

## THE MINIMUM PRICE PROGRAM

### 1. Introduction

Gordon Smith

This section deals with the minimum price program administered by the Comissão de Financiamento da Produção.<sup>29</sup> Special programs for

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29 Products included in this program for the Center-South are currently cotton, peanuts, soybeans, rice, corn, beans, manioc flour and sunflower seeds (for translator: girassol)

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coffee, sugar and other export crops will not be treated.

First, several theoretical approaches to minimum price policy are presented and adapted to the current possibilities in Brazil. Then the past action of the program is described briefly, followed by an analysis of current policy and suggestions for change. We will see that in spite of operational improvement in the system, it is still in critical need of overall policy definition if it is to have more than marginal impact on Brazilian agriculture.

### 2. Why Minimum Prices?

The minimum price program, to the extent it reduces risk and uncertainty in farming, can be a significant stimulant to agricultural development and efficiency. And by dampening supply and price fluctuations, it can also raise consumer welfare, diminishing the likelihood of periodic "crises de abastecimento".

Agriculture is subject to sharp price swings, rooted primarily in the instability of output. A part of production fluctuations arises, of course, from uncontrollable climate factors. But the price system operating under uncertainty in the atomistically competitive structure of agriculture creates built-in instability in output and prices.

Farmers do not, when they decide to produce, know the prices they will receive for their output. In these conditions they tend in some degree to project current prices into the future: the higher current prices at the time of the decision to plant, the higher the planned output for the following harvest, etc.<sup>30</sup> Theoretically,

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30 Technically, a supply function of the following type (with several possible variations) will apply:  $\text{Planned Output}_t = f(\text{price}_{t-1})$

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MINISTÉRIO DO PLANEJAMENTO  
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depending upon the supply and demand elasticities, this structure will lead to dampened, constant or exploding fluctuations in prices and planned output, the famous cobweb phenomenon. In practice, the intervention of random shocks and variables not included in the simple supply and demand analysis usually avoid the explosive alternative and leads to irregularity in the fluctuations. But it is clear that uncertainty about future prices combined with lags between the decision to produce and the realization of production are a principal source of output and price instability. Table XXIII gives an idea of the magnitude of real price fluctuations from harvest to harvest for four crops in São Paulo.

Table XXIII

Average Absolute Values of Harvest to Harvest  
Percentage Changes in Real Farm Prices, São  
Paulo State - 1949/1963

Beans	38.4%
Rice	27.1%
Corn	22.5%
Cotton	12.8%

Note: Annual average prices were deflated by an index of 23 agricultural price (excluding coffee) in São Paulo.

Source: Annual prices and price index: Divisão de Economia Rural da Secretaria da Agricultura do Estado de São Paulo.

This structure has at least two undesirable consequences. First, in any given year resources will tend to be misallocated within agriculture. Output tends to fluctuate around the equilibrium level, allocating alternatively too many and too few resources to any given product. Second, the risk of farming is greatly increased through the very responsiveness to producers to (the wrong) price.<sup>31</sup> Higher risk

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<sup>31</sup> Supply functions estimated for the Center-South of Brazil have usually shown significant response to prices. See, for example, the several monographs by Sérgio Brandt et.al., distributed by the Divisão de Economia Rural da Secretaria de Agricultura of São Paulo, estimating supply functions for São Paulo. See also the forthcoming publication by ANPES on Brazilian agriculture. There is an accumulating large body of literature on the supply response of farmers in underdeveloped countries, generally showing significant response to price.

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tends to reduce output, ceteris paribus. Perhaps even more important for increasing productivity in agriculture, high risk and uncertainty make farmers less willing to use inputs requiring money outlays and longer-term investment, and greatly reduce their access to credit. Put another way, a reduction in uncertainty and the risk of losses should prove a stimulant to the use of modern inputs which require money outlays and/or contractual obligations.

We assume that the principal policy goal of the minimum price program in Brazil is in fact a reduction in uncertainty and risk coupled with a dampening of supply fluctuations to consumers. Subsidies to agriculture through the product price mechanism, i.e. income transfers to agriculture from consumers and the government, are assumed not to be a goal of policy at this time.<sup>32</sup>

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<sup>32</sup> This does not rule out, of course, selective subsidies to the use of modern inputs such as fertilizer.

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### 3. Approaches to Minimum Price Policy

There are several approaches to minimum prices, three of which will be discussed here: forward equilibrium pricing, cost of production and floor pricing.

#### 3.1 Forward Equilibrium Pricing

The economically most appealing approach to minimum prices fixes them near their probable "equilibrium" levels. An equilibrium price is one which leads farmers to produce a level of output which final consumers, through exports or in the internal market, will also value at that price.

The goal of forward equilibrium pricing is to predict for farmers future equilibrium prices and divulge them widely before planting so that producers respond to them as probable future market prices in their production decisions. Equilibrium prices are then guaranteed as minimum prices, completely eliminating the producer's downward price risk and uncertainty for any single harvest. Minimum prices under this approach are fixed at the consumer's valuation of output, thus avoiding unnecessary accumulation of stocks and subsidies to producer from consumer and government alike.



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### 3.1.1 Forward Pricing: Closed Economy

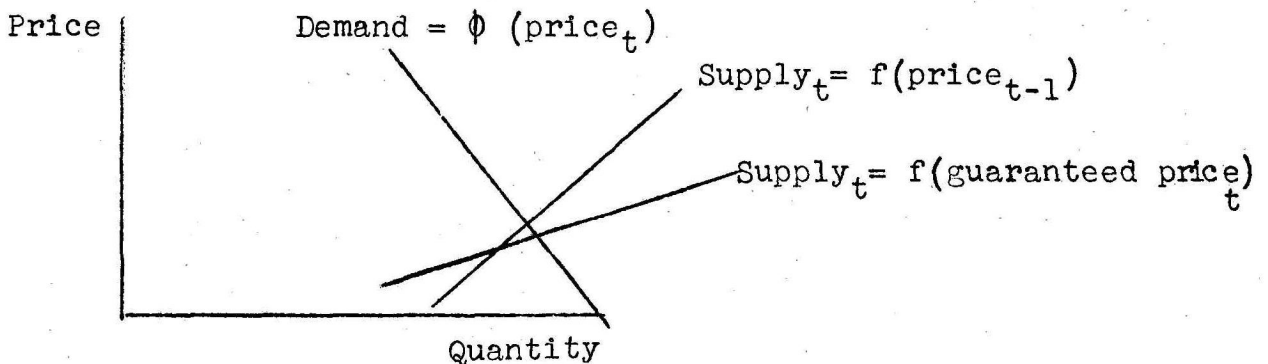
Oversimplifying somewhat let the demand and supply of a support commodity be as depicted in Diagram I, where

$$\text{Demand} = \phi (\text{price}_t) \text{ and supply} = f (\text{price}_{t-1}) \text{ or } f (\text{minimum price}_t)$$

The subscript  $t$  refers to the year. For ease of exposition, we assume that if farmers respond at all to preannounced minimum prices, they will do so in exactly the same way as they have to last year's market price in the past.(33) To achieve equilibrium, the price $_{t-1}$

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33 That is, output is the same function of guaranteed forward prices as it is of lagged market prices. This is clearly not so, given the great reduction of uncertainty in the guaranteed price system. The probable relation between the two types of supply functions is given in the graph. The supply function of guaranteed price will cut the supply =  $f (\text{price}_{t-1})$  curve from above. Supply will be higher for the guaranteed system at prices above the intersection point and lower for prices below this point. It is likely that equilibrium output



