, subsidies to exports).

In 1987, without renouncing to *ad hoc* interventions to ensure supply to the domestic market, the government started a gradual liberalization of agricultural exports. It was not until 1990 that major trade reform was introduced. The main thrust of the reform was to move away from quantitative restriction and to establish a tariff system, which, while compatible with Gatt and Mercosul agreements, can also be used by the government as

² In fact there are two markets. One for trade, capital flows and registered foreign investments (commercial rate) and the other for international travel, personal transfers and usual parallel operations (tourism or free market rate).

instrument to both foster productive restructuring and control inflationary pressures. Agricultural trade has been consistently liberalized.

Although it is still early to assess the impacts of liberalization of agricultural production, it is likely that, at least initially, food imports have contributed to aggravate the problems agriculture was facing since 1989.

4. Financial market, inflation and agriculture performance in the 1980s

To understand the linkages among financial market, inflation and agriculture we have to go back to early 1980s, when open market operations became an overwhelming presence throughout the economy.

Without going into details, at least two elements are worthwhile retaining here: first, fiscal discipline and monetary tightening did not refrain inflation from accelerating: as mentioned, it jumped from 100 percent in 1981/82 to 230 percent in 1983/84. This, in turn, has increased uncertainty, instability and risk in the economy. The response of economic agents was to run away from long term financial contracts, either at floating rates (borrower) or at fixed nominal rates of return. While preference for liquidity increased, demand for money (M1) decreased. These two seemingly contradictory demands were conciliated by — and this leads us to the second point — both the way government bonds market is organized in Brazil and monetary policy implemented from this period onwards.

Central Bank sells public bonds only to financial institutions (primary bond-takers). In response to the uncertainty provoked by 1979 devaluation, the government introduced public bonds whose nominal value was pegged either to the rate of exchange or to the rate of inflation, so that bond-takers were relatively well protected against both inflation and devaluation risks. Regardless of both public bonds' maturity period and its nominal rate of interest, primary bond-takers had to refinance themselves by placing these bonds to the public (secondary bond-takers) at the overnight rate. The refinancing was done on a daily basis so that for the public the money invested in overnight operations had high liquidity.

Monetary policy followed since this period not only endorsed the increasing demand for this "quasi-money" from the public, but also ensured a high rate of return for both primary and secondary bond-takers. Before 1982, the rate of interest was kept extremely high to stimulate public and private companies to borrow abroad;³ after 1982, the increase in international reserves held by the Central Bank as well as the transfer of balance of trade surplus from exporters to the government was mainly funded by a combination of increased money supply and open market operations. In the context of the tight monetary policy implemented during the 1981-84 adjustment, prevailed the later.

As a result of this particular arrangement, open market operations offered money holders an unique and "ideal" financial asset: a safe, profitable and almost instantaneous liquidity. In the context of increasing economic riskiness and instability, agents were quick to respond to this opportunity and open market operations flourished rapidly.

With the exception of 1986, when monetary correction was abolished and rates of interest were lowered, and very short periods scattered along the decade, public bonds kept its attractiveness and performed, in Brazil, the role of store of value which real assets and

³ Since financial market was not liberalized and capital repatriation was severely restricted, borrowing abroad was the main instrument used to induce additional capital inflow to help covering the growing balance of trade deficit.

foreign exchange performed in the countries where hyperinflation more fully and more rapidly developed. However, the cushioning of inflation pressures through open market operations was contradictory and potentially unstable, not only due to backfire effects of the policy but also to its dependence on the credibility of the government (i.e., the willingness of the public to believe that the government would honor its debt).⁴

The generalization of highly profitable open market operations had two main consequences: on the one hand, to some extent opportunity costs of productive investments became determined by short term open market gains. This led to capital flight away from productive investments into the financial circuit. On the other hand, as producers were heavily dependent upon borrowing, costs of production were highly affected by the increase in financial costs. In addition, since firms had to borrow at floating rates, actual financial costs were not known in advance,⁵ thus adding to the uncertainty and risk in the economy, particularly in those more competitive sectors, such as agriculture, in which individual firm's prices may not keep pace with general inflation. As mentioned, agents adjusted avoiding financial obligations at floating rates and increased the degree of self-financing.

