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Accelerating Factors in 1979 and 1983

During the period of rapid economic expansion from 1967 to 1973, Brazilian inflation was around an average annual rate of 19.5 percent.¹ In subsequent years it began to suffer from the impact of various inflationary pressures, until, in the second semester of 1983, it reached a level ten times higher.

In the first phase, the inflation rate doubled, going from an average annual rate of 19.5 percent in the period 1967-1973, to 38.7 percent in the period 1974-1978. During this period, the rise in the inflation rate was accounted for by the impact of high international oil prices. In spite of this acceleration, the inflation rate was maintained under relative control, stabilizing itself at an annual level of approximately 40 percent.

After 1979, Brazil entered a more turbulent phase, with a series of new accelerating factors (supply and demand shocks), which caused the annual inflation rate to jump to 77.2 percent in 1979 and to around 100 percent in the period 1980-1982. In 1983, new inflationary pressures caused the inflation level to double again, closing the year with an annual rate of 211 percent. The main price fluctuations that occurred in the period from 1979 to 1983 are shown in Table 8.1.

In this chapter, we will analyze the main factors that caused inflation in Brazil to soar. We will restrict the study to the period after 1979 and concentrate the analysis on two critical moments: the second semester of 1979 and the first semester of 1983. The acceleration of inflation that occurred in these two periods can be explained with the help of the model of autonomous or inertial inflation that we studied in Part 1 of this book. For these two periods, the main factors causing inflation to accelerate were: (1) price adjustments administered by the government (the so-called corrective inflation), implying an increase or recomposition of profit

Table 8.1 Price Variations: 1979 - 1983 (%)

| Year | IGP-DI | Means of payment | Exchange devaluation | Monetary correction | Diesel oil on the Rotterdam market | Internal price of gasoline | Internal price of diesel oil | Nominal wages |
|------|--------|------------------|----------------------|---------------------|------------------------------------|----------------------------|------------------------------|---------------|
| 1978 | 40.8 | 42.2 | 30.3 | 36.2 | 7.9 | 33.3 | 31.4 | 58.1 |
| 1979 | 77.2 | 73.6 | 103.3 | 47.2 | 145.2 | 169.0 | 160.9 | 67.8 |
| 1980 | 110.2 | 70.2 | 54.0 | 50.8 | -0.8 | 125.7 | 66.7 | 109.7 |
| 1981 | 95.2 | 74.7 | 95.1 | 95.6 | -5.0 | 66.7 | 150.0 | 96.4 |
| 1982 | 99.7 | 69.7 | 97.7 | 97.8 | -0.8 | 96.5 | 104.0 | 107.6 |
| 1983 | 211.0 | 92.0 | 289.4 | 156.6 | -15.1 | 166.5 | 194.1 | 121.0 |

Sources: Getúlio Vargas Foundation, Central Bank,
Federation of Industries of the State of São Paulo (for wages)

margins; (2) the maxidevaluations of the exchange rate; (3) shocks of agricultural prices; and (4) changes in the formula for the indexation of wages.

The assumption in this analysis is that the acceleration of inflation functions as a defense mechanism for the business sector against threats to profits. It tries to protect these profits from recession, wage increases, devaluations of the exchange rate, increases of agricultural prices, and corrective inflation. In other words, the acceleration of inflation defends the profits of the business sector, because it succeeds in increasing the profit margin or, simply because when inflation goes up, it causes the average real wage to go down.

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When analyzing the process of the acceleration of inflation, the second semester of 1979 is an important period because it was both decisive and full of incidents and experiences that caused strong inflationary pressure. This pressure caused the inflation rate to jump from 40.8 percent in 1978 to 77.2 percent in 1979 and to 110.2 percent in 1980.

The year 1979 began with pressure from the prices of agricultural products that was the result of an inadequate expansion of cultivated area, as well as of poor harvests from 1977 to 1979. Actually, since the beginning of the 1970s, agricultural prices had been turning into an inflationary factor, but they had been repressed at the consumer level through price controls. This phenomenon can be accounted for by an insufficient supply of products for internal consumption, as well as by some cost-related pressures.