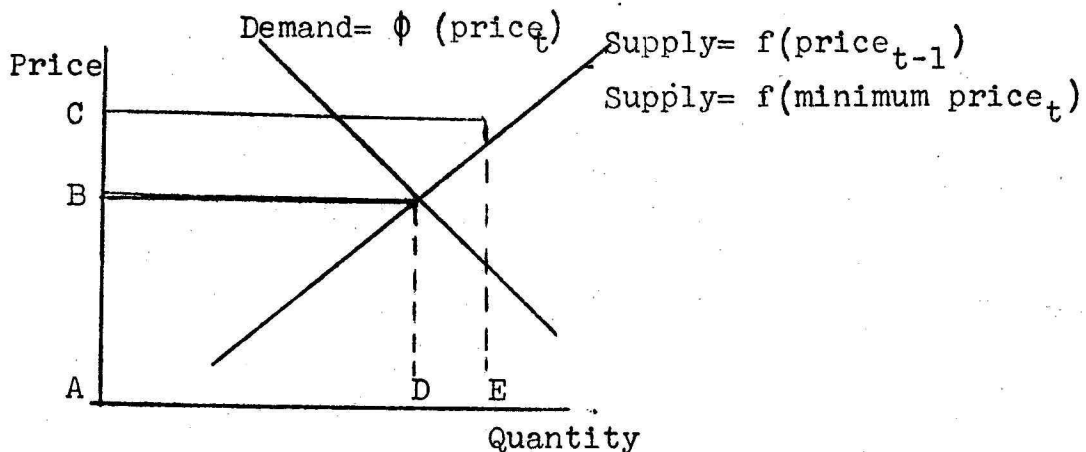
will be higher under the guaranteed forward price system than under free market operation. The basic conclusions of the argument are unchanged by the assumption of identical supply functions.

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or the pre-announced minimum price $_t$  of the supply function must equal the price $_t$  of the demand function for the same quantities. Forward pricing would fix minimum prices at AB and pre-announce them

(5)

DIAGRAM I



If farmers based their planting decisions on minimum prices rather than last years market prices, planned output would approach equilibrium levels in any given year. Even if producers continued to respond mainly to past prices, equilibrium prices would tend to be established in the market once the harvest was large enough to require government support. This can be seen from Diagram I. Let price of last year be AC, above equilibrium levels. Production this year will be AE, requiring government purchases at the equilibrium price AB. From then on, planned output would be AD, the equilibrium level, abstracting from fluctuations in yields.

In a closed economy the goals of stability and equilibrium under forward pricing are not in conflict and could be achieved simultaneously.

Fluctuations in yields would still cause frequent departures from such equilibrium levels. Complete stability in supply and prices could be obtained only with massive and costly government stocks to offset production declines in very poor harvests. The marginal social gains from such stocks carried over a number of years would be much less than the marginal costs of such stocks. Some instability, therefore, would have to be permitted in a closed economy. Given knowledge of the equilibrium price, the time distribution of yield variations, storage costs, and the demand functions,

it is conceptually possible to estimate the optimal level of stabilization stocks which would equate marginal social value with marginal cost.

### 3.1.2 Forward Pricing: Open Economy

In an open economy the minimum price system under forward pricing is intimately connected with foreign trade policy and must be adapted to it. Optimal trade policy for agricultural products is beyond the scope of the present discussion.

Rather we assume an export-import policy close to current practices in Brazil. Exports of all products are assumed to be free, whereas imports are undertaken only if production fails and prices rise substantially above normal levels.<sup>34</sup>

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<sup>34</sup> This is approximately the present policy of trade in minimum price products. Exports have been freed for the 1966/67 harvest (Decreto nº 58977, Aug. 3, 1966). Imports of these products, generally subject to tariffs 50% or greater outside of ALALC, have been undertaken only when domestic shortages have arisen through production failures. Whether or not this policy is rational from Brazil's point of view depends upon the mobility and degree of full employment of resources within agriculture. If resources were fully employed and could be shifted to products in which Brazil has a comparative advantage, there would be a net gain from freeing imports. The basic assumption of past and present policy is that imports of non-competitive domestically produced goods would result in a net reduction in the availability of goods and services to Brazil.

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Annual equilibrium under these export-import assumptions would require the announcement before planting of expected export prices or internal equilibrium prices, whichever are higher.<sup>35</sup>

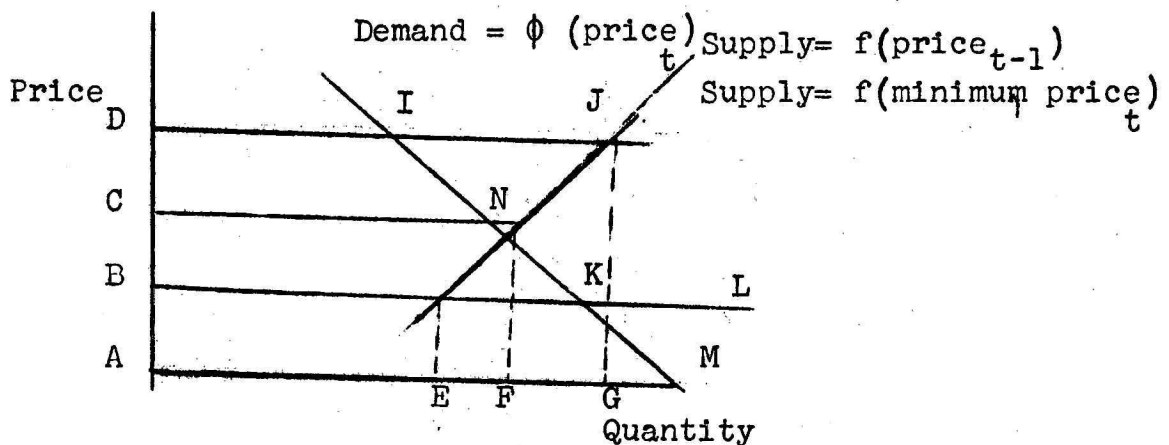
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<sup>35</sup> We assume here that world markets do exist for all products and that Brazil's sales in these markets have a negligible effect on world prices. If the second assumption is not true, some adjustment would have to be made, e.g. guaranteeing only 90% of expected world prices.

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DIAGRAM II



When predicted export prices are above internal equilibrium levels, they become market equilibrium prices. In diagram II the total demand is HIJ, when the export price is AD, above internal equilibrium level (assuming Brazil's exports have no effect on world prices). If producers respond to minimum prices pre-announced at export levels, then J is the equilibrium point. DJ is produced, IJ is exported and DI consumed internally.

When the predicted export price is below internal equilibrium, e.g. AB in diagram II, and imports are only permitted during harvest failures, the internal equilibrium price is also the market equilibrium price. If producers respond to it as the probable future price, supply and demand will be equated at that price.<sup>36</sup> Demand is now HIKL, which intersects supply at point M.

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<sup>36</sup> Again, let it stated that for ease of exposition we assume that producers respond to pre.announced minimum prices in the same way as they did to last years market price. This oversimplification does not affect the conclusions of the argument.