In addition to these general consequences, the emergence of open market operations had significant implications for agricultural development during the 1980s due to the linkages between the financial market and formation of agricultural prices and income. According to the hypothesis of this paper, the insertion of agricultural producers into the financial circuit is one of the key elements to explain both the growth and crisis of the agricultural sector since the 1980s.

Indexed money and agricultural prices

The specialized literature has been emphasizing real agricultural prices as the main producer incentive. Although there are several ways to calculate these prices, basically they represent agricultural terms of trade, i.e., the ratio of agricultural to non-agricultural prices in the economy. As can be seen in table 1, since 1975-77 real agricultural prices at producer level have shown a steady tendency to fall; with the only exception of 1986, the tendency of prices to fall is particularly acute after 1980, and, in a second moment, after 1986. Agricultural terms of trade have shown wide fluctuation between periods, but after 1986 there was a clear inverse relationship between the rate of inflation and terms of trade in agriculture/industry (figure).

Additional analysis carried out by Contador and Silva Jr. (1992), who compared the evolution of agricultural and industrial prices since 1970, produced the following results: (a) wholesale agricultural and industrial prices have shown tendencies to increase and fall, respectively; (b) agricultural prices of domestic and exportable goods at producer level have shown a tendency to fall; (c) fluctuation of agricultural prices of both types of goods at both wholesale and producer levels was more intense than of industrial prices; (d) dispersion of all agricultural prices at both levels increased during the second half of the 1980s, therefore confirming the increase in both uncertainty and risk mentioned above.

⁴ The loss of "attractiveness" was mainly determined by lack of confidence in the government rather than low economic returns.

⁵ Financial contracts were (pegged) indexed either to inflation rate, rate of exchange or other financial indexator such as ORTN, OTN, TR. A typical borrowing contract included two clauses: payment of interests according to a pre-established nominal rate of interest plus monetary correction of the principal according to choice (agreed) index whose actual value could only be known *post-factum*.

Table 1
Brazil: indices of real producer prices, 1974-91
(1980 = 100)

Year	Internal market		Export crops	
	Crops	Animal products	Without coffee	With coffee
1974	86	111	117	104
1975	95	102	103	95
1976	105	90	100	121
1977	89	91	146	157
1978	88	94	121	120
1979	92	105	117	117
1980	100	100	100	100
1981	92	83	87	78
1982	71	73	79	75
1983	73	74	82	73
1984	81	82	129	109
1985	72	72	94	92
1986	75	80	87	121
1987	48	72	64	58
1988	49	54	75	64
1989	57	63	69	61
1990	39	52	40	38
1991	51	48	50	42

Note: Indices calculated on the basis of the monthly indices of producer prices of FGV, deflated by IGP-DI. Individual products' indices are annual averages for potatoes, edible beans, manioc, and all animal products, and averages for the harvest months, for the rest. Domestic market crops include rice, potatoes, edible beans, manioc, and corn; animal products are beef cattle, suine, poultry, milk and eggs; export crops include seed cotton, cocoa, oranges, soybeans, and coffee.

