

THE DECLINE AND FALL OF BRAZIL'S CRUZADO

Werner Baer * and Paul Beckerman **



On February 28, 1986 the Brazilian government announced a “heterodox” inflation stabilization program, which rapidly came to be called the “Cruzado Plan.” It was intended immediately to stop an inflation that appeared to be escaping control and seemed untamable through orthodox stabilization policies. Although at first Cruzado Plan seemed to succeed dramatically in eliminating inflation without recessionary side effects, it failed by the end of 1986, as inflation recovered, the external accounts collapsed and real growth sagged.

Does this failure reflect an incorrect diagnosis of the nature of Brazil’s inflation, which led to inappropriate policies? Or, was the Cruzado Plan correct in conception, but incorrectly administered? And if the latter was the case, did socio-economic forces stand in the way of correct implementation?

This essay argues that the answers to these questions are relatively straightforward. There is no question that “inertial” forces played a fundamental role in Brazil’s inflationary momentum, through such dynamic processes as wage indexation, financial indexation, the crawling peg exchange rate, expectations formation, relative price dispersion, and so on. The Cruzado Plan addressed these problems, but it was fatally flawed by its incorporation of a substantial wage increase. Whatever good the Cruzado Plan did was largely cancelled by the inflationary wage shock. Matters were made worse by the persisting public sector deficit, a relatively low exchange value of the Cruzado on its launch, and then by the execution of the Plan: prices were frozen in disequilibrium too long and monetary policy was too loose.

The wage increase was the essence of what went wrong, however. Unfortunately, it may be that, given the government’s political weakness, the Cruzado Plan had to incorporate a wage increase. That is, the competition for purchasing power that sustained the inflation effectively required the wage increase.

To make this argument, this essay is divided into four sections. The first section presents a brief background to the Cruzado Plan’s conception. The second describes the plan and its immediate impact. The third section analyzes the distortions that developed and the authorities’ attempts to counteract them. The

* Professor at University of Illinois, Urbana, Champaign.

** Federal Reserve Bank of New York. The views expressed are not those of the Federal Reserve Bank of New York nor the Federal Reserve System.

The authors wish to thank Thomas Trebat for many helpful suggestions.

change of monetary unit was never attempted, their arguments for a general price freeze were incorporated into the Cruzado Plan approach.

EVENTS LEADING TO THE CRUZADO PLAN

The severe recession of 1981-4 (see Table 1), which resulted from the adjustment policies enacted to confront the external payments crisis, had no impact on the inflation rate, although it did dramatically reverse the country's balance-of-payments position. It produced large trade surpluses, which resulted mostly from a pronounced decline of imports, from almost US\$ 23 billion in 1980 to US\$ 15 billion in 1983, and US\$ 13 billion in 1985. The contribution of export growth to trade surpluses began only in 1984 (see Table 4a). Economic growth resumed in 1984. It was at first the consequence of the rapid export expansion. Beginning in 1985, it was based mainly on a notable increase in real wages which generated a consumption boom.

The resumption of growth in an economy with widespread financial indexation, a crawling-peg exchange rate, and wage indexation reinforced by resurgent labor militancy (a brief period of "80 percent wage indexation" was ended in 1985) reinforced the intractability of the inflation. In late 1985 a drought caused a sharp rise in agricultural prices. By early 1986, as the shock fed through the indexation system, the inflation rate seemed set to rise to unprecedented levels. President Sarney's economic advisors, arguing that this inflation could not be managed with traditional orthodox stabilization programs, persuaded him to attempt a "heterodox shock."⁸

THE CRUZADO PLAN

On February 28, 1986, in a television address, President Sarney announced Decree-Law 2283, intended to kill off Brazil's inflation in a dramatic blow. The Decree Law (and its slightly revised version, DL 2284) imposed the following measures: 1) a general price-freeze on final goods prices; 2) a wage freeze following a readjustment which set the new real wages at the previous six months' average plus 8 percent, and 15 percent for the minimum wage; 3) application of the same to rents and mortgage payments, without the 8 percent increase; 4) a wage-escalation system, which guaranteed an automatic wage increase each time the consumer price index accumulated 20 percent from the previous adjustment, or from each labor category's annual "base date;" 5) prohibition of indexation clauses for contracts of less than one year; and 6) creation of a new currency, the **cruzado**, which replaced the old cruzeiro (1 Cz\$ being equal to 1,000 Cr\$). There was no specific reference in the decree laws to the exchange rate, but the government indicated clearly that it intended to keep it fixed indefinitely at Cz\$ 13.84 to the U.S. dollar.⁹ For contracts previously made in **cruzeiros**, the Decree Law stipulated a conversion rate to **cruzados** under which the **cruzeiro** would decline against the **cruzado** at a

⁸ Lopes (1984) and (1986).

⁹ A full description of the Cruzado decree laws can be found in *Conjuntura Econômica*, Março de 1986; the subsequent issue of this journal (Abril 1986) contained a lengthy panel by many of Brazil's leading economists on various aspects of the Cruzado Plan.

monthly rate of 14 percent, i.e., the presumable expected monthly inflation rate implicit in the contracts.

The Cruzado Plan clearly reflected the enhanced influence of analysts who diagnosed Brazil's inflation as being mainly of the "inertial" type.¹⁰ They had wrested the balance of power over economic policy in President Sarney's transitional civilian government (in office since March 1985), from analysts who understood the inflation problem in a more orthodox fashion¹¹ and who had advocated more traditional remedies. As the transition proceeded and directly elected officials gained influence relative to those of the previous regime, recessionary policies became increasingly difficult to institute for "political" reasons.