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If producers adjusted to pre-announced prices and these were correctly fixed, output would tend to annual equilibrium, either AG with exports of AF with no trade (see Diagram II). Annual risk and uncertainty would be considerably reduced. The uncertainty of longer-term investment would be diminished to the extent that the fluctuations of export prices above internal equilibrium are less than of internal prices without trade. In addition, the production for export would be stimulated exactly when world prices are high.

The full success of such a program clearly depends on getting producers to respond to pre-announced prices as the best estimate of future prices. Even if farmers did not adjust to pre-announced prices, greater stability would be achieved than under a completely free market system with no foreign trade.

The basic problem with this approach is that it requires considerable knowledge of domestic demand and supply conditions that cannot be obtained from available statistical information. In practice the domestic equilibrium price is unknown; and all estimates of it, say through past average prices, are subject to considerable error. The capacity of Brazil's minimum price system to buy and store is still not great. Errors provoking large purchases in any year, could swamp the minimum price system.

On the other hand Brazil's position for predicting world market prices is very good. Minimum prices are pre-announced in August, before planting. By that time the size of harvests in the leading producing nations of the northern hemisphere is fairly well known.

The general principle of forward equilibrium prices is valid and should be applied to the greatest extent possible with current information. Suggestions for this adaptation are made below.

### 3.2 Cost of Production

One policy goal of minimum prices frequently defended in Brazil is to guarantee producers their "cost of production". The Estatuto da Terra requires that minimum prices should be fixed to cover cost of production plus a 30% profit for producers. The Instituto Rio Grandense do Arroz used cost of production plus profit as their price criterion until very recently, and the concept plays a leading role in the fixing of sugar prices.

The principal problem with this criterion is its complete separation from final consumer demand. There is little reason to believe that a minimum price covering "costs" plus profit would lead farmers to produce at the level demanded by consumers at that price. Without production or marketing controls, there could

well arise a tendency to chronic overproduction, since the government would cover "costs of production" with or without a market. Permanent subsidies would be the result.

There are also serious practical problem in defining and measuring costs over large economic regions with widely varying unit costs and production techniques. These pitfalls make "cost of production" an even less desirable criterion and remove it one step farther from market equilibrium considerations.

Cost of production may be used supplemental information, but the criterion by itself cannot be applied in fixing minimum prices.

### 3.3 Floor Prices

This approach does not attempt to cover cost of production nor indicate forward prices before planting. Rather it seeks to prevent only the greatest declines in prices in the largest harvests. These prices would be somewhere between either export or domestic equilibrium prices and the lowest prices verified in the past. Were exports free with sure world markets and the marketing process more or less smooth, no government purchases would be required under this system except in products without world markets. Purchases would be undertaken only because of export limitations or bottlenecks in the export sector. The philosophy of very low minimum prices-floor prices-dominated the minimum price program in Brazil until recently.

### 3.4 Suggestion for Policy Orientation

As we shall see, current minimum price policy still lacks an overall set of policy goals and a general orientation, leading to frequent ad hoc decisions and a general uncertainty with regards to the system. What follows is a tentative suggestion for the fixing of minimum prices, mainly for discussion and comparison with other policies. In Brazilian conditions, some compromise of forward and floor pricing is probably indicated at this stage.

In drawing the outlines of a practicable forward price system in Brazil, we continue to assume free exports of minimum price products, while imports will be undertaken only during harvest failures.



It is useful to distinguish three groups of products:

- (1) those usually or always competitive in the world market;
- (2) those sometimes competitive in the world market, depending upon fluctuations in world prices and the internal level of output;
- (3) those usually not competitive in the world market or without a significant active international market. Judging by past export behavior, the competitive category includes cotton, probably peanuts and soybeans, and perhaps mandioca. The sometimes competitive group includes rice and corn. The third class includes beans and perhaps mandioca.<sup>37</sup> A detailed analysis of price

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<sup>37</sup> Brazilian mandioca is usually competitive and is exported, but in very small quantities in relation to domestic consumption. Export promotion might put it in the same group as cotton. Beans is less frequently competitive and suffers a very small and uncertain world market.

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movements is necessary for definitive classification.

For competitive products (cotton, soybeans, peanuts), the forward pricing system could be applied without modification. Predicted FOB export prices net of port expenses would be announced before planting and backed off into the interior by deducting freight and other expenses.<sup>38</sup> In order to hedge against possible errors

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<sup>38</sup> See Section IV.5.3 below

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in predicting, requiring large government purchases, perhaps only 90% of predicted net FOB export prices should be guaranteed, but with full readjustment for inflation before harvesting.<sup>39</sup> It should,

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<sup>39</sup> See Section IV.6 below

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be recalled that Brazil's position in predicting world market prices is excellent due to the fact that planting occurs in Brazil during or soon after harvests in the major Northern Hemisphere producing countries.

For the sometimes-competitive products (rice, corn) predicted export prices or internal equilibrium prices would be fixed, whichever were higher, following the principles set forth in section IV.3.1.2. But we cannot determine internal equilibrium prices with any precision. As a rough approximation, past monthly farm and wholesale prices should be analyzed thoroughly 12 month and, where appropriate, cyclical moving averages of past prices should be calculated and deflated.<sup>40</sup> These averages would

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<sup>40</sup> Some products, e.g. rice, show definite cyclical movements of output and price which should be taken into account in fixing minimum prices.

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then be a rough proxy for the moving internal equilibrium prices.<sup>41</sup> Past averages could then be compared with past troughs

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<sup>41</sup> There would be some influence from exports in some years, thus causing deviations from internal equilibrium. In addition, only if demand and supply had been shifting at the same rate and had fluctuations around equilibrium been regular, would such a method give a precise estimate of future equilibrium.

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in prices. Internal minima, instead of equilibria, would be set somewhere between troughs and averages, initially near the latter. A clear formula is desirable here, e.g. 80% of average price in the last 3-4 years. This would give internal minima a certain flexibility in reflecting price trends, avoiding downward price rigidity in face of increases in productivity. The exact percentage to be used can be determined only after the analysis of probable government purchases in the past under different alternative rules.

Thus either the prospective export price of the internal "minima" would be pre-announced, readjusted before harvesting for inflation and maintained as a floor during the harvest.

For products with little world trade (beans), the internal minimum price is indicated.

Stocks will sometimes be accumulated by the government. This is not, per se, a sign that minimum prices should be lowered,

since governmental purchases are in the nature of the program. Only if for at least two consecutive years large purchases are made, with little prospect for sales out of stocks, should minimum prices be lowered for this reason alone.

Concrete problems of price readjustment in this minimum price set-up are examined below in Section IV.6.

#### 4 Minimum Price Policy in Brazil, 1951-1964

The most salient characteristic of the minimum price policy in the past — and to some extent still today — has been the lack of a clear definition of policy goals and related to them, a set of operational guidelines. Until 1963, the minimum price program did not, in practice, guarantee even floor prices to producers, and its emphasis in government policy was practically nil. In 1963, policy orientation suddenly changed, and minimum prices were set aggressively to stimulate production, again, however, without a general definition of policy objectives.

The minimum price program was initiated, for all practical purposes, in 1951 with Lei 1506, which reformed the Comissão de Financiamento da Produção and placed it under the jurisdiction of the Ministério da Fazenda.<sup>42</sup> CFP was charged fixing minimum prices

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<sup>42</sup> Comissão de Financiamento da Produção was created in 1943, but remained practically inoperative until 1952.

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and regulating the field operations of the program. The Bank of Brazil has been almost the sole operational agent of CFP in the field.