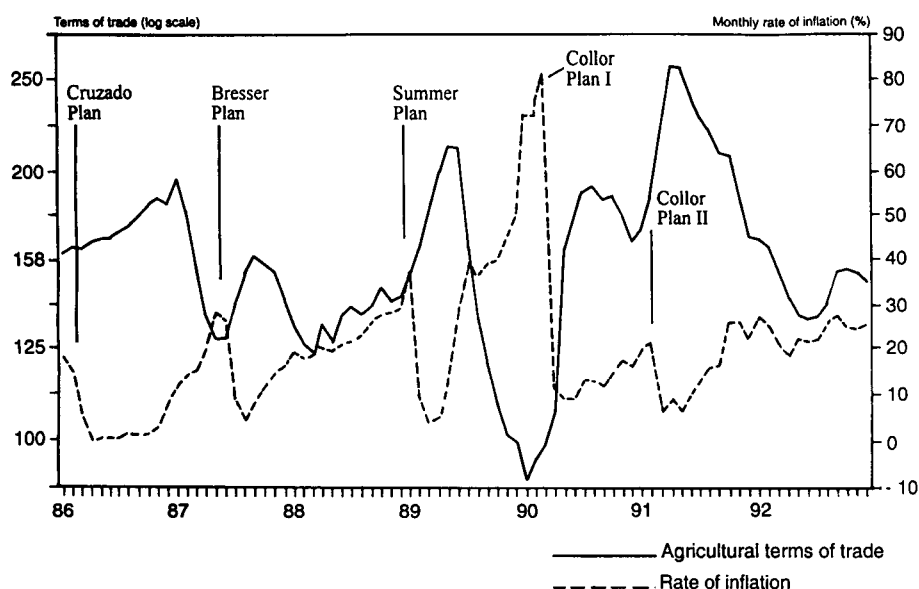
While this secular tendency is determined by a set of structural and policy changes whose analysis is beyond the scope of this paper,⁶ in the short run, particularly in post harvest period, agricultural prices at producer level are strongly affected by the demand for stockholding. This paper focuses on two basic changes that occurred in the Brazilian economy during the 1980s to help explaining both the sharp fall and fluctuations of agricultural prices at producer level as well as the inverse relationship between rate of inflation and agricultural terms of trade observed in the second half of 1980s: acceleration and increasing variability of inflation, and the creation of the so-called "indexed money"

⁶ Norton (1992) mentions three kinds of structural determinants of real agricultural prices: "(a) the dynamic relationship of supply to demand; (b) bounds established by international prices and (c) the country's income distribution... The main policy determinants are the following: (a) the exchange rate, (b) the structure of tariffs, (c) trade policy, (d) taxation policy and (e) direct price controls" (pp.13-4).

(i.e., an inflation-indexed, highly liquid financial asset), and the subsequent contamination of the whole economy.

Conventional portfolio theory would indicate that the higher the expected rate of inflation, the faster agents would run away from money and the more they would prefer to hold real assets, including agricultural commodities. On the other hand, the higher the rate of interest on government bonds, the more agents would want to hold them. In the case of Brazil, except for short periods of prices freezing and great political uncertainty, such as from the end of 1989 to the beginning 1990, or during the impeachment process in 1992, preference for government bonds supplanted by far real assets. In periods of accelerating inflation, as in the beginning of 1987 and in the second half of 1989, wealth-owners' preference for indexed money has also meant a complete lack of interest in the holding of stocks of agricultural commodities, with adverse consequences for agricultural prices. Given the fact that in these periods industrial prices were set ahead of current inflation (partly as a reflection of accelerating expectations and partly as a defense against the prospect of a new price freeze), it is easy to understand the violent fall in the terms of trade of agriculture in these periods.

Inflation and agricultural terms of trade



An opposite movement on the part of the wealth-owners towards commodity stockholding and other non-financial assets (see Rezende, 1992), took place during the price freeze under the Cruzado, Bresser and Verão (Summer) Plans, when inflation fell abruptly. To explain this, Rezende (1992 and 1993) advances two hypotheses. The first is that during price freezes, price indices — and, together with them, financial market indexation — become biased downwards, both with respect to the “true” current inflation, as well as — and more importantly — with respect to expected post-freeze inflation. In other words, prices freezes were accompanied by expectations of negative interest rates, even when, as in the case of the Bresser and Verão Plans, overnight rates were set at levels supposedly high in real terms.

The second hypothesis focus on inflation itself rather than on the varying degree to which public bonds were indexed to it during and after the prices freezes. According to this hypothesis, the very fall in inflation reduces the premium attached to financial assets due to their inflation-indexing as lesser economic uncertainty reduces the liquidity preference in the economy and also the cost of holding assets whose nominal value may not keep in pace with future inflation.⁷ Conversely, the attractiveness of holding indexed and highly liquid financial assets increases in periods of acceleration of inflation and higher uncertainty.