These pressures are explained by the increasing distance of the production areas from the centers of consumption, and subsequently by the expulsion from the rural frontier of the small farmers, who did not have legal rights over their land (*posseiros*). They were also influenced by the rapid modernization of agricultural production in the Central-South region of the country. This modernizing process implied high financial outlays to make the transition from traditional, itinerant agriculture, which uses almost no industrial input, to a type of agriculture that entailed massive consumption of industrial products. It also involved a process of replacing the fertility of the soil, which was exhausted by the previous process of traditional exploitation. This all added up to the fact that, on the one hand, the increase in productivity due to modernization usually resulted in an increase in costs while, on the other hand, it interrupted the subsidy for the

urban sector that was implicit in nonmonetary production costs and an underpaid work force.

The insufficient expansion of the supply of agricultural products was especially severe for products for internal consumption. This was basically because of a combination of the following factors: (1) income concentration that limited food consumption, (2) a lack of stimulation for food production because of price controls and unequal terms of trade with the oligopolistic industrial sector, (3) the stimulation and expansion of agricultural products for export, (4) heavy land speculation, and (5) an inadequate landholding structure.

As a result of these factors, the internal per capita availability of basic food—rice, beans, corn, manioc, and potatoes—suffered a 25 percent drop between 1967 and 1969. Even if one includes products of animal origin—beef, pork, poultry, milk products, and eggs—there was still a drop of -0.76 percent per year in the same period in terms of internal per capita availability.²

As shown in Table 8.2, in 1979 there was a factor for potential inflation: the price squeeze of agricultural products at the consumer level. The changes in the economic policy in the second semester of 1979 created a favorable environment for turning this factor into effective inflation. The average quarterly annualized rate of increase in the price of foodstuffs in 1979 jumped from 69.5 percent and 39.5 percent in the first two quarters, to 105.2 percent and 139 percent in the third and fourth quarters.

The monetary and fiscal policy in the period between 1974 and the first semester of 1979 was basically a policy of "stop and go," which maintained inflation under relative control at an annual level of a little below 40 percent. At the same time, it maintained economic growth by means of public investments financed by external debts.

In the first semester of 1979, the eruption of the war between Iran and Iraq and the new monetary policy adopted by the Federal Reserve Board of the United States gave Brazil two brutal shocks: (1) the "second oil shock," which caused the price of oil to double on the international market between the first quarter of 1979 and 1980, going from \$12.63 per barrel to \$21.01; and (2) the impact of the interest rate, which caused the prime rate to reach a level of 20 percent per annum, so that the real interest rate on the international market, which was around zero at the beginning of the decade, rose to a level of around 8 percent per annum at the end.

It was in this context that planning minister, Mário Henrique Simonsen, decided to implement a new orientation for the economic policy, making it more austere. He proposed budget and monetary reforms aimed at taking effective control over the expenditures of the public sector and over monetary expansion. He also took complementary steps in

Table 8.2 Indexes of Real Prices for the Agricultural Sector^a

| Year | Prices received by the farmers | | Wholesale prices for foodstuffs | Consumer prices for foodstuffs for Rio de Janeiro |
|------|--------------------------------|-----------------|---------------------------------|---|
| | Crops | Animal products | | |
| 1970 | 100 | 100 | 100 | 100 |
| 1971 | 110 | 105 | 107 | 102 |
| 1972 | 113 | 114 | 109 | 102 |
| 1973 | 142 | 142 | 110 | 102 |
| 1974 | 138 | 163 | 109 | 108 |
| 1975 | 149 | 145 | 110 | 106 |
| 1976 | 186 | 126 | 116 | 108 |
| 1977 | 184 | 129 | 116 | 110 |
| 1978 | 173 | 141 | 123 | 111 |
| 1979 | 161 | 169 | 126 | 116 |

Source: Getúlio Vargas Foundation.

^a Prices deflated by the IGP-DI.

monetary and credit control by requiring that the equivalent in cruzeiros to 50 percent of foreign loans be deposited in the central bank for six months and by restricting the conditions for consumer loans.

This new policy was never implemented because it was faced with strong resistance both from inside and from outside the government. As a result, Simonsen resigned his position as planning minister in August, to be replaced by Antonio Delfim Netto.

The new minister implemented a new orientation completely contrary to that of Simonsen. Rather than decelerate the economy, he sought to expand it and, at the same time, to reduce inflation, as he had done in 1967. Thus, he adopted the following set of measures: (1) release credit and practice a looser monetary policy; (2) expand government expenditures; (3) control interest rates by applying a reducer to the prevailing rates; (4) suspend price controls for foodstuffs and for industrial products through the CIP (interministerial price control); (5) advocate a real readjustment of the prices of petroleum products, of public services, and of other prices administered by the government.