The success of the Cruzado Plan presumably hinged on the degree to which the Brazilian inflationary process was mainly "inertial" in nature. To the extent that it resulted from an excess of aggregate demand or insufficiency of aggregate supply, the Plan would not be sufficient to bring inflation under long-term control. As Maia Gomes stated, "...Several indicators suggested, already by the last quarter of 1985, that formal and informal indexation could not fully explain Brazilian inflation. For one thing, inflation was accelerating, something that cannot be dealt with in terms of inertia. In addition ...the rate of capacity utilization was approaching 100 percent in some industrial sectors... Evidence was also abundant that the public sector deficit increased from 1984 to the end of 1985."¹² In fact, prior to February 28, 1986, the government had taken measures to deal with presumable sources of fiscal and monetary imbalances. The National Treasury budget and the so-called "monetary budget" (mainly subsidy programs operated by the monetary authorities) were partially unified in August 1985 to better control expenditures; in February 1986 the "movement account" of the Banco do Brasil, which enabled this official commercial bank to create base money through an open Central Bank "discount" facility, was frozen; in the same month a Treasury Secretariat was created within the Finance Ministry to centralize control over all public expenditures; and in December 1985 Congress approved Law 7450, which substantially increased tax rates on financial transactions, required firms to file income tax twice a year, and raised the personal income tax burden. Finally, days before the introduction of the Cruzado Plan, the National Monetary Council reduced the maximum time for consumer credit from 12 to four months and tightened other rules relating to such credit.

The immediate results of the Cruzado Plan were spectacular from both an economic and a political point of view. The monthly inflation rate as measured by the general price index declined from 22 percent in February 1986 to minus 1 percent in March, a further minus 0.6 percent in April, plus 0.3 percent in May, and plus 0.5 percent in June (see Table 2). Meanwhile, economic activity, which had grown 8.3 percent in 1985, and was still growing in January and February 1986, accelerated. Industrial production was 8.6 percent higher in the first quarter than in the corresponding 1985 period, and 10.6 and 11.7 percent higher in the second and third quarters respectively. Table 3(a) also shows that consumer durable production

10 Besides Lopes, mentioned in note 4, see also Arida (1986), Modiano (1986) and Martone (1986).

11 Represented by Finance Minister Dornelles and Central Bank President Lemgruber, who resigned in late August 1985.

12 Maia Gomes (1986), pp. 13-4.

grew at astonishing rates: annualized growth rates surpassed 30 percent in the months of May to August. At least during the first few months following the Cruzado Plan, the external accounts remained strong, with merchandise trade surpluses running at US\$ 1 billion a month (see Table 4b). Superficially it seemed that Brazil had accomplished the trick of running solid external accounts and maintaining spectacular growth with rising real wages, diminishing unemployment and insignificant inflation.

EMERGING DIFFICULTIES AND CONTRADICTIONS

The point of the Cruzado Plan's price and wage freeze was to halt inertial inflation. The wage increase and price freeze together amounted to an incomes policy favoring labor (although, curiously, Brazilian public opinion failed to perceive this at first, perhaps because of the confusing multiplicity of policy actions). The Cruzado Plan's drastic nature, coming after an inflation which seemed increasingly out of control, rallied the population behind the President, with millions of citizens volunteering to serve as "Sarney's price inspectors" to report on freeze violations. This popular enthusiasm made an incomes policy feasible for a short period of time. Real wages rose dramatically. São Paulo real average industrial wages were 9.1 percent higher in March than in February, and they rose a further 1.5 percent by November, when they peaked. The corresponding real wage bill was 9.8 percent higher in March than in February, and peaked a further 8.7 percent higher in November. Within weeks, however, problems emerged, and rapidly intensified.

The Allocative Impact of the Price Freeze. One immediate consequence of the freeze – perfectly anticipated by the Cruzado Plan's economists, who urged the **temporary** sacrifice of the allocative system to wring inflation from the economy – was that it eliminated the price mechanism as allocator of resources. The longer the freeze lasted, of course, the more serious the market distortions must become. Brazil's inflation had not yet reached a "hyper" level at the time of the freeze, so economic agents were still adjusting prices (or having prices adjusted) at discrete, if relatively short intervals. Thus, on February 28 some sectors whose prices had risen just prior to the freeze were in a favorable position compared with their recent real averages, while others which had planned to make adjustments a short time thereafter, lagged behind. A study of 311 products revealed that 84 items were in the former category; 35 had price adjustments which kept them at par at the time of the freeze; while 192 products lagged behind. The latter included milk, cars, meat, and various consumer durables (see Table 5).¹³

Public utility rates, notably electricity, were caught notoriously behind by the freeze. In the period February 1985 to February 1986, for example, public utility rates in Rio de Janeiro increased by only 201 percent, while general prices rose by close to 270 percent. This increased the deficit of the state public utility companies, placing pressure on the government to subsidize both their current and their capital expenditures. Capital expenditures could not be postponed if bottlenecks were to be avoided as rapid economic growth continued.

While the Cruzado Plan economists agreed that the price freeze would have to be temporary, they had reached no consensus about how long it should last, since

¹³ de Souza (1986), pp. 29-30.

they did not know how long it would take to reverse inflationary expectations. They appear to have been thinking in terms of two or three months. They did fear, however, that premature unfreezing could reintroduce inflationary expectations and bring about renewed inertial conditions. As time passed, political criteria came to dominate economic considerations: the price-freeze component of the Cruzado Plan had become the basis of the government's popularity. That is, zero inflation was increasingly perceived by the President and his political advisors as the essence of the government's economic success and adherence to it was therefore important as crucial November 1986 congressional and gubernatorial elections approached. Since the Congress would also function as a constitutional assembly with the power to determine the length of the president's term of office, the President was anxious to preserve zero inflation as long as possible. Government economists argued for price realignments as early as May 1986, and they were joined by the Finance Minister in June 1986. They were overruled on political grounds, however.