To sum up, as inflation increased its variability, periods of very low inflation rate alternating with periods when inflation accelerated and hyperinflation become a real threat, the need to hedge against inflation varied wildly from period to period, in response to changing inflationary expectations. This has affected the willingness of agents to purchase and/or hold stocks of agricultural commodities, and therefore the formation of agricultural prices. Naturally the relationship between inflation and agricultural prices, as well as the linkages between financial markets and agricultural prices deserve substantive additional research. However, the evidence produced here seems to be enough to demonstrate the relevance of these relationships to understand the performance of Brazilian agriculture during the last 10 years.

Financial market and farmers' financial conditions

The insertion of farmers into the financial circuit played a very contradictory role. Farmers adjusted to changes in rural credit policy through the reduction of borrowed capital and increasing reliance on self-financing. As a result, farmers decision to produce and to invest became more affected by their financial condition and by monetary policy. The latter played a twofold role: on the one hand, by determining the availability and cost of rural credit as well as the opportunity cost of producers' own funds; as the share of these funds increased, it is clear that opportunity cost of agricultural production was at least affected by conditions prevailing in the financial market; on the other hand, it affected producers financial conditions not only through costs of production — in some years like 1984 and 1985 the share of financial costs in total cost of production of cotton, rice, beans, cassava, maize and soy beans varied from 31 percent to 54 percent (Buainain & Souza Filho, 1986, p. 93) —, but also through farmer's gross income.

We have already seen how agricultural prices at producer level might have been affected by agents shifting preference between indexed-money and real assets, including stockholding of agricultural commodities. Producers were mainly negatively affected by both the tendency of prices to fall and price instability brought about, amongst other reasons, by unstable commodity stockholding, as prices fell sharply during harvest seasons to recover later in the year when most producers had already sold their crops.

The additional hypothesis we want to raise, though without much possibility of an empirical test, is that middle and large producers, by selling part of their crop at low prices right after harvesting and investing the accrued money in the financial market, might have partially compensated the low net revenue obtained. The validity of this hypothesis could help to understand how, in spite of unfavourable macroeconomic and sectoral conditions,

⁷ It is sufficient to note that an error of 100 percent in the monthly forecast of inflation means a real loss of -1.92 percent, if effective inflation turns out to be 4 percent and not the forecasted 2 percent; but it means a real loss of -8.3 percent if actual inflation is 20 percent rather than the projected 10 percent (Rezende, 1993, p. 19).

agriculture was able to perform reasonably well for most of the 1980s. In fact it provides additional explanation to those already known (see Goldin & Rezende, 1993; and FAO, 1992).

In the context of increasing inflation and great fluctuation in the level of economic activities, as the one of Brazil in the second half of the 1980s, in the absence of supply problems, agricultural prices at producer level tend to lag behind inflation. This is due to structural, institutional and policy factors. The seasonality of agricultural production and its rigidity to adjust, in the short term, to changing market conditions; the high cost of holding stocks and the more competitive nature of agricultural markets *vis à vis* industry, all these make "market indexation" of agricultural prices more difficult. In addition, as agricultural prices are politically more sensitive than industrial prices, they are more often subject to direct and indirect government controls. In consequence, while industrial prices are more perfectly indexed to inflation, and adjust almost continuously (or at very short intervals) to both past and expected inflation, agricultural prices at producer level tended to lag behind inflation — particularly during harvesting season — and to increase discontinuously, catching up and eventually surpassing general price increases when market conditions were particularly favourable, such as during off-harvest season, when there are supply problems due to poor crops, demand shocks as it happened during the Cruzado Plan, or sudden drop of inflation.

Given this "imperfect indexation" of agricultural prices as well as the availability of a highly liquid and profitable financial asset such as government bonds, to sell part of the crop quickly and invest the money in the financial market could well turn out to be a profitable deal (we sustain it did). While holding bonds would ensure instantaneous liquidity and real return to investments, producers had no guarantee that agricultural prices would rise enough as to offset current inflation, costs of holding stocks and risk of stockholding under highly unstable economic environment.

Until 1987, a combination of high guaranteed minimum prices and availability of marketing credit allowed part of the producers to take advantage of holding both bonds and stocks. Through the use of the Federal Government Storage Loan Facility (EGF), without having to sell all the crop during harvest season, producers were able to cash enough money to pay falling due debts, buy government bonds (or other alternative investment), and for transactions purposes, including pre-financing of next agricultural season. Under this EGF arrangement, producers' risk was very low, as in case expectations regarding future prices increase were not fulfilled, government would just buy the stored crop at the value of the minimum price and cancell the EGF debt without any cost for the farmer. Meanwhile, producers would have benefited from eventual gains accrued in the financial market.