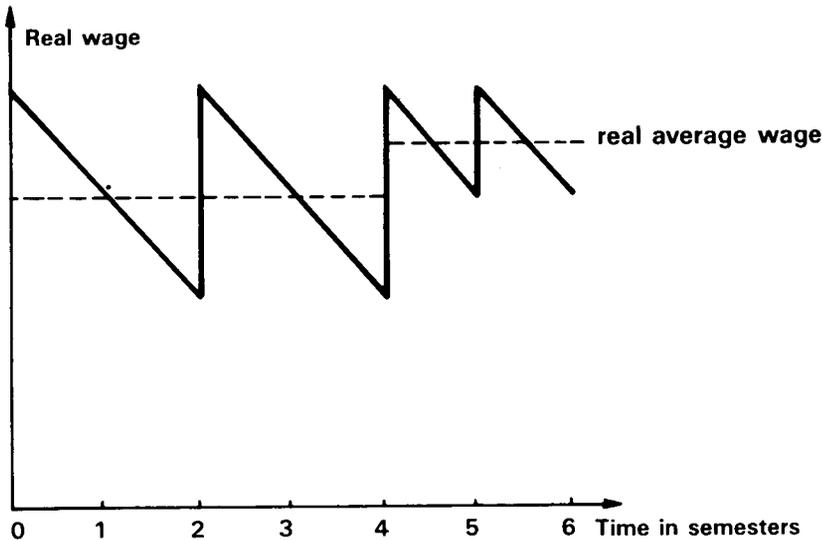
To have an idea of the impact of this "corrective inflation" policy, one only needs to remember that petroleum products, which had been readjusted by an average rate of 32.3 percent in 1978, underwent an average readjustment of 164.8 percent in 1979. Just in the month of November, gasoline was increased by 58.1 percent and diesel oil by 37.9 percent. There is no doubt that the big rise in the real price of imported energy acted as a shock, unleashing a wave of inflationary acceleration that caused inflation to double between 1970 and 1980.

At the same time, congress approved law 6708, shortening the period for readjusting wages from a one-year to one-semester basis. It also guaranteed that they would be raised to 10 percent above the inflation rate as measured by the national consumer price index (INPC) for those who made up to three minimum wages. The wage readjustments guaranteed by the law for those in the higher income brackets were progressively smaller, so that workers who earned up to 11.5 minimum wages had their real wage protected, while those above that level saw their wages decline.

There is no sufficient empirical evidence to prove the hypothesis that law 6708 increased the coefficients of indexation of the average wage to prices, or that the reduction in the period for readjusting wages had a strong inflationary impact.

There is no doubt that the new law had some inflationary impact as soon as it was enforced, but the real wage increase was almost immediately neutralized. In fact, a reduction in the period for wage readjustment would imply, in principle, an increase in the average real wage and, consequently,

Figure 8.1 Theoretical Effect on the Real Average Wage of the Change to Semestral Readjustments



a reduction in profit margins, as we can see in Figure 8.1. To neutralize this change, the business sector's immediate solution was to accelerate the inflation rate. When faced with the simple threat of an increase in costs, business firms reacted by increasing their profit margins and prices. The resulting acceleration of inflation lowered real wages. The business sector also managed, through an increase in the turnover of workers, to reduce average real wages. Finally, the law itself, by penalizing wages above the level of 11.5 minimum wages, also helped to neutralize its own inflationary impact. As a result, there were not, according to the law, significant variations in the per unit cost of labor. See, for example, Eduardo Modiano (1983) and Paulo Vieira da Cunha (1983).

As if the inflationary impact of the previous measures was not enough, on 7 December 1979, the economic authorities carried out a maxidevaluation of the cruzeiro of 30 percent. The inflationary impact of this measure was immediate. Prices went up not only for imported products, but also for all other products because of the propagation effect. Speculation by those who held stocks of imported goods or of goods with a high content of imported components anticipated the inflationary impact.

In order to try to restrain the inflationary impact of the maxidevaluation, the government announced in advance that it would go back to administering prices and would establish limits for monetary

correction and for a nominal exchange devaluation at 45 percent. It also tried to control monetary and credit policy by imposing a limit of 45 percent over the expansion of credit for the banking system for operations based on resources earned in the internal market.