Inevitably, there were widespread attempts to circumvent the freeze. Brazil provided case studies for all the folklore of price-control evasion, including raising prices by offering "new products" cheating on the content of packages, and requiring "side-payments" or "premia" (in Portuguese, "ágios"), particularly for automobiles and other consumer durables. Waiting lists for new automobiles swelled to six months and more, although the wait could often be shortened appreciably through appropriate "ágio" payments. Products of all kinds went into short supply, and shoppers' queues became increasingly common. Foodstuffs – notably milk and meat – became scarce as lower income groups increased demand while producers reduced supply. In response to complaints about shortages, the government pointed out that meat had become a regular part of poorer people's diet for the first time, even if they had to wait in line for it. Later in the year government reached the point of confiscating some cattle in its well-publicized struggle with meat producers. More effectively, it authorized increased imports of foodstuffs. By cutting certain taxes and increasing subsidies the government managed to increase supply without literally raising prices – thus adding to pressure on public sector finances, however. As the year went on, the inevitable problems caused by frozen prices deepened, and the government's and populace's efforts to enforce the freeze became more half-hearted and enfeebled.

Excessive Growth. The Cruzado Plan resulted in a continuation (and even acceleration) of economic growth, much of it based on consumer spending. The high consumer spending was stimulated by the substantial real-wage increases; the elimination of indexation from savings deposits, which caused a large exodus from savings accounts and largely into consumer goods; the price attractiveness of many goods whose relative prices were lagging at the time of the freeze; and the "wealth effect" resulting from the sudden change of inflationary expectations which released funds for consumption.¹⁴

As the boom continued in the months following the introduction of the Cruzado Plan, many sectors were approaching capacity, with limited short-run hopes of increasing it. In any case, entrepreneurs were hesitant to invest in view of the deepening economic difficulties. The estimates reproduced in Table 3b show

14 Dias Carneiro (1987), p. 15.

that industrial capacity utilization was at a low of 71 percent at the beginning of 1984, rising to about 78 percent at the time of the introduction of the Plan, reaching 82 percent in the second half of 1986 (one source even placing it at 86 percent). By January 1987, almost 60 percent of the manufacturing sector was said to be operating over 90 percent of capacity.¹⁵

It is difficult to establish how large an increase in productive capacity occurred during the time of the Cruzado Plan. The overall low investment of the Brazilian economy in the mid - 1980's was associated with low saving rates. Whereas in the mid - 1970's the investment / GDP ratio had reached 25 percent, it declined to 16 percent in the mid-1980's. The macro explanations for this trend lie in the severe recession of 1981-3, which was followed by the high rates of growth in the mid-1980's, based on consumer spending. It was also related to the fact that Brazil became a net exporter of finance as it serviced its enormous foreign debt. The debt service, given the low influx of foreign finance in the mid-1980's, implied net external dissaving of 4 to 5 percent of GDP. Public investment had been cut in previous stabilization efforts, and the price freeze only made it difficult for many public utility firms to generate internal resources to finance investment. Large private investment plans were discouraged by lingering skepticism about the ultimate success of the Cruzado Plan and by the uncertain position of firms caught behind by the price freeze. Indeed, the frequent dramatic policy shifts *per se* – the frequent changes in “the rules of the game” – were seriously discouraging private capital formation.

There are indications, however, that the sales and production boom which took place during the Cruzado Plan resulted in a substantial amount of what may be described as “short term” capital formation. The output of capital goods in 1986 increased by 21.6 percent. Preliminary figures indicate that Brazil's gross domestic capital formation in 1986 rose to 19.6 percent of GDP.¹⁶ The high rates of consumption growth appear to have forced many firms to invest in added production capacity. This appears to have occurred mainly in the form of added machinery rather than large scale construction of new plants. For instance, in the year October 1985 to October 1986 the output of machinery increased by 14.4 percent; but within the machinery sector the biggest subsector growth was in textile machinery (30.1 percent), while heavy equipment production was less than 10 percent greater than the year before. Waiting lists for textile and shoe machinery are reported to have gone above 12 months.

The Public Sector Deficit. The role of the public sector deficit in the Cruzado Plan's disintegration is a controversial matter. There is a widespread view that the Cruzado Plan's fundamental flaw was its lack of a fiscal control program. This view is particularly dear to analysts who never sympathized with the inertial inflation diagnosis, who believe that inflationary pressure can result only from fiscal imbalances. In reality, the role of the public-sector deficit was complicated. True, the Cruzado Plan *per se* incorporated no specific tax increases or budget appropriation cuts. As noted above, however, the government instituted a significant tax reform in December 1985, which was expected to increase real revenues significantly over the course of 1986. In addition, the government had

15 *Conjuntura Econômica*, February 1987, p. 83

16 Maia Gomes (Dezembro 1986), pp. 41-8.

taken steps to unify the budget and to improve its monitoring. Moreover, the Cruzado Plan itself had powerful favorable fiscal consequences (just as the subsequent resurgence of inflation had unfavorable fiscal consequences – it is increasingly clear that the public sector accounts are a channel for inflation feedback). The price freeze eliminated the well-known “collection lag” problem: tax receipts based on prices and income flows weeks or months earlier lose their real value against current expenditures. The reduction of nominal interest rates and the fixed exchange rate sharply reduced the public sector’s massive “non-operating” borrowing requirement, resulting from the effective inflation adjustment of the public sector’s voluminous internal and external debt.