In the Center-South minimum prices have been fixed for cotton, rice, beans, corn, peanuts, soybeans, farinha de mandioca and, sporadically, sunflower seeds,<sup>43</sup> the principal storeable pro-

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<sup>43</sup> We will not deal here with the program in the North and Northeast, which has been limited primarily to financing of export products.

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ducts not covered by individual programs (coffee, sugar, etc.). There were two types of operations — purchases at minimum prices and loans on stocks in warehouses approved by the Bank of Brazil at 80%

of minimum prices (raised to 80, 90, or 100% in 1966, depending upon whether market prices are above, equal to or below minimum prices). Subsequently in 1965, discount of promissórias rurais,<sup>44</sup>

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<sup>44</sup> This instrument is essentially credit to the buyer, not to the farmer.

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when minimum prices are paid, were brought under the program. Until 1964, farmers, merchants and processors could all avail themselves of the program. This was changed in 1964. Now only farmers and, exceptionally, processors at the discretion of CFP (through loans with sales options) may participate in the system.

Minimum prices were and are fixed at the ports of embarkation and selected "centers of consumption". Prices paid in the interior are then calculated through a series of deductions including freight to the nearest port or consumption center, commissions to the Bank of Brazil and other expenses, such as grading.

The system functioned very poorly until 1964 and gave little protection to farmers. CFP was a small weak organization of little technical assistance in the process of fixing minimum prices. In any case, until 1963 the policy goal was clearly to avoid purchases except in the most extreme conditions.

Prices were generally fixed below market prices even at their troughs, and usually no government support was given to the market. Table XXIV gives real average prices paid to farmers in São Paulo and real minimum prices fixed for the ports and consumption centers. Farm prices are higher in almost every case, even though freight has not been deducted from the minimum price series.<sup>45</sup>

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<sup>45</sup> Given the system of equal prices in all ports and consumer centers, purchases were sometimes made in regions far removed from the major consumer centers of Rio and São Paulo, even though São Paulo prices almost never fell to the minima.

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When market prices fell below minima prices in certain areas, the program usually failed in its support goal. Financial resources at the disposition of the program were insufficient. The Bank of Brazil

F E I J Ã O prêto (saca de 60 kilos)		M I L H O semi-duro misto (saca de 60 kilos)	
Preços Pa- gos aos lavradores	Preços Mínimos	Preços Pa- gos aos lavradores	Preços Mínimos
8 436	5 662	4 359	3 737
10 406	6 091	5 685	3 756
15 014	5 829	5 917	3 621
7 476	5 633	3 825	3 477
16 291	5 072	6 325	3 133
17 539	5 988	5 614	3 293
14 406	6 996	4 875	3 716
8 620	7 094	5 284	3 664
21 941	5 911	5 702	3 116
19 964	5 924	3 917	3 255
11 929	7 742	5 688	3 200
27 030	7 656	5 187	4 271
16 849	13 692	3 837	4 377
11 390	8 955	4 949	3 613
10 388	8 700	3 792	4 350

classificação dos preços

Q U A D R O    XXV

Compras efetuadas pelo Governo através do Programa de Preços Mínimos de  
1952 a 1965  
(toneladas)

ANOS	MILHO	ARROZ	FEIJÃO	ALGODÃO	CAFÉ	AMENDOIM	SOJA	FARINHA DE MANDIOCA
1952	-	-	-	1/4 717	12 399	-	-	-
1953	-	-	-	421 741	-	-	-	-
1954	2 362	-	12 151	590	-	-	-	12 151
1955	89	-	1 443	-	-	-	-	5 151
1956	-	-	-	1 284	27 429	-	-	-
1957	-	-	-	-	195 395	-	-	-
1958	-	-	114	-	21	-	-	-
1959	-	-	-	941	9	-	-	-
1960	-	-	-	3 486	-	-	-	-
1961	296	43 927	21 779	346	-	-	5	-
1962	-	6	-	-	-	-	-	-
1963	657 573	-	23 981	8 224	-	69 048	-	46 810
1964	61	1 738	64 000	2 373	-	-	-	24 101
1965	422 008	1 695 106	91 552	-	-	-	-	43 408
1952/62	2 747	43 933	35 487	443 105	235 163	-	5	17 302

FONTE: Comissão de Financiamento da Produção - A Política Nacional de Preços Mínimos (1966)  
(1) Trata-se de aquisições excepcionais, pois o Café constitui um caso particular da responsabilidade de outros programas.



was badly organized for the operation, and there were frequent bottlenecks in storage, grading and the sheer transactions capacity of the Bank.

The insignificance of purchases under the program can be seen from Table XXV. Total purchases of corn in the 11 year period 1952/1962 reached only 2,747 tons, of rice 43,933 tons of beans 35,487 tons and farinha de mandioca, only 17,302 tons. Purchases of peanuts and soybeans were will nil. Only in cotton were acquisitions substantial, but of the total of 443,105 tons bought 1952/1962, 95% took place in 1953.

Loans under the program went in great part to processors of peanuts, rice but mainly cotton (see Table XXVI) - as they still do.

Table XXVI  
Financiamentos Concedidos pelo Banco do  
Brasil através do Programa de Preços Mí-  
nimos(1) (1,000 Cr\$)

	<u>Valôres Correntes</u>	<u>Valôres Constantes (2) 1965 Cr\$</u>
1952	174,925	8,879,018
1953	166,157	7,337,493
1954	66,320	2,306,079
1955	81,775	2,439,921
1956	28,641	714,536
1957	69,728	1,524,324
1958	485,629	9,364,869
1959	2,006,541	28,041,410
1960	2,040,034	22,134,368
1961	not available	not available
1962	not available	not available
1963	24,568,000	73,654,864
1964	26,995,000	42,409,145
1965	34,078,000	34,078,000

(1) Excludes discounts of promissórias rurais.

(2) Inflated by the general price index, No. 2 of Conjuntura Econômica

Source: Relatórios do Banco do Brasil e CREA; CFP, A Política Nacional de Preços Mínimos (1966).

In part, the ineffectiveness of the program was rooted in the very backwardness of the marketing and production system, the inability of producers to fulfill the requirements of the Bank of Brazil, the necessity of many producers to sell soon after harvest in liquidation of debts to merchants etc.

However, the principal reason for the marginal impact of minimum prices was the lack of policy orientation in the field. Little effort was made to improve the program until 1962/1963. After the "crises de abastecimento" of 1962, the government took seriously the possibility of using the minimum price program to stimulate output, but in a very ad hoc fashion. Extremely high stimulus prices were announced before planting for rice, beans and corn in September, 1962, higher at that time in real terms than most previous market prices. These prices were not adjusted for inflation before harvesting, but still were the highest minimum prices yet fixed for corn and beans and the second highest for rice (see Table XXIV).<sup>46</sup>

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<sup>46</sup> When announced in September, real minimum prices in 1965 Cr\$ (using Conjuntura Econômica's Index No. 2 of prices) were 13,382 for rice, 22,584 for beans and 7,220 for corn. Previous annual peaks of São Paulo farm prices were 16,957 for rice, 27,030 for beans and 6,325 for corn, again in 1965 (see Table XXIV).

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The fixing of minimum prices obviously above internal equilibrium levels, when not tied to exports, was a misuse of the minimum price program for the immediate goal of increasing output.

Although these stimulus prices were not readjusted for inflation the field apparatus and financial resources of the program were still inadequate to purchase the supply offered by farmers at the support prices.