After 1987, there were major changes in both macroeconomic and sectoral conditions which to some extent induced producers to liquidate their crops, or part of it, right after harvesting, and rush to government bonds market. As already mentioned, the failure of the Cruzado Plan introduced a period of greater macroeconomic instability and uncertainty; the situation of agriculture became truly dramatic, as economic policy tools relevant for producers investment and production decisions — in particular pricing and credit policies — became more than ever subordinated to short-run stabilization goals, and therefore stopped providing the support they had provided until 1986, and which had become even more necessary as inflation rose. Facing, on the one hand, very unstable and uncertain markets for their crops, and, on the other hand, a "booming" financial market, it is only logical that producers with surpluses have opted for the later.

Producer's attitude during this period was also induced by both their financial conditions and the particular situation of agricultural markets. In 1986, for instance, in response to both government incentives and favourable market conditions ensued by the Cruzado Plan, producers increased investments and expanded cultivated area. As Rezende (1992, p. 20) observes, as prices of land soared during the Cruzado Plan, farmers ability and disposition to borrow and take risks through greater level of indebtedness increased dramatically in 1986. The harvesting of the first *supersafra* in 1987 was however carried out amidst a totally different scenario: the economy entering rapidly into deep recession, reacceleration of inflation with its negative impact on the holding of commodity stocks by the non-agricultural sector, falling agricultural prices and a high degree of farmers' indebtedness. Agriculture had fallen in a trap and the ensuing financial crisis clearly forced farmers to sell their crops at whatever prices they could get in the market and (probably) invest the net in the overnight market, whose monthly real rates of interest during the period May-September 1987 varied from 1.15 to 6.38 percent (Costa, 1988, p. 96). Thanks also to government's intervention absorbing the undesired stocks and promoting, at the expense of the Treasury, farmers' financial adjustment, in spite of both the steep fall of agricultural prices and level of economic activity, which could have provoked a major sectoral crisis, the outcome of the 1987/88 *supersafra* was not as bad as the situation would suggest. An indication of this is that, in spite of reduction of rural credit and low minimum prices (tables 2 and 3), farmers were able to keep the level of production in 1988 (see Rezende, 1992, for detailed analysis for period 1986-90).

Table 2
Brazil: value of rural credit loans contracted by use
(US\$ billions)

Year	Operational credit	Investment	Marketing	Total	Real rate of interest (%)
1970	2.8	1.7	1.8	6.2	-3.9
1971	3.2	2.1	2.0	7.3	-4.0
1972	3.8	3.0	2.3	9.0	-1.5
1973	5.5	4.2	3.1	12.8	-1.4
1974	7.1	4.8	3.9	15.9	-15.1
1975	10.1	7.2	5.8	23.1	-11.5
1976	10.0	7.7	6.0	23.7	-21.9
1977	10.0	5.1	6.0	21.2	-16.7
1978	9.9	5.2	5.7	20.8	-17.7
1979	13.5	6.7	6.6	26.8	-34.4
1980	14.5	4.8	6.3	25.6	-37.7
1981	13.0	3.4	5.8	22.2	-27.0
1982	13.8	2.8	4.9	21.5	-28.7
1983	10.1	2.7	3.4	16.2	-23.4
1984	7.0	1.2	1.7	9.9	-5.1
1985	10.1	1.8	2.3	14.2	-2.3
1986	11.8	6.8	2.5	21.1	-33.3
1987	11.7	2.8	2.1	16.6	7.0
1988	8.0	1.9	1.9	11.7	7.0
1989	8.6	1.1	1.0	10.7	7.0
1990	4.6	0.7	0.9	6.1	9.0
1991	5.2	0.5	0.6	6.3	9.0

Source: Central Bank. Authors' elaboration.

Note: The nominal values of the balances in cruzeiros were deflated by IGP and then converted to dollars at the commercial rate of exchange of June 30, 1992 (same basis of IGP).