More could have been done to improve the public sector accounts, of course. More should have been done because public opinion thought the deficit mattered, and public credibility was fundamental to the Cruzado Plan’s chances of success. The central government continued to maintain large subsidy programs, which were not significantly cut until June 1987. All organs of Brazil’s government – federal, state, municipal, public enterprise, the social security system, and decentralized agencies – were (and are) widely believed to be badly overstuffed, but political exigencies (and in a few cases the real needs of government activity) made cuts impossible. The public sector wage bill increased with serious consequences for public budgets; but that was the consequence of the 8 percent wage increase, not of public sector policies per se. Certain state enterprises – notably the electrical power sector – were caught by the price freeze with lagging output prices, because their previous rate adjustments happened to have occurred too long before. An overall public sector deficit accordingly persisted after the Cruzado Plan. Given the conditions of excess demand, this was inappropriate given the booming economy; considerations of cyclical management called for a surplus. Nevertheless, this deficit cannot reasonably be blamed for the Cruzado Plan’s disintegration. The available evidence indicates that the overall deficit cannot have been very large in the months just following the Cruzado Plan. For reasons noted, the nonoperating part of the deficit must have been virtually zero in these months. For the year 1986 as a whole, the operating deficit – the PSBR purged of the inflation component – was 3.7 percent of GDP, of which 0.9 percent was the central government’s, 0.5 was the states’ and municipalities’, and 2.3 percent was the state enterprises’. The bulk of the operating deficit must have been incurred at the beginning and end of 1986, since these were the months when prices were accelerating; moreover, seasonal pressures are strongest at the end of the year. Even if the operating deficit had been running at anywhere near 3.5 percent of GDP in the months following the Cruzado Plan, that could hardly have caused a triple digit inflation by itself. Consider the matter this way: the economy grew in real terms at more than 8 percent per year. Suppose the deficit ran at a steady 4 percent of GDP throughout the year. Supposing that the real income-elasticity of money demand was only one-half, that the monetary velocity of circulation had fallen to about 8, and the deficit had been fully monetized, the resulting inflationary pressure would have been about two percent a month – not “zero inflation”, but tolerable, and well within the capacity of the monetary system to offset.¹⁷

Inevitably, one’s judgement about whether a public sector deficit is inflationary is a function of one’s judgement about what it ought to be. If you believe

17 Maia Gomes (May 1986).

that the deficit ought instead to have been a 10 percent surplus, then the deficit was very inflationary. A budget deficit can always be improved; but this one was not the essential cause of the 1986 inflation. By comparison, assuming that labor's share of GDP was 55 percent in 1986, the 8 percent increase added 4.4 percent of GDP to labor income at a stroke.

On the Money Supply. One of the lessons the architects of Brazil's Cruzado Plan drew from Argentina's Austral Plan experience was that the public's willingness to hold money would rise sharply as a consequence of declining inflation expectations, and that policymakers would therefore be well advised to allow money supply growth in order to forestall undue upward pressure on domestic interest rates. Brazil's monetary authority saw an additional opportunity here. By retiring outstanding index-linked government obligations, it could reduce the future public sector debt service burden. The monetary authority created a new "Central Bank Bill" to replace the index-linked obligations it was not effectively monetizing. The new obligation could be sold at a discount in the country's well-developed short-term open market system, further reducing the cost of servicing the public sector's accumulated debt.

In introducing Central Bank Bills, the government was able to take advantage of some of the basic practices of Brazil's open market system. Brazilian public sector obligations are sold mainly to financial institutions who, in turn, finance their positions by accepting "overnight" funds from the public. These "overnight" operations are collateralized by the obligations. The Brazilian public prefers to maintain its funds in short holdings because of the uncertainty of inflation and interest rates: 60 day bank certificates of deposit are regarded as virtually "long-term" by the average Brazilian portfolio manager. Central Bank Bills yield the financial institutions the going overnight rate plus a narrow spread, which is determined at the moment the Bills are auctioned. The government secured financing at the lower overnight rates, rather than the high indexed rates. The Central Bank makes it a standard practice to intervene directly in the overnight market, "placing" and "accepting" funds in order to manipulate the overnight rate. Since the Cruzado Plan this has become the Central Bank's basic monetary policy tool, used not only to influence liquidity conditions throughout the system (including what is now described as "indexation" – see below), but also to manipulate the government's domestic borrowing charges. In 1987, "indexation" was restored by linking longer-term securities to overnight LBC financing rate; the Central Bank has manipulated the rate with a view to making it come out equal to the average inflation rate.

Under the approach of increasing the money supply to meet presumably higher money demand, the money supply increased vertiginously in the months following the Cruzado Plan. The narrow money supply increased 80 percent in March alone.

The monetary accounts are tricky to interpret for this period, since the imposition of reserve requirements on the Banco do Brasil in February effectively reduced the monetary base, excluding Banco do Brasil demand deposits. Nevertheless, there appears to have been a sharp rise in the money multiplier – from 2.2 to nearly 3 on the new definition – between February and March, and demand deposits nearly doubled. The monetary base rose by about one-third in March, and by another one-third in April, partly through other purposely expansionary means.

The public clearly shifted its assets into money, as the theory predicted; the ratio of the narrow money supply M_1 to the broad liquidity aggregate M_4 rose from about 8 percent to about 20 percent over the course of 1986, before it plunged back again in the inflationary explosion in early 1987. Nevertheless, because inflation was repressed by the price freeze, it was difficult to gauge at the time whether the money supply increase was excessive. There is no reliable estimate of the elasticity of money demand with respect to expected inflation; nor is there any reliable estimate of just how far expected inflation had fallen. (Even if there were, it would undoubtedly be made unreliable by the "regime change" which the Cruzado Plan represented.) By June, however, the Central Bank apparently concluded that the low open market yields were indicating excessive liquidity, and beginning in July it tightened liquidity and credit significantly.