When it announced a parameter for the indexation of the exchange rate that was below the actual inflation rate, the government was adopting the monetarist theory of "purchasing power parity." According to this theory, the inflation rate should adjust itself to the nominal devaluation rate of the currency. In order to do this, it is only necessary to make a prior announcement of the devaluation to a lower rate so that it can create expectations for a lower inflation rate. This is the same policy that was adopted earlier in Chile and in Argentina, based on the tablita of currency devaluation, with catastrophic consequences for these two countries.

Unfortunately, this attempt to control inflation "by decree" was a complete disaster. It was based on the assumption that the business sector would believe in the official measures and thus change its expectations, which would guarantee a drop in the inflation rate to the levels decreed by the government (50 percent). The impact of the exchange rate revealed that, in reality, the business sector bases its calculations on past inflation rather than on future rates decreed by the government, which, as a result, has no conditions to determine the expectations. After jumping from 77.2 percent to 110 percent, from 1979 to 1980, inflation stabilized at this level, in spite of the preannounced exchange and monetary index. A small reduction in the inflation rate only came about in 1981, thanks to a radical contractionary policy that was adopted at that time. On the other hand, the valorization of the cruzeiro, provoked by the minidevaluations below the inflation rate, discouraged exports and encouraged imports. This, in turn, provoked a commercial deficit of almost three billion dollars in 1980, even though all of the indicators had pointed toward a policy of external adjustment since 1979. As a result, this adjustment, which was not carried out with moderation nor under Brazilian control in 1979 and 1980, was done violently and under the control of international creditors and the IMF in the following years.

In 1983, when the inflation rate doubled again, going from an annual rate of 99.7 percent in 1982 to 211.8 percent there were many similarities to 1979. Prices were once again submitted to a series of inflationary shocks: (1) strong pressure from the price of agricultural goods because of a reduction in the amount of cultivated land and an explosion in the price of

some products, such as soya, in the international market; (2) a maxidevaluation in the exchange rate in February 1983 of 30 percent; (3) "corrective inflation" through price increases (and the elimination of subsidies) for some products and services that were controlled by the government (electric energy, steel, petroleum products, wheat, etc); and (4) a tax increase.

The first thing that differentiates 1983 from 1979 is that these inflationary shocks were now occurring in an economy that was going through its third year of recession. This was due to the policies of stabilization and adjustment patterned by the IMF, which had been implemented since the end of 1980 and then formalized in the letter of intentions of December 1982. The second difference is that the 1983 maxidevaluation was not annulled in the following month as had happened in 1979-1980.

Monetary expansion was contained at a level of 74.7 percent and 69.7 percent in 1981 and 1982, for inflation of 95.2 percent and 99.7 percent respectively, thereby causing a strong reduction in real liquidity. The total deficit of the public sector was reduced from 6.6 percent in 1982 to 2.5 percent in 1983. The real interest rate reached levels over 30 percent per annum, and the industrial employment level suffered a strong contraction, going down to the same level as in 1973. Industrial idle capacity reached almost 30 percent.

In respect to anti-inflationary policy, the wage law was changed at the beginning of 1983, with a reduction for workers earning more than three minimum wages. On the other hand, as the workers who earned more than 11.5 minimum wages did not have the replacement of their real purchasing power guaranteed, wages became partially deindexed. With the passage of law 2065 in November, which created an even more accentuated deindexation, the coefficient of the average readjustment fell to 87 percent of the national consumer price index (INPC). On top of this, price controls were reestablished, imposing a readjustment for industrial prices of 80 percent of the change in the ORTN.³ A similar reduction was applied to rents.

It was this environment of a very heavy contraction in aggregate demand because of a tight fiscal and monetary policy, unprecedented in recent Brazilian history, combined with wage and industrial price controls, that the inflation rate skyrocketed, leading to the great stagflation of 1983. Neither the Keynesian models nor the monetarist models of inflation can explain this phenomenon. It is necessary to develop an alternative model that clearly distinguishes the elements that cause inflation to accelerate, as opposed to those that maintain inflation or cause inflationary inertia, even when there is high unemployment.

The first accelerating factor to manifest itself in 1983 was the pressure of agricultural prices, caused by a decrease in supply. In 1983, the main Brazilian crops, except for sugar cane, were 5.5 percent less than in 1982. This drop in production was partially due to crop failures resulting from climatic factors (floods in the South and droughts in the Northeast). The main reason, however, was an almost 6 percent reduction in cultivated area, because of the recessive policy itself and a drop in the real prices of agricultural goods in 1981 and 1982. Another fact, which is not as important as those mentioned previously, was a reduction in agricultural credit and the elimination of credit subsidies.