Thus the minimum price program before 1964 was characterized by inactivity, indefiniteness, terminating in an ad hoc effort to stimulate output of certain products through high minimum prices.

## 5. Present Minimum Price Policy

Although the minimum price program has improved in several respects since 1964, most notably in its operational capacity, it still lacks long-run policy goals. The whole orientation of the program requires re-thinking in order to obtain a greater degree of output and price stability. We turn first to the operational aspects of the program, with some suggestions for improvement, and then to the program's overall policy definition.

### 5.1 Current Organizational Structure

The present governmental structure was created by Leis Delegadas No. 2-7 of September 26, 1962. The diffusion of policy authority in abastecimento was recognized as leading to frequently contradictory measures. As a result, overall policy authority in regulating exports, fixing minimum prices, enforcing ceiling prices and many other activities affecting food supply was given to SUNAB and its several Conselhos. The executory organs for these policies are CFP (now transformed into an autarquia under SUNAB), COBAL (Cia. Brasileira de Alimentos) and CIBRAZEM (Cia. Brasileira de Armazenamento). CFP is responsible for proposing minimum prices for the approval of the Conselho Deliberativo da SUNAB and for regulating and overseeing the administration of the program. COBAL is essentially the government's marketing company, responsible for maintaining regulatory stocks and intervening "opportunistically" in the market. CIBRAZEM is the warehousing arm of the federal government, at the disposal of both COBAL, and CFP in their respective programs. It also sells storage services to private parties. The Bank of Brazil remains CFP's main operational agent in the field.

The minimum price program currently acts through three instruments: (1) purchases from producers at minimum prices; (2) storage loans to producers and selected processors at 80, 90 and 100% of minimum prices depending on whether market prices are above, equal to or below minimum prices respectively; (3) discounts of promissórias rurais by the Carteira de Crédito Geral do Banco do Brasil when minimum prices are paid. An idea of the relative importance of these three instruments in recent months is given in Table XXVII.

QUADRO XXVII

OPERAÇÕES DE SUSTENTAÇÃO DA POLÍTICA DE "PREÇOS MÍNIMOS"

SALDOS OBSERVADOS - EM BILHÕES DE CRUZEIROS

D I S C R I M I N A Ç Ã O	1964	1 9 6 5				1966		
	Dezembro	Março	Junho	Setembro	Dezembro	Março	Junho	Julho
<u>Carteira de Crédito Agrícola e Industrial</u>								
I - Comissão de Financiamento da Produção "Aquisição de produtos agrícolas"	5,2	10,6	81,7	225,2	229,2	178,4	115,0	108,4
II - Financiamento da produção agrícola	16,4	12,9	15,2	19,9	14,8	12,5	23,7	39,8
Total Parcial I .....	21,6	23,5	96,9	245,6	244,0	90,9	138,7	148,2
<u>Carteira de Crédito Geral</u>								
III - Desconto de promissórias rurais	-	0,8	24,3	38,1	26,4	48,3	122,6	158,9
Total Parcial II .....		0,8	24,3	38,1	26,4	48,3	122,6	158,9
Total Geral .....	21,6	24,3	121,2	283,7	270,4	139,2	261,3	307,1

FONTE: Comissão de Financiamento da Produção - A Política Nacional de Preços Mínimos

## 5.2 Operational Aspects of the Minimum Price Program

The operational effectiveness of the program has improved considerably since 1963. The Bank of Brazil now supports the program more actively than in the past and is much better equipped to carry out field operations. With the incorporation of CIBRAZEM and better coordination between the several government organs involved, storage of purchased output has become much less of a bottleneck. And in spite of its possible short-run inflationary impact full financial support has been given the program to buy the quantity offered at the minimum price.

There are still several fronts upon which operational efficiency could be substantially improved. First, the reporting and tabulation of financial and quantitative information on the program is very slow and incomplete. CFP generally does not know its total stock position and its location, and information on total purchases filters through with considerable delays. This makes decisions on sales and exports from CFP stocks much more difficult. It has also led to considerably inefficiency in storing and cross transporting in the interior and between the interior and major consumer centers. It is impossible to coordinate effectively the storage and transport operations of the program without such information. Total stocks and purchases should be tabulated rapidly and at least monthly and published so that market participants may better judge the market situation and future prospects.

Second, as proposed in the section above on storage, in many areas private banks and warehouses should be integrated into the program to improve its coverage and expand its operational capacity. Now only the Bank of Brazil may make such agreements with private organizations. This should be changed to permit CFP to operate directly with such banks and warehouses, thus avoiding possible conflicts of interest detrimental to the program.

Third, lack of information by producers on the program has limited its scope. Specialists estimate that perhaps 10% of Brazilian farmers are aware of its existence. It is clear that the program reaches primarily large farmers, reflected in the fact that average purchases by CFP in 1965 were much larger than the average output per establishment producing the products in question (see Table XXVIII). The total number of acquisitions was about 5% of the total number of agricultural establishments in the Center-South shown by the 1960 census. The program should be more widely divulged



Table XXVIII  
Purchases by CFP, 1965

<u>Product</u>	<u>No. of Acqui-</u> <u>sitions</u>	<u>Total Purchases</u> <u>(60 kilo sacks)</u>	<u>Average Purchase</u> <u>(60 kilo sacks)</u>
Beans	6,427	1,504,918	234
Rice	66,492	30,523,057	459
Corn	14,679	7,210,043	491

Source: CFP, Relatório de 1965, pp. 22-23

and explained. One effective method would be large billboards on all roads leading to towns with buying agents of CFP. The signs could give in the simplest terms first the alternatives of the program, then minimum prices for products produced in the region. Farmers could be referred to the agency for further information.

Fourth, although greatly improved over previous years, the technical assistance given by CFP in determining prices could still be substantially improved. CFP has not sufficiently analyzed the economic consequences of different alternative measures in the program. It has little notion of the cost of the program, and has not profitted from the experience of other countries to any great extent. Nor has it profitted from world market information available for predicting world market prices.

Finally, at present the gains from later price rises of goods purchased by CFP accrue to the government. Loans through penhores mercantis involve a rather formidable mountain of paperwork, much more than in purchases. One rather simple change could probably increase operational efficiency while at the same time transferring to farmers gains from price rises after they have sold to CFP. All farmers would sell to CFP with the option of repurchase at the minimum price plus storage, interest and other expenses within a period of, say 180 days. This is equivalent to 180 days loans with sales option to CFP at the minimum price less expenses (the now current loan procedure). Paperwork for farmer is reduced, in addition to giving all producers the loan equivalent, allowing them to postpone the decision of whether to sell or not. All price rises in the 180 day period could then be absorbed by farmers, while CFP would still cover costs. The desirability of



this change along with its exact implementation is now being studied by CFP.

### 5.3 Current Approach to Minimum Prices

Lei Delegada No. 2 (26/9/62) requires that minimum prices be set "nos centros de consumo ou nos portos, FOB, e levando em conta os diversos fatores que influem nas cotações dos mercados interno e externo". This clause does not define any real policy of minimum prices. In practice, the orientation of the program is determined administratively by the Conselho Deliberativo da SUNAB (SUNABÃO). As a result, policy direction itself has been unstable, varying between aggressively high minimum prices, e.g. rice, corn and beans in the 1965 harvest, and the much more cautious fixing of minimum prices below current export prices.