The expansionary policy maintained downward pressure in interest rates, not only in the "open market", but in the commercial bank certificate of deposit market. Relatively low interest rates amounted to additional fuel for aggregate demand, encouraging economic agents to spend for consumption rather than to save. They also contributed to a stock market boom and undoubtedly encouraged capital flight. Rates of return on saving accounts in the housing finance system were far lower now, since they now offered a very diluted form of indexation, and savings and loan institutions suffered leakages of funds. Some of the funds withdrawn went into checking accounts, since the demand for money was now higher. But on the whole, the relatively low interest rates contributed in various ways to the overheating of the economy and the authorities made several attempts to raise them. They were hamstrung by their determination to keep commercial and working capital credit rates as low as possible, however. In June and July the National Monetary Council added further restrictions on consumer credit operations, intending vaguely – but never successfully – to create a segmented credit structure in which consumer credit was expensive and production credit was cheap.

Brazil's monetary authorities faced – and continued to face – troubling dilemmas in targeting interest rates. The advice they receive, and usually claim to follow, is that interest rates ought to be "positive in real terms", especially when aggregate demand is hot. Some of their difficulty arises from the fact that the Brazilian public forms inflation expectations partly on the basis of interest rates. Thus, when the monetary authority tightens policy and tries to raise both nominal and real interest rates, the public tends to assume that only nominal rates have risen, and raises its inflationary expectations accordingly. For example, when the monetary authority intends to discourage people from borrowing money by raising real interest rates, it frequently fails to accomplish this; it only persuades people that the future inflation will be higher. In order to persuade people that it is serious, the monetary authority may have to raise interest rates so high that it causes financial mayhem. On top of this problem, the authorities continued to speak of responding to excess demand by encouraging creation of new productive capacity, and to this end they felt they had to maintain low credit rates. Only in late June, when it became clear that aggregate demand had become too intense, did the monetary authority make a determined effort to tighten policy. Even then, the government tried to offset the adverse consequences of this tightening by setting up a National Development Fund to investment (see below).

The External Accounts. At the moment of the Cruzado Plan Brazil had a relatively strong external position. The exchange rate was favorable to exports, as a consequence of the February 1983 maxidevaluation and the general maintenance of the crawling peg. Industrial exports were particularly favored, because agricultural prices had risen far more than industrial prices in the wake of the 1985 drought. Industrial prices had therefore lagged behind the overall price index; the price of the dollar therefore had outpaced domestic industrial prices. The dollar devaluation vis-à-vis some of Brazil's trade partners helped to strengthen its export competitiveness. There had been a substantial surplus in the balance of trade since 1983, which enabled the country to accumulate 11 billion dollars of foreign exchange reserves. Debt servicing was alleviated by the falling of international interest rates, offsetting the sharp increase in commercial bank debt in 1984. The decline of the international price of petroleum and the recession of 1981-4 helped to keep imports at a relatively low level. In the first months of the Cruzado Plan, however, the favorable balance of payments situation was also a source of inflationary pressure.

There is little doubt that the exchange rate was kept fixed far too long – that the sharp increase in domestic demand and the *de facto*, if not fully measured, inflation after mid March meant that the *cruzado* was increasingly overvalued. On this reasoning, once it became obvious that as the *cruzado*'s overvaluation became clear to everyone, one-way speculation developed against it. The spectacular rise in the parallel-market premium, from 25 percent in March 1986 to more than 100 percent in November 1986, would seem to be clear evidence for this view. The trade accounts deteriorated after August, not only because exporters found domestic markets more attractive, but because they clearly saw that the government would be compelled soon to devalue. (Decisions to carry out export shipments are typically made six to nine weeks before goods leave Brazilian ports, so one may infer that exporters were reaching their conclusions as early as June 1986.) Some observers even suggested that the larger exporters were trying to force the government's hand, purposely engaging in an "export strike" in a bid for a better price. Much the same can be said of producers throughout the economy, who found themselves stuck with low prices, such as the afore-mentioned cattle raisers.

The reason why the government resisted devaluing so long was that it feared it would revive the inflation-devaluation-inflation cycle. The external accounts were most probably a source of inflationary pressure at the time of the Cruzado Plan. Since early 1984 Brazil's merchandise trade surplus had been running at roughly US\$ 1 billion a month, and while this was a good thing in that it enabled Brazil to cover its external interest bill with no "new money" requirement, it was also a source of inflationary pressure. There are several perspectives from which to see this, but the clearest is probably the consideration that the surplus of net exports of goods and final services was running just slightly below that of merchandise trade, at between 3 and 5 percent of GDP. This was a substantial contribution to aggregate demand, particularly in view of the fact that it had been running in the years before 1983 at about 2 percent of GDP. Since Brazil's net-unrequited transfer accounts are insignificant, the surplus in net exports of goods and final services gives the approximate national accounts measure of the external *dissaving* being carried out by Brazil's economy.

The real effective exchange rate calculated by the Central Bank is a problematic guide to whether the new currency was undervalued at the moment of

the Cruzado Plan, for it was heavily influenced by movements among convertible currencies early in 1986. Nevertheless, the fact that the external accounts were strong combined with the fact that industry had been heavily favored by the crawling-peg policy in the early part of the year suggests that it probably was.

Brazil's external dissaving must be judged to have been, in itself, a source of inflationary pressure. One may argue that Brazil ought to have increased its private and public saving to compensate for its need to run external dissaving in order to service its external debt – or else reduced its capital formation. In fact, Brazil did all these things, although by the time of the Cruzado Plan it had not done so in sufficient degree to overcome its external dissaving from the point of view of inflationary pressure. Obviously, increasing domestic saving is all to the good. Reducing capital formation would have been dangerous, on the other hand, since it would worsen future problems. Not only would it compromise the nation's future ability to employ its growing labor force and raise productivity and living standards, but it would compromise the efficiency of production for export. As the Brazilian government has been pointing out in recent months, the transfer of resources overseas through external dissaving seems irrational from the viewpoint of global allocation of financial resources, in that a developing economy ought to be the most profitable for such resources. These issues are beyond the scope of the present discussion, however; the essential point is that the external accounts represented a source of inflationary pressure at the moment the Cruzado Plan was announced.