Agricultural prices began to go up at the end of 1982, after having been repressed, in real terms, for two consecutive years. The average monthly increase in agricultural prices in the wholesale market jumped from 4.9 percent in the second semester of 1982 to 12.2 percent in the first semester of 1983, and to 20.3 percent in the third quarter of 1983, when it climaxed.

In 1981 and 1982, it was the price of industrial products that pushed up the inflation rate, with increases of 99.6 percent and 99.8 percent respectively, compared to increases of 70.7 percent and 89.5 percent for agricultural prices in the same period. In 1983, the agricultural prices took the lead, increasing 335.8 percent as opposed to 200.5 percent for industrial products. Agricultural products play an important role in the cost of living index (INPC) and in indexation in general. As a result, this recomposition of the profit margins of agricultural prices, which especially benefitted the middlemen, spread to all other sectors via wage indexation and the automatic passing on of the price of agricultural raw materials, causing a strong acceleration in the inflation rate.

At the same time as the shock of the agricultural prices, the government provoked a new brutal price shock by declaring a 30 percent maxidevaluation of the cruzeiro in February 1983. As mentioned earlier, agricultural prices had already begun to exert pressure on the prices in other sectors at the end of 1982 and in the beginning of 1983, increasing by 11.9 percent in December and 11.5 percent in January in the wholesale market. As this was a totally inopportune moment from an inflationary point of view, the maxidevaluation caused prices to skyrocket. This then provoked successive waves of acceleration through the propagation effect, raising the inflation rate from a level of 100 percent, prevalent after since the end of 1979, to a level of over 200 percent at the end of 1983. As a result of these two shocks and their side effects, the general price index (IGP) jumped from a monthly average of 5.3 percent in the last quarter of 1982, to 8.5 percent in the first quarter of 1983, 9.4 percent in the second quarter, and 12.1 percent in the third quarter.

A real exchange devaluation (above the inflation rate) has a strong accelerating influence on inflation even though there are few imported products that participate in the GNP. Given the fact that more than two-thirds of Brazilian imports are petroleum and other basic components, the impact of a real change in the exchange rate is much greater than one would at first imagine. Moreover, the ultimate impact on inflation is more than proportional to the imported products' participation in the costs of production because of the generalized indexation of the economy.

Price readjustments for products and services whose prices are controlled by the government make up a third factor that also contributed to the acceleration of the inflation rate. These readjustments, especially for petroleum, steel, electric energy, and wheat, were aimed at eliminating subsidies in accordance with the recently assumed commitments to the IMF. They also took place in the second quarter of 1983, right after the two previously mentioned shocks. The shocks provoked by "corrective inflation" occurred at a moment when the system of prices was just beginning a process of absorbing and dispersing the shocks of the agricultural price increases and of the maxidevaluation.

Actually, the partial elimination of subsidies, which had occurred so far, fed inflationary expectations rather than actually pressuring costs. As can be seen in Table 8.3, the price readjustments administered by the government in 1983, with the exception of diesel oil, were less than the

Table 8.3 Prices Controlled by the Government (%)

| | 1980 | 1981 | 1982 | 1983 |
|----------------------------|-------|-------|-------|-------|
| Electric energy | 67.0 | 112.4 | 103.1 | 156.9 |
| Telephone | 69.1 | 98.4 | 90.4 | 127.5 |
| Petroleum products | | | | |
| Gasoline | 125.7 | 66.7 | 96.5 | 166.5 |
| Fuel oil | 66.7 | 150.0 | 104.0 | 194.1 |
| Diesel oil | 404.2 | 90.1 | 104.3 | 225.2 |
| Gas | 104.3 | 94.7 | 105.4 | 213.8 |
| Coal | 77.2 | 248.8 | 174.4 | 102.6 |
| Steel | 133.9 | 105.9 | 99.0 | 150.1 |
| Mail and telegraph service | 56.2 | 139.9 | 101.2 | 88.0 |
| Railroad transportation | 79.4 | 112.1 | 98.2 | 152.6 |
| IGP/DI | 110.2 | 95.2 | 99.7 | 211.0 |

Source: Getúlio Vargas Foundation and the Central Bank

average fluctuations measured by the IGP. What happened was that there was a concentration of price readjustments in the second quarter of the year, after they had been held down for months. This exacerbated inflationary expectations, thus provoking an elevation in the anticipated inflation rate much higher than that which would result from a simple passing on of costs.