In the first half of 1988, low real rates of interest as well as great uncertainty regarding the government's anti-inflationary strategy following the failure of both the Cruzado and Bresser Plans, increased agents preference for real assets; stockholding of agricultural commodities was particularly favored by the recently introduced changes in minimum prices policy, which in practice prevented government's *ad hoc* intervention in the commercialization of the crop. In this context, participation of private sector in the commercialization of the crop and stockholding of agricultural commodities actually increased, thus concurring to an increase of agricultural prices in the peak of harvesting season. Farmers' lower level of indebtedness associated with a reduced but still significative supply of marketing credit (EGF) allowed at least part of agricultural producers to hold their crops and benefit from prices increase.

Table 3
Indices of minimum prices for the major crops, 1970-91

Year	Seed cotton	Raid-fed rice	Edible beans	Corn	Soybeans
1970	81	91	50	83	85
1971	81	83	53	83	94
1972	95	94	56	87	115
1973	98	11	64	105	119
1974	108	108	84	135	115
1975	123	132	78	131	152
1976	116	119	78	125	138
1977	135	114	90	113	120
1978	128	110	82	102	103
1979	118	105	77	97	95
1980	94	98	72	86	n.a.
1981	100	100	100	100	100
1982	105	102	106	112	105
1983	96	91	97	98	94
1984	103	95	92	92	81
1985	126	125	113	140	151
1986	106	108	95	123	133
1987	72	76	73	86	88
1988	73	72	73	96	80
1989	60	55	69	84	66
1990	40	38	51	57	42
1991	47	43	60	59	48
1992	50	51	56	79	61

Sources of basic data: Conab and FGV.

Note: Minimum prices were first deflated (using IGP-DI), then averaged for the harvest months.

The harvesting of the 1989 crops was accompanied by rising agricultural prices, due to the Verão (Summer) Plan and farmer's greater financial capacity to withhold their crops, thanks to the combination of lower level of indebtedness and positive results obtained in 1988. Farmers expected to repeat the experience of 1988, when they retained their crops and sold in the second semester at higher prices. However, the acceleration of inflation and the sky high rate of interest led to the collapse of agricultural prices, to which farmers themselves contributed. In their attempt to find a better refuge for the capital they had invested in production and that they had been keeping in the form of commodity stocks, they rushed to the overnight market, "liquidating" their stocks.

5. Summary and conclusions

This paper has argued that adjustment policies in Brazil did not prevent agriculture from performing reasonably well during the 1980s, a decade characterized by a sharp deceleration of the country's economic growth and by the overall deterioration of the macroeconomic situation.

This was due, on the one hand, to the stimulus that the adjustment policy itself provided to agriculture, through exchange rate devaluation, and, on the other hand, to the adoption of compensatory sectoral policies.

With the deterioration of the fiscal situation, these sectoral policies started to face resource restrictions from 1987 on. Besides this, and in the attempt to compensate the agricultural sector, the government reduced its intervention in the agricultural markets, both in what respects the selling of its stocks of agricultural commodities as well as through greater liberalization of exports and imports of agricultural goods. These market liberalization measures were extended to 1990 and 1991, with the deregulation of the markets of wheat, coffee and sugar. Imports of agricultural goods became even more liberalized, too.

At the same time that this deactivation of sectoral policies took place, together with extensive liberalization of internal and external markets, the inflationary process became more unstable, affecting the agricultural sector in a significant way. Basically, this occurred through the financial market, and specifically by the inverse relationship which was established between financial applications in public bonds and commodity stockholding, which increased the instability of agricultural prices and income.

Thus, due to the changes in sectoral policies as well as to the macroeconomic policies adopted to fight inflation, there occurred, at the end of the 1980s, an increase in instability of agricultural income, to the point of creating the conditions that led to the downward-adjustment in investment levels for the agricultural years of 1989/90 and 1990/91, a fact which, compounded with adverse climatic conditions, caused the dramatic downturn in agricultural output in these years. Since the end of 1991, however, the government reactivated the sectoral policies; producers' response was positive and agricultural GDP grew 6 percent in 1992. The quantities produced reached record levels in 1994.

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