Pursuing this reasoning further, it is possible that the Cruzado Plan might have benefitted from a slight revaluation in the months immediately following, particularly if it were accompanied by reductions in prices that incorporated a significant exchange rate cost component, and if it were offset by increases in lagging public sector prices, so as to keep the overall price level unchanged. The value of the **cruzado** was relatively low when it was launched, particularly in view of the peculiar circumstances in the months just prior to the Cruzado Plan. As noted above, the fact that the exchange rate was devalued according to the overall inflation rate while industrial prices generally lagged behind the inflation rate implied that manufacturers perceived an effective devaluation in the months leading up to the Cruzado Plan.

If the **cruzado** was undervalued upon its being launched, how then is one to explain (a) the subsequent deterioration of the trade accounts and (b) the rising parallel market premium? The first is straightforward. Inflationary pressure developed after the Cruzado Plan, partly on account of the pressure from the external accounts, but more from internal sources, principally the wage increases. On the whole, the wage increase was probably the most important source of inflationary pressure, and whatever might have been done along the lines of tightened monetary policy or combined revaluation and price readjustment is unlikely to have sufficed to overcome the wage pressure.

The parallel exchange market premium is a more intricate matter. The parallel market premium had risen as high as 50 percent toward the end of 1985, but with the Cruzado Plan it came under downward pressure. For a period of 6 weeks after the Cruzado Plan, the parallel market premium was maintained at 25 percent through an informal understanding between the government and the principal dealers. Since dollar purchases from the Central Bank are subject to "Financial Operations Tax" of about 25 percent (some purchases are exempted),

this premium amounted to zero from a purchaser's point of view. In April, however, the dealers broke the agreement, and thereafter the premium rose sharply. The rise was not simply the consequence of anticipated devaluation, however. It was as much, or more, the consequence of a highly distorted foreign exchange market subjected to the pressure of sharply increased aggregate demand. The demand for nonofficial foreign exchange resulted in large part from extensive prohibitions on purchases from the Central Bank, and was aggravated by the narrowness of Brazil's parallel market, which was estimated at the time to carry out no more than US\$ 2 billion a year in sales (about US\$ 8 million per business day). If the government had devalued the **cruzado** early on, these distortions would all have remained. The pressure on the parallel market premium would have been reduced only slightly, if at all, to the extent that the premium resulted from distortions rather than expectations of devaluation. Pressure on the parallel market premium resulted from such consequences of higher income levels as demand for foreign microcomputers, imports of which were banned under the "market reserve" policy and heavy overseas travel – Brazilian travellers could make only limited foreign exchange purchases at the official exchange rate. It also resulted from the so-called "Portuguese exchange": coffee exports had to be made at the official minimum "registration price", which Brazil maintained in order to put upward pressure on world prices; some exporters found that in order to conclude sales in a softening world market they had to provide illicit rebates to foreign purchasers, means of paying which had to come from the parallel market. Yet another source of pressure was the drought, which reduced output of crops exported through illegal channels for cash; part of the soybean crop, for example, is exported illegally, and the drought therefore implied reduced supply of foreign exchange to the parallel market. There is no doubt that one-way speculation against the **cruzado** and capital flight – stimulated by higher incomes and the suspension of financial indexation – took on increasing importance over time. Once the markets concluded that devaluation was inevitable, of course, the premium soared speculatively. Nevertheless, in evaluating the parallel market premium as an indicator of exchange rate misalignment, the "real" distortions must be taken into account.¹⁸

THE BREAKDOWN OF THE CRUZADO PLAN

In July the government made a half-hearted attempt to cope with some of the accumulated problems. Monetary policy was significantly tightened. To increase investment and decrease consumption, the government imposed a 25 percent tax on international travel and instituted a compulsory savings scheme which included a 30 percent "forced loan" on new cars and a 28 percent "forced loan" on gasoline.

18 Maia Gomes at the time stated that "... it is important that the government avoid devaluing the cruzado vis-a-vis the dollar for as long as it can. The central idea is that monetary reform, by doing away with the cruzeiro, has given rise to a stable currency could hardly be maintained were the cruzado to be devalued in the way the old cruzeiro so frequently was. If people do not believe that the cruzado has a stable value, they will behave accordingly: inflationary expectations will be brought back to the scene and the whole plan will break down and since a Cruzado devaluation would increase the costs of many products "... it would be impossible to avoid firms from passing along to prices the increase in costs that would follow a devaluation..." He therefore concluded that "... Brazil will have to follow a fixed exchange regime for months to come." Maia Gomes (May 1986, pp. 31-2).

These were considered by the government to be loans (forced savings), since they were to be returned to the consumers of these products in the form of equity shares in a new National Development Fund. The government therefore excluded them from the official inflation measures. The resources of the fund were to be invested in development projects outlined in a simultaneously published "Targets Plan". The net result would presumably be a higher investment/GDP ratio¹⁹ and a higher aggregate saving/GDP ratio. The basic point of the policy package, sometimes called "the little Cruzado Plan", was to cool aggregate demand, to capture savings and to promote investments.

The real crisis of the Cruzado Plan emerged in the external accounts. By mid-1986 it was clear that the capital account of the balance of payments had reversed dramatically. Net direct foreign investment, which had totalled US\$ 800 million in what was regarded as a disappointing performance during 1985, totalled only US\$ 15 million in the first six months of 1986. Profit remittances and capital flight were rising, one apparent sign of which was the rising "parallel" exchange market premium. Although the government released its international reserve figures with a six-month lag under a policy set in 1985, private observers inferred significant reserve losses and hence an imminent maxi-devaluation. Apart from a slight devaluation (1.8%) in mid October, the government resisted devaluation because elections were imminent. Exports fell rapidly, however, as would-be exporters awaited devaluation and found domestic markets relatively lucrative.