There is no doubt that when the inflation rate reaches a level of 10 percent per month, inflationary expectations play a more important role. This is because the risks of a divergence between effective and anticipated inflation become greater as the inflation rate rises. Given this situation, in the short run, the business community begins to base its calculations on some unit of buying power other than the current nominal currency. In this case, the dollar and the ORTN took the place of the cruzeiro as the accounting unit. When readjusting prices, the businessmen were also more strongly influenced by these buying power units than by cost increases.

3

As seen in Chapter 2, the accelerating factor of inflation, P , can be summed up as: (1) the increase in nominal average wages, \dot{w} , above the increase in productivity, \dot{q} ; (2) the increase in the profit margin over the increase in sales, \dot{m} ; (3) the devaluation of the exchange rate, \dot{e} ; (4) the increase in the international prices for imported goods, \dot{z} ; (5) the increase in indirect taxes; and (6) the increase in the real interest rates.

The increases of profit margins and wages do not in themselves cause inflation to accelerate, but rather are consequences of one of the following factors: (a) a generalized excess of aggregate demand in relation to supply, when there is full employment and the idle capacity is exhausted; (b) sectorial bottlenecks of supply; (c) the monopolized power of businesses and trade unions; (d) a reduction of productivity and consequently the elevation of fixed unit costs; and (e) increases in direct taxes.

In analyzing an economy like that of Brazil, in which inflation is a chronic phenomenon and which is characterized by the strong presence of oligopolies and of the state, it is fundamental to integrate the mechanism of indexing prices into the analysis. When there is chronic inflation, all businessmen try to defend their real income by automatically passing on increases in costs to prices. Thus, not only does inflation acquire inertia, but price shocks are also spread throughout the whole economy, creating an inflationary multiplier. When indexation is complete and generalized, an increase in any price in the economy not only provokes an initial increase in the general level of prices proportional to its participation in costs, but

it is also multiplied by a factor represented by the mechanism of indexation. This mechanism guarantees all agents an increase equal to that which began the process, thus maintaining real income and relative prices intact.

In order to develop a more concrete theoretical base to explain the recent phenomenon of inflationary acceleration, it is necessary to break down the general price index into its three components, each with distinct behavior: industrial prices, \dot{p}_i ; agricultural prices, \dot{p}_a ; and prices which are controlled by the government, \dot{p}_g :

$$\dot{p} = \gamma_1 \dot{p}_i + \gamma_2 \dot{p}_a + \gamma_3 \dot{p}_g \quad 8.1$$

where the γ 's are the weight given to the participation of each sector in the composition of the general price index, p .

In the Brazilian industrial sector, which is marked by the strong presence of oligopolies and large state enterprises, prices are administered and set according to a markup above direct or variable costs. This markup factor tends to maintain itself constant in normal conditions of demand. However, in the course of the economic cycle, and when the economy is submitted to deep shocks or changes, businesses adjust their markups with an eye to protecting their long-term profit rates. Under normal conditions, margins are stable, and any increase in direct costs, interest rates, or indirect taxes are passed on to the consumer. Margins vary when there is a significant increase in direct taxes, fixed unit costs, and the degree of monopoly.

In order to determine the fluctuations of industrial prices, we should consider the fluctuations of profit margins, \dot{m} , the fluctuation of the wage rate, \dot{w} , the dollar price of imported raw materials, \dot{z} , and the exchange rate, \dot{e} , that is:

$$\dot{p} = \dot{m} + \alpha (\dot{w} - \dot{q}) + (1 - \alpha) (\dot{z} + \dot{e}) \quad 8.2$$

where α stands for the participation of the cost of labor in the total direct cost.

In the agricultural sector, prices are governed by the rules of competition, except in the commercialization of a few products. In this sector, there is free mobility of capital and, with this, the agricultural producers are not able to influence their prices in the market. Short-term agricultural prices depend on the conditions of supply and demand, and are therefore relatively deindexed. Agricultural prices are determined, on the one hand, by harvests and existing stocks and, on the other, by demand,

and there is almost nothing that agricultural producers can do to change them. In the long run, relative prices need to be balanced so that production prices can act as a center of gravity for the market prices. Long-term prices are structural parameters that accompany production costs as a way to guarantee a minimal profitability of capital. Therefore, agricultural prices, which are flexible and deindexed in the short run, are indexed in the long run.