The current minimum price policy has little positive effect on price and supply stability, except insofar as its storage loans and promissória rural discounts avoid credit bottlenecks and reduce seasonal price fluctuations. Although minimum prices now are tied loosely to the world market (with the possible exception of beans), they are of marginal assistance to producers in guiding their production decisions. First, they are not publicized sufficiently. More importantly, pre-announced minimum prices have little content either as indicators of future real minimum prices or as predictors of future real market prices. There is no guarantee of price readjustment for subsequent inflation before the harvest. Thus the farmer is kept guessing about what the real minimum prices in fact will be.<sup>47</sup>

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<sup>47</sup> Decreto No. 54 294 (18/9/64) promised readjustment according to "índices de correção monetária" 30 days before harvest. Actual readjustments were small and in rice, nil. Decreto No. 56 822 (1/9/65) promised readjustment, but dependent also upon international and domestic price quotations. Decreto No. 58 977 (3/8/66) for the 1966/67 harvest no longer contains any reference to readjustment.

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All minimum prices stipulated in the ports and centers of consumption for the 1966/67 harvest are well with the FOB export prices net of port expenses current when the prices were fixed (see Table XXIX).

Table XXIX

FOB Export Prices Net of Port Expenses  
and Minimum Prices Fixed in August, 1966  
for the 1966/67 Harvest

<u>P r o d u c t</u>	<u>FOB Price Net of Port Expenses (60 kilo sacks except as indicated)</u>	<u>Minimum Prices in the Ports 1966/67</u>
Algodão em carôço	Cr\$ 4,445 (arrôba de 15 quilos)	Cr\$ 4,500
Amendoim industrial	Cr\$ 8,492 (sack of 25 kilos)	5,430-5,800
Arroz <sup>(1)</sup> grão médio	US\$ 144 (July) (ton)	US\$ 148
Farinha de mandioca	Cr\$ 3,700 (sack of 50 kilos)	Cr\$ 3,700
Feijão	Cr\$15,462-26,600	Cr\$18,000
Milho semiduro e misto	Cr\$ 5,439	Cr\$ 6,000
Soja	Cr\$12,660	Cr\$ 8,700

(1) The equivalent in milled rice of the rough rice price.  
All prices are for identical grades.

Source: CFP, Preços Mínimos para a Região Centro-Sul do País:  
Safra 1966/67 (1966).

taking into account a probable exchange devaluation before the  
1967 harvest months.<sup>48</sup> However, little effort was made to predict

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<sup>48</sup>. The same was true of prices fixed for the 1966 harvest.

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export prices for the coming year. Given inflation and a probable  
devaluation before the 1967 harvest, all of this risk and un-  
certainty is still borne by the producer. A forward pricing system  
has not been achieved.

Exports of minimum price products have been freed for the  
1967 harvest.<sup>49</sup> Minimum prices are fixed well below prospective

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<sup>49</sup> By decrees 58,975 (cotton), 58,976 (girassol) and 58,977 (other  
products) (3/8/66). Given the past performance of CACEX in grant-  
ing export licenses, this general policy may be thwarted indi-  
rectly under the almost certain pressures from industries proces-  
sing cotton, peanuts and soybeans.

export levels and will not subsequently be raised above them while no real attempt is made in fixing minimum to predict future real export prices. What, then is the role of the minimum price program? Presumably market forces would maintain internal prices near export levels (net of marketing expenses) in any case.

Admitting that market imperfections, bottlenecks in the export process, including the difficulty of finding markets rapidly, do exist, one function of the program is to guarantee the producer price near current export levels at the port less freight and other expenses. Its second, and perhaps more important, function is as a source of credit for storage and marketing (*penhores mercantis* and *promissórias rurais*).

This is a modest program, with marginal impact on price and supply stability. Operationally it is equivalent to fixing minimum prices soon before harvest somewhat below the current net export price levels. Pre-announced prices have little real content in guiding farmers and, within the context of the present system, could be discontinued without changing farmer behavior significantly. All that is necessary is a guarantee that minimum prices will be fixed near export levels soon before harvest.

There are statistical indications that producers have not responded significantly to pre-announced prices, even when accompanied by promises of readjustment. Data appropriate for testing this hypothesis are sparse, and limited mainly to São Paulo State.<sup>50</sup>

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50 Production and area data furnished by SEP are too approximate for exact statistical analysis. Only São Paulo State has price and production statistics sufficiently accurate for this purpose for a broad range of products. The statistics on rice in Rio Grande do Sul published by the Instituto Riograndense do Arroz are perhaps the best of their kind in Brazil. However production has long been influenced by this autarquia's aggressive minimum price program.

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In September, 1964 high prices were announced for rice, corn and beans, for the first time with the promise of readjustment for inflation. Had the promise been fulfilled,<sup>51</sup> minimum prices during

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51 Rice prices were not readjusted, corn and beans price not by the full rate at inflation.

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the harvest would have been the highest in history for rice and corn, the second highest for beans, and near market prices for the 1964 crop (see Table XXX). For rice, corn and beans in São Paulo State

Table XXX

Real Minimum Prices, 1965 Harvest,  
Assuming Full Adjustment for In-  
flation in March, 1965 (1)

<u>Product</u>	(Cr\$ of 1965)		
	<u>Real Mini- mum Price</u>	<u>Previous High Minimum Price</u>	<u>São Paulo Farm Price, 1964</u>
Rice	10,160	9,096 (1964)	10,321
Corn	4,541	4,377 (1963)	4,949
Beans	10,681	13,692 (1963)	11,390
		8,955 (1964)	

(1) Prices fixed in September, 1964 were inflated by the relative increase in Conjuntura Econômica's price index no.2, September to March and deflated by the ratio of this same index in March to the annual total. This converts readjusted prices into 1965 cruzeiros, making the prices comparable with those in Table XXIV.

Source: Table XXIV, CFP, Conjuntura Econômica.

an attempt was made to test the hypothesis that farmers planted more because of the high pre-announced minimum prices for the 1964/65 harvest.

Supply functions were estimated by EPEA for rice and beans in São Paulo during years in which minimum prices were of little import, 1949-63 (64). For corn, a function previously estimated by Sérgio Brandt, et al. was used (see Table XXXI for the functions and Table XXXII for the supply elasticities).<sup>52</sup>

52 The corn supply function is an attempt to apply the Nerlove distributed lag supply model, which permits the estimation of long-run static supply elasticities. The reduced form of the model is essentially as follows:

$$\text{Production}_t = aB + EB (\text{Price}_{t-1}) + (1-B) \text{Production}_{t-1}$$

The coefficient of the lagged dependent variable supposedly

represents  $(1-B)$  where  $B$  is the elasticity or coefficient of expectations and the coefficient of the lagged price is the product of the long-run elasticity,  $E$ , and  $B$ . This model does poorly for corn, in spite of the reasonable  $R^2$ , since only the coefficients of the lagged dependent variable (production) are significant even at the 10% level. For both rice and beans, the lagged dependent variable gave highly insignificant coefficients, and with beans, a negative coefficient, which implies that the elasticity of expectations is greater than 1, an absurd result in this context.