The government's refusal to consider any price realignment was probably motivated by two considerations. First, since the freeze came to symbolize the political success of the plan, President Sarney was reluctant to tamper with it, at least until after the crucial November elections to the new constituent assembly. Second, because the Cruzado Plan allowed wages to automatically rise every time the accumulated inflation from each labor category's annual "base date" reached 20 percent, policymakers were afraid to permit price increases which might activate the "trigger".

Shortly after winning the November 15 elections, however, the government announced another dramatic adjustment program, which rapidly came to be called the "Cruzado II". Its focus was a realignment of prices of "middle class" consumer products and increases in taxes on them. Automobile prices were raised by 80 percent; public utility prices by 35 percent; fuels by 60 percent; cigarettes and alcoholic beverages by 100 percent; sugar by 60 percent; milk and dairy products by 100 percent. A crawling-peg exchange rate devaluation was reinstated, and new tax incentives for savers were introduced. These measures were intended to cool consumption expenditures. Unfortunately, as a number of economists warned at the time, the price increases tended to divert consumption expenditures rather than stimulate savings.

Inflation revived in the wake of these measures. Wages rose as the automatic trigger mechanism began to function. In December 1986 consumer prices rose 7.7 percent and in January 1987 they rose 17.8 percent. These recorded price

19 Controversy arose over whether the compulsory loans should be incorporated into the consumer price index as if they were taxes. Arguing that the loans did not amount to a real price increase because the consumer would be repaid with participatory shares in the National Development Fund, the government decided to exclude them from its computation of the inflation rate.

increases still did not reflect the widespread use of price premia ("ágios") which made many prices much higher than the officially quoted ones. In the following months the inflationary explosion continued, reaching 14 percent in March, 19 percent in April and 26 percent in May. Thus, by the middle of 1987 the yearly rate of inflation was well over 1,000 percent. Inflationary expectations – and uncertainty – recovered with a vengeance, and annualized short-term interest rates reached nearly 2,000 percent in early June 1987. Finally, the Central Bank's international reserve position had fallen so far that the government found it necessary to declare a unilateral moratorium on February 20, 1987.

The "Cruzado II" and the revival of inflation engendered severe instability in Brazil's domestic financial markets, dramatically demonstrating their peculiar sensitivity to inflationary expectations and uncertainty. It is clear that not only inflationary expectations, but also inflationary uncertainty, intensified in the wake of Cruzado II. The consequences were magnified – ironically – by the tightened monetary policy put into effect with the new policy package. Tight credit conditions effectively implied that lenders (i.e., purchasers of bank certificates of deposit and economic agents placing funds in the overnight open market) had the greater market strength. This implied that they were in a position to demand compensation for inflationary uncertainty. Thus, for example, a lender who ordinarily sought real compensation of (say) 1 percent per month, and who had an **expectation** that inflation would run at 7 percent per month but **feared** that inflation might turn out 9 percent, might insist on being compensated on the basis of the inflation he feared rather than the inflation he expected, i.e., 10 percent rather than 8 percent. This contributed to the volatility of inflationary expectations, to the extent that people drew their conclusions about expected inflation on the basis of observed interest rates. Worse, it made the recessionary consequences of monetary tightness more severe: since inflationary uncertainty made real interest rates higher, bankruptcies were more likely to result from monetary tightness when credit came due.

Ironically, although the Cruzado Plan had ended financial indexation on the arguments that it contributed to inflation-feedback pressure and that it maintained high real interest rate levels, many analysts and businessmen defended its return on the grounds that in circumstances of high inflationary uncertainty it would reduce real interest rates. In the example given above, the lender could charge his real interest rate plus **ex post** indexation; the indexation would take the place of the provision for expected inflation and uncertainty, but would probably turn out lower than they would have been if the uncertainty were excessive. In any case, the argument goes, it ought to end the vicious circle in which inflation uncertainty on the part of lenders continually drove up interest rates. The problem with indexation in this context, however, is that it would create severe risks if applied to borrowers. Because inflation is not neutral, i.e., because particular prices rise at different rates, borrowers have no assurance that their prices and incomes will rise as much as the average price level on which the indexation is based.²⁰ The increase in any inflation index is an average of price rises: even if they were symmetrically distributed, roughly half of them would lag behind their average. Recent empirical work on Brazilian prices suggests that matters may be even worse: in most of the time

20 Baer and Beckerman (1980).

intervals studied, the median price rise was less than the average price rise.²¹ Moreover, the dispersion of price increases is undoubtedly wider, the higher is the inflation rate. Particularly in view of the high inflation rates and high dispersion characterizing Brazil's economy by early 1987, full financial indexation might have been perilous. In any event, interest rates rose high enough to cause calamitous problems for many enterprises, especially those set up in the euphoria following the Cruzado Plan. Bankruptcy proceedings reached record levels throughout Brazil in the first half of 1987.

A partial sort of indexation was introduced in early 1987: the classes of government obligations and savings instruments that had been index-linked before the Cruzado Plan were now officially linked to the overnight market rate. As noted above, the Central Bank actively manipulates the overnight rate. Although the government has strongly indicated that it plans to ensure that the overnight rate yields a "positive real" rate of return, it has not legally pledged itself to do so. Accordingly, the "financial indexation" now in effect is rather more "partial" in character than the financial indexation practiced before the Cruzado Plan – which was itself heavily diluted by various means.