In fact, as we will see later, the economic recession of 1981 and 1982 caused a strong contraction of agricultural prices, which contributed to a reduction of inflation in that period. It also resulted in a reduction of land cultivated in the following harvests. This fact, combined with crop failures due to climatic factors and with low stocks, caused supply to be insufficient in 1983, with consequent price increases. A reduction in cultivated area functions as a regulating mechanism that reestablishes relative prices, but it also implies an inflationary acceleration.

When discussing agricultural prices, it is also important to distinguish between prices that are determined in the international market and those in the internal market. The two prices will tend to move together, but their dependence on each other is generated by the degree of protectionism or liberalization of the market. The price of export products are almost completely dependent on the conditions of the international market and on the exchange rate policy unless the government develops control mechanisms, such as export quotas and internal price controls.

In simple terms, we can state that the variations in agricultural prices, \dot{p}_a , depend on supply, O , and on demand, D , in the short run and, in the medium run, on the general price index.

$$\dot{p}_a = f(D, O, \dot{p}) \quad 8.3$$

In an economy in which inflation is a chronic phenomenon, economic agents and groups make an effort, both formally and informally, to protect their real earnings through the indexation of their prices according to the general price index. There are four administered prices that depend on the government, trade unions, or oligopolies: (1) the prices of products controlled or produced by the government, (2) the exchange rate, (3) wages, and (4) the profit margins of businesses. The rate of increase of these prices depends on a coefficient of price administration, A :

$$\dot{p}_g = A_1 \dot{p}_{-1} \quad 8.4$$

$$\dot{e} = A_2 \dot{p} + M \quad 8.5$$

$$\dot{w} = A_3 \dot{p}_{-1} \quad 8.6$$

$$\dot{m} = A_4 \quad 8.7$$

Note that A_1 and A_2 basically depend on government decisions. A_3 depends jointly on business, trade unions, and the government. A_4 depends on the decisions of the oligopolies as they try to adjust their profit margins to attain a long-term profit rate. Actually, all of these prices, with the exception of the profit margin (which is not exactly a price), are generally indexed to past or current rates of inflation. As for the exchange rate, we use A_2 as the coefficient of indexation that guarantees a given parity for the local currency and M to reflect an eventual maxidevaluation.

Inflationary acceleration or deceleration occurs in agricultural prices if supply or demand undergo variations that affect relative prices. For other prices, the acceleration or deceleration of inflation will depend on the coefficients of price administration, that is, if they are greater or smaller than 1. Generally, what happens with the prices controlled by the government, including the exchange rate, is that they tend to make A_1 and A_2 less than 1 during periods of decelerating inflation. Then corrective inflationary measures making A_1 and A_2 greater than 1, or a maxidevaluation of the exchange rate, reestablish relative price equilibrium, thus accelerating inflation. A_3 varies around 1 according to the bargaining power of the workers and the power of the workers and businesses over the government. In order for A_4 to be neutral in relation to inflationary acceleration or deceleration, it should be equal to zero. If this is the case, profit margins are satisfactory and allow businesses to attain their planned profit rate.

In the medium term, agricultural prices, controlled prices, the exchange rate, and wages should accompany the inflation rate in order to reestablish the equilibrium of the structure of relative prices. When the economy is formally indexed, price controls serve this purpose. In the short run, the pendular movements described above are the most common or probable, especially when inflation itself accelerates.

In terms of the previous model, the strong acceleration of inflation in 1979 can be summed up in terms of the three shocks mentioned above. The first is the increase of agricultural prices, which had been partially held down at the consumer level by various control mechanisms. Due to the end of controls and to poor crops, which are related, agricultural prices began to

accelerate in the second semester of 1979. This expansion found a favorable environment in the new "developmentalist" policy adopted by the government at that time.