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Table XXI

Farm Supply Functions Estimated for  
São Paulo State(Prices: 1948/52 Cruzeiros)<sup>(1)</sup>

(Area : 1,000 hectates)

(Production: million sacks of 60 kilos)

Arroz

$$\ln \text{Area Planted}_t = 5.651 + .357^{(2)} \ln \left[ 100 \left( \frac{\text{Rice Price}_{t-1}}{\text{Corn Price}_{t-1}} \right) \right] -$$

$$- .294^{(4)} \ln (\text{Corn Price}_{t-1})$$

$$R^2 = .78^{(2)}$$

Years included: 1950-63, excluding 1954 and 1957.

Feijão das Águas

$$\text{Area Planted}_t = 248.124 + .197^{(2)} (\text{Average Beans Price May-Aug.}_{t-1}) -$$

$$- .178 (\text{Rice Price}_{t-1}) - 1.208^{(2)} (\text{Corn Price}_{t-1})$$

$$R^2 = .92^{(2)}$$

Years included: 1954-64

Milho

$$\text{Production}_t = 10.644 - .112^{(5)} (\text{Corn Price}_{t-1}) + .941^{(2)} (\text{Production}_{t-1}) -$$

$$- .515^{(5)} \text{Year}^{(6)}$$

$$R^2 = .83^{(2)}$$

Years included: 1949-63

Notes: Coefficients were rounded for ease of presentation.

- (1) Prices for the rice and beans functions were deflated by the index of prices received by farmers in São Paulo, less coffee (23 products). The corn function prices were deflated by the same index, but including coffee.
- (2) Significant at the 1% level.
- (3) Significant at the 5% level.
- (4) Significant at the 10% level.
- (5) Significant at the 20% level.
- (6) 1949 = 1.

Sources: The corn supply function was taken from Sérgio Brandt et al., *Estrutura da Oferta de Milho no Estado de São Paulo* (1964), a monograph distributed by the Divisão de Economia Rural da Secretaria da Agricultura do Estado de S. Paulo.

The beans and rice functions were estimated by EPEA using data supplied by the Divisão de Economia Rural da Secretaria da Agricultura do Estado de São Paulo.



Table XXXII  
Supply Elasticities to Price, São Paulo State

<u>Variable</u>	<u>Elasticity</u> <sup>(1)</sup>
<u>Rice</u>	
<u>Rice Price</u>	
Cotton Price	.357
Corn Price	-.294
<u>Beans</u>	
Bean Price	.284
Rice Price	-.200
Corn	-.550
<u>Corn</u>	
Corn Price - Short-run	.398 <sup>(2)</sup>
Long-run	3.235 <sup>(2)</sup>

(1) For corn and beans, elasticities were calculated at the means of the observations.

(2) Significant only at 20% level.

Source: Table XXXI

If pre-announced prices influenced producer behavior, we would expect realized area or production in 1965 to be significantly larger than predicted by supply functions excluding the minimum price variable, because of high pre-announced minimum prices for the 1964/1965 harvest.

"Predictions" for 1965 were made through supply functions or area planted in rice and feijão das águas of corn production. These were then compared with realized area and production.<sup>53</sup>

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<sup>53</sup> In supply functions, the dependent variable should be planned output, since farmers cannot control yield variations arising from the weather. Area planted is a proxy for planned output and assumes constant planned yields. Actual output realized is a less satisfactory proxy for planned output, because random influences on yield are more important in determining output than systematic responses in yields to price. The production supply function was used for corn because of its ready availability.

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Actual corn production was 3.8% less than predicted by the supply functions. Area planted in feijão das águas was only 1.8% greater than predicted, while that of rice was 4.2% greater than forecast by the supply functions (see Table XXXIV).

Table XXXIII

Data used for Supply Predictions of Rice  
Corn and Beans, 1965

	Deflated Prices <sub>t-1</sub> (1964) <sup>(1)</sup> (1948/52 Cr\$)	Production <sub>t-1</sub> (1964) <sup>(2)</sup> (million sacks of 60 kilos)	Year
(Rice/cotton) 100	262.800		
Corn	76.160		
Corn (for corn function only)	78.730	36.795	17
Beans	196.954		
Rice	158.849		

Notes: (1) See Note (1) of Table XXXI.

(2) This is the average yield in 1963 and 1965 multiplied by the area planted in 1964. Yield were very low in 1964, 1,120 kilos/hectare as compared with 1,709 in 1963 and 1,753 in 1965, and realized production in that year was far below planned output. This wide divergence in yields would cause substantial errors in prediction in the particular model used for corn.

Data rounded for ease of presentation.

Source: Divisão de Economia Rural da Secretaria da Agricultura do Estado de São Paulo.

Table XXXIV

Predicted and Realized Area and Production,  
São Paulo, 1965

	<u>Area</u> (1,000 Hectares)			<u>Production</u> (1,000 sacks of 60 kilos)		
	<u>Predicted</u>	<u>Realized</u>	Percentage Difference of Realized from Predicted	<u>Predicted</u>	<u>Realized</u>	Percentage Difference of Realized from Predicted
Rice	962	1,004	4.2			
Feijão das águas	167	170	1.8			
Milho				42,340	40,800	-3.8

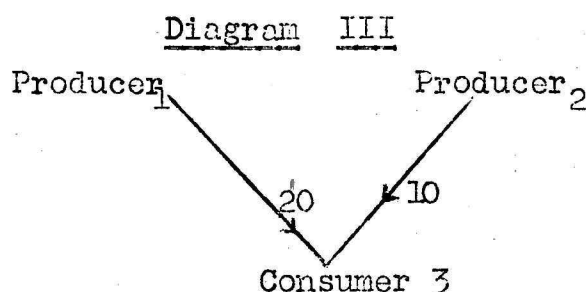
Source: Tables XXXI, XXXIII. Divisão da Economia Rural da Secretaria da  
 Agricultura do Estado de São Paulo.

All the differences between variables predicted ignoring minimum prices and those actually realized, are statistically negligible. Although a one year analysis is not sufficient, serious doubt is cast on the hypothesis that pre-announced prices in fact stimulated planned output. It would have been interesting to test also for the influence of lower minimum prices in 1966, but the necessary price and production data were not available at the time of writing. This analysis is not conclusive for other products, and particularly cotton may be influenced by pre-announced prices. But the data do not support the idea that pre-announced prices have been an important factor determining output in the past.

Three facts account for the apparent ineffectiveness of pre announced prices: lack of information on the minimum price program and of confidence on it coupled with uncertainty about the future real value of minimum prices. The pre-announcement of minimum prices is of little utility under the present system.

Thus the minimum price system today mainly compensates for deficiencies in export and marketing structure, although its loan program to producers and processors is of considerable importance. But little risk or uncertainty in farming is reduced or transferred to the government in this system.

In fact, the spatial pricing system in the minimum price program may introduce serious distortions into marketing. In spatial price equilibrium, differences in prices between different locations must be related to transfer costs over space. Thus in 3 point space, with 2 producing points and one consuming point,



the difference in prices between the consumer point and each producer point is the cost of transfer and between the two producing points the differences in the cost of transfer to the consumer point. Thus in diagram III the price in region 2 is 10 higher than in region 1, but 10 lower than in region 3 (consumer).

With many point space in equilibrium, the differences in spatial prices are greater than or equal to transfer costs when shipments occur and less than transfer costs when no shipments take place. This system also minimizes transport cost for any spatial pattern of demand and production.

If distortions are not to be introduced by the program in storage and shipping patterns, minimum prices should differ over space in a fashion roughly approximating spatial equilibrium. Normal commodity flows for each product and transport costs between the major points should be determined, and spatial price differences fixed according to the direction of the flow and the cost of transfer.<sup>54</sup> Perfection is impossible but the broad

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54 The problem is complex, complicated by different harvest times in different regions of Brazil. Thus, for example, Bahia may both ship to and receive beans from the South in any given year.