EXTERNAL DEBT

Brazil's difficult relationship with its external creditors was never far in the background as the consequences of the Cruzado Plan were played out. The sharp improvement in Brazil's trade account during 1984 enabled the country to cover its interest bill, and so to use the proceeds of the "involuntary" 1984 commercial bank new money facility to rebuild its international reserves. Negotiations to restructure Brazil's commercial bank debt collapsed in early 1985, however, because – after repeated interruptions – Brazil had fallen out of compliance with its 1983 Extended Fund Facility IMF program at the end of 1984. The new governments that took office in March 1985 ruled out further IMF arrangements which had become unpopular even by Latin American standards. As a consequence, no new credit facilities could be negotiated with commercial banks during 1985 and 1986. In March 1986 the commercial banks agreed to reschedule unpaid 1985 maturities and to roll over 1986 maturities into 1987 (since 1982 it has become a commonplace that no one seriously expects Brazil to make amortization payments).

The government's refusal to consider a new IMF program also led to difficulties with the Paris Club. The new government backed its demand for a multi-year rescheduling by suspending debt service to Paris Club creditors from June 1985 through April 1986; since the Paris Club refused to consider a multi-year rescheduling without an IMF agreement, relations between Brazil and the Paris Club worsened. In May 1986, however, Brazil resumed interest payments on its Paris Club debt. In January 1987 it secured a rescheduling agreement from the Paris Club, with a promise to "enhanced contacts" with the IMF. This meant acceptance, in mid 1987, of a series of IMF missions.

Brazil's capital account remained stable enough during 1985, but in the first half of 1986 problems developed as net direct foreign investment fell from US\$ 800 million a year to virtually zero. In the second half of the year it turned negative.

21 Moura Silva and Kodota 91982).

The trade surplus continued to cover the interest bill until mid 1986, but thereafter, reserve loss quickened, leading to the suspension of interest payments to commercial banks in February 1987. Since then, in effect, Brazil has financed its interest bill by accumulating arrears.

EVALUATION

The Cruzado Plan's basic purpose was to eliminate the "inertial" part of Brazil's inflation, which government economists professed to believe was the essential explanation of the country's persistent inflation. No doubt, Brazil's inflation had become increasingly inertial as indexing, both formal and informal, had spread, resulting in a situation in which each economic agent had the power to maintain its relative position in the economy. The situation could be characterized as a "permanent stalemated fight for purchasing power shares". There seemed only two ways out. One was an orthodox stabilization policy, which could succeed permanently only if certain socio-economic groups could be made to absorb a decline in their share of the national income. The other way was the creation of a social consensus, which would stop the "fight for shares". The Cruzado Plan amounted to an attempt to choose the second way. The general frustration with an endless triple digit inflation and the boldness of the price-freeze-cum - new currency created a temporary social consensus in which even those agents that were disadvantaged at the time of the freeze were willing to accept a sacrifice.

The Plan's failure may be ascribed to several causes. The most important was the wage increase granted at the Plan's inception. It swelled aggregate demand at a moment when the economy was already hot, aggravated by external and public-sector dissaving. In retrospect, it may be that the Plan was fatally flawed; but subsequent errors in the Plan's execution made matters worse. The money supply assuredly grew too rapidly at the outset. Once the Plan failed, the government clung far too long to the price freeze and to the fixed exchange rate. The freeze stopped the workings of the price mechanism and caught a large segment of the economy in too sharply disadvantageous a relative-price position. The basic error was the rigid adherence to the idea of zero inflation. One could hardly expect the disadvantaged sectors of the economy to accept their sacrifices for more than three or four months. Selective price readjustments, with an emphasis on low rather than zero inflation, might have kept the gradual spread of "ágios" and shortages on a much lower level. Also, many problems related to unfavorable relative price position of public enterprises might have been prevented by increasing rates in advance of the freeze or, as with the private sector, gradually readjusting those tariffs after the freeze.

In order for "zero inflation" or anything like it to work, of course, some prices have to fall. It is a revealing characteristic of Brazil's economy that - agricultural commodities apart - the very notion that a particular price might decline seems antiquated. It appears clear in retrospect that the government's basic dilemma was that it was determined to have zero inflation but needed to realign relative prices. This would only have been possible if it could reduce some prices. It belabors the obvious to say that an economy with well-developed inflation - feedback mechanisms and extremely sticky downward prices has little hope of

permanently rooting out inflation.

Distributionally, the Cruzado Plan favored the wage earning class, which was the opposite of what usually occurs in classic stabilization programs. Redistribution of income from capital to labor set into motion contradictory forces. It caused a substantial increase in the demand for consumer goods. The industrial capitalist sector reponed by increasing output, even though unit profits were declining for many firms on account of the combination of the price freeze and increased wage costs. It is likely that some firms were able to maintain adequate profit levels through economies of scale resulting from larger production runs, although profitability came under pressure later in 1986. This may explain the increased investment, although it apparently consisted more of installation of additional machinery rather than extensive new factory construction. As the "freeze" melted, however, it is likely that capital's share recovered.

CONCLUSION

The Cruzado Plan failed rather definitely, and the costs of the failure were high. The economic costs were bad enough: they included the international reserve loss leading to the interest moratorium, the nasty inflationary resurgence at the end of the year, and the sharp decline in labor purchasing power, leading to incipient recession in the first half of 1987. In many ways the political price was even higher, not merely for the particular personalities in power, but for the "political morale" of the nation. Many Brazilians feel that the whole exercise was a crude political manipulation: prices were frozen long enough to enable a weak, unpopular government to win its legislative election, then turned loose in the Cruzado II program – which followed the elections by less than a week. The government appeared, in turn, to be as vacillating, as manipulative, as deceptive as the preceding military regime. (For example, it altered the fundamental structure