In this model, agricultural prices are related to the general price index, and these to nominal wages. Any increase in agricultural prices not only has an immediate impact on the general price index, according to its weight, γ_1 , but it also has an indirect effect on industrial prices through the indexation of wages. Given that the participation of agricultural prices in the price index used for wage adjustments is high in Brazil, the indirect effect of the increase in agricultural prices on industrial prices is significant.⁴ Also note that, as the shock of agricultural prices spreads throughout the economy through the indexation of wages, it has an inflationary impact much greater than that which corresponds to its participation in the GNP. This impact can be partially neutralized only if the factor of wage controls, A_3 , is less than 1.

The impact of the second accelerating factor of inflation—the maxidevaluation of the cruzeiro in relation to the dollar in 1979, and particularly in 1983—can also be analyzed more clearly in terms of the above model. At first, the maxidevaluation converts itself into an increase in industrial prices, as the businesses try to maintain their profit margins at a constant level by passing on increases in the costs of raw materials, as can easily be seen in Equation 8.2. The extent of this effect depends on the rate of the exchange devaluation, and on the participation of the costs of imported raw materials in industrial costs ($1 - \alpha$). Next, we have the effects of the spread of inflation via the impact of industrial prices on the price index used for wage and exchange correction. In other words, the maxidevaluation now converts itself into an increase in wages and of the exchange rate itself, as both are indexed. Obviously, these wage and exchange rate increases are immediately passed on to prices.

If we were to have a maxidevaluation of 30 percent, as occurred in Brazil in December 1979 and in February 1983, and if the rest of the economy were indexed, the effect of the maxidevaluation on the general index of prices would be equal to M , or to 30 percent. In reality, the inflationary effect would be less than 30 percent because agricultural prices are not directly indexed. Also, industrial prices of the competitive sectors are only partially indexed, and the correction coefficient is less than 1 for the prices controlled by the government and for wages. On the other hand, if a maxidevaluation occurred at the same time as an increase in agricultural prices and a "corrective inflation" of controlled prices, as happened in 1979 and 1983, the accelerating effects on inflation would tend to be above this 30 percent, even if the economy were not totally indexed.

The effect of a 30 percent maxidevaluation will also be greater than 30 percent if the economic agents do not accept the change in relative prices and try to increase their prices in order to reestablish their share in the income prior to the real devaluation. They will not succeed in this attempt if the subsequent minidevaluations follow inflation, but the price increases they make in the meantime will have a powerful multiplying effect on inflation. It was probably this type of mechanism that had the most weight in the extraordinary acceleration of inflation in 1983.

5

The inflationary acceleration that happened in Brazil in 1979 and 1983 can, however, be explained perfectly by the model of autonomous or inertial inflation. In these two years, neither the public deficit nor the increase in the monetary supply had an accelerating effect on inflation. They were limited to sanctioning acceleration that had already occurred.

On the other hand, the Brazilian government and the International Monetary Fund applied an orthodox model of adjustment, based on the monetary approach to the balance of payments, which led to a recession in the Brazilian economy in 1983 unprecedented in its industrial history. Although the government also tried to partially deindex the economy, the emphasis of its anti-inflationary economic policy was put on a reduction of the public deficit and in controlling the monetary base.

They had success in reducing the public deficit and reasonable success in reducing the money supply, but the inflation rate still doubled in this period.

Faced with these results, it became normal in Brazil, including in official government documents such as the fifth letter of intentions to the International Monetary Fund, to attribute the inflationary acceleration of 1983 to the three factors we examined in this chapter (increase of agricultural prices, maxidevaluation, and the "corrective inflation" of controlled prices).⁵

Based on this fact, it is clear that neither the Brazilian authorities at the time nor the International Monetary Fund have a theoretical model capable of explaining Brazilian inflation. Although they explained the inflationary acceleration of 1983 in nonmonetarist terms, they insisted on emphasizing a monetarist therapy.

April 1984

Notes

1. General prices index, internal availability (IGP-DI), calculated by the Getúlio Vargas Foundation. When we talk about inflation without any other reference, we are referring to this index, although there are other indexes that are also indicators of inflation.

2. See Fernando Homem de Mello, "Disponibilidade de alimentos e efeitos distributivos: Brasil 1967/79," *Pesquisa e Planejamento Econômico*, vol. 12, no. 2, August 1982.

3. ORTN—obrigações reajustáveis do tesouro nacional—are corrected monthly according to past inflation. The value of these federal bonds served as the basis for indexation in Brazil.

4. It is estimated that agricultural prices have a value of 0.43 in the INPC.

5. Central Bank of Brazil, "Brazil Economic Program—Internal and External Adjustment," March 1984, 23.