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patterns of spatial equilibrium prices should be aimed at.

The current system of spatial pricing under the minimum price program introduces distortions into the shipping and storage patterns when harvests are large enough to require significant government purchases. Identical prices are now set in the "portos de escoamento" and in several "centros de consumo" — Brasília, Belo Horizonte, Curitiba and São Paulo. Prices paid outside these cities are calculated by deducting freight from nearest (i.e. lowest freight) consumer center or port.

The choice of consumer centers and ports bear little relation to actual products flows. Goiás, for example is a net surplus area in rice and beans, yet Brasilia's minimum price is the same as São Paulo's, a city receiving from Goiás. In general the current system fixes minimum prices as high as surplus areas far removed from marginal ultimate consumption points — e.g. Goiás and Rio Grande do Sul — as in areas nearer the consumption centers — e.g. São Paulo State.

The exact consequences of this rather arbitrary method of fixing minimum prices over space are impossible to predict.<sup>55</sup> In

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55 In a perfect market over space, such a system would lead to a new equilibrium conditioned by the minimum price constraints. This equilibrium would be less efficient in shipping output to points of final consumption.

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addition to a probable decline in shipping and storage efficiency, there are two general undesirable consequences of the system. CFP purchases tend to be concentrated in the areas farthest removed from the marginal final consumption areas.<sup>56</sup> Thus over 2/3 of rice

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<sup>56</sup> i.e. deficit areas farthest removed from the surplus area in question

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purchases in 1965 were made in Rio Grande do Sul and Goiás.<sup>57</sup> 90% of

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<sup>57</sup> CFP, Relatório de 1965

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the gaúcho rice harvest was bought by CFP. Concentration of purchases in distant areas puts on merchants in these areas a disproportionate burden of the reduction in private trade provoked by government purchases. In addition, the capacity of the minimum price program is itself taxed much more through the spatial concentration of its purchases.

Thus the spatial differentials in minimum prices should be set on the basis of normal product flows and transport costs, and not as presently upon a rather arbitrary definition of consumption centers. Thorough studies of commodity flows and transport costs should be made by CFP and recommendations made for improved spatial price fixing.



## 6 Suggestions for Change in the Approach of the Program

As we have seen, the current program succeeds only marginally in reducing uncertainty and risk in agriculture. Alternative policy approaches should be studied, to be introduced as the operational maturity of the program increases. The system could be improved, for example, through a forward pricing system such as outlined above (Section IV.3.4). The first prerequisite of this system would be considerable improvement in publicizing minimum prices so that producers may adjust their output to them. In competitive and sometimes competitive products (when export prices are above internal equilibrium levels), the program would assume most of the risk in predicting world price levels and exchange rates. Forecasts would be made of probable FOB dollar export prices net of port expenses for the next harvest.<sup>58</sup> These would be converted into cruzeiros at the current

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<sup>58</sup> Careful attention must be paid here to the seasonality of world prices.

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exchange rate. Since such forecasts are approximate, it may be desirable to discount predictions by some factor, say 10%, as a margin of security for the government. These prices would be announced in advance of the planting as the best possible estimates for the coming year of market prices in the ports and would carry a guarantee of readjustment for inflation before the harvest. Indicative, although not binding prices could also be announced for the principal interior marketing centers by deducting estimates of current expenses and freight from the ports to the interior<sup>59</sup> and an acceptable profit

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<sup>59</sup> But obeying spatial equilibrium criteria.

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margin for private trade.<sup>60</sup> Soon before harvest these port prices

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<sup>60</sup> If this is not done and the government is correct in its price predictions, it will end marketing most of the crop at cost, eliminating private trade. The 2% Bank of Brazil commission may be sufficient to cover private net profit margins.

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would be fully adjusted for inflation, and from them interior prices would then be calculated net of expenses. These should be close in real value to indicative prices pre-announced in the interior before

planting, since most expenses should accompany general inflation fairly closely.

If the exchange rate accompanies inflation, readjustment before harvesting should not make exports unprofitable. Exchange rate readjustments may, however, be far apart. In this case temporary export subsidies may be necessary to be offset by temporary export taxes after exchange rate devaluation during the same crop year. Subsidies and later taxation transfer some of the windfall gain of holding stocks of exported crops from commerce to farmers. Presumably future policy will not permit an "undervalued" export rate for a period of several months, given a probable tendency towards a balance of payments bottleneck in the future.<sup>61</sup> Thus the subsidy-

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61 According to the EPEA macro-planning model.

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taxation system should be necessary only infrequently and should always be self-liquidating.

This system of forward export prices fully adjusted for inflation before the harvest removes the risk of losses in predicting future market prices from the producer to the government, and gives the producer a price floor near the expected marginal value of his output. If done well, there is no need for permanent net expenditures by the government, whereas the security of planting is increased considerably, stimulating the use of modern inputs requiring money outlays. Production for export would be stimulated when the world market appears good and reduced when the world market is poorer.

If predicted FOB export prices are significantly below internal minima estimated through past moving averages and troughs of internal prices,<sup>62</sup> the internal minima should be fixed and readjusted fully

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62 See Section IV.3.4 above

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for inflation before harvesting. For products with a small world market, like beans, the internal minima are indicated. It is certain that stocks will be accumulated in some years through use of the internal minimum price, since farmers will not adjust their output fully to it. This is to be expected, and government purchases up to

a certain point are a sign that the program is functioning properly. Reduction in minimum prices solely in response to stock accumulation should probably not be undertaken without the experience of at least two years' consecutive adding to stocks with little prospect of sales without subsidies. If minimum prices are manipulated up and down annually mainly in response to current internal market conditions, little stability is to be gained through the program. However, the necessity for through analysis of past price and production behavior cannot be overestimated.

The proposal of forward pricing is tentative and will no doubt need to be modified in practice. In addition other systems may be more considered more desirable in the future. However, analysis of policy alternatives is now critical for the future of the program, if it is to make a substantial contribution to Brazilian agricultural development.

#### Summary and Conclusions

Thus we have seen how uncertainty and risk may play an important role in retarding agricultural development and provoking misallocation of resources. The minimum program could substantially reduce uncertainty and risk, although today it still has small impact on price and supply stability.

Cost of production criteria in fixing minimum prices were rejected as not related clearly to equilibrium prices, to consumers' valuation of output produced in response to minimum price covering "cost of production". A modified system of forward equilibrium pricing was suggested as a desirable direction for future policy.

The efficiency of the CFP-Bank of Brazil - COBAL - CIBRAZEM operation in minimum prices is an improvement over the past, but still could be substantially bettered. A series of general recommendations was made on this problem.

We also saw that the present program is chiefly a source of marketing and storage finance coupled with the attempt to compensate internal marketing inefficiencies. If it is to have the effect it could the program should be rethought and redefined, perhaps along the lines of a modified forward equilibrium system.

We have not analyzed the desirability of including other products under minimum price policy. Green vegetables and fruits are

not appropriate for such program, while such semi-perishables as meat and eggs could perhaps profit from price supports. The desirability of support for these products in the future should be studied.

But the two priority areas today are (1) improving the operational capacity and efficiency of the program and (2) a general redefinition of minimum price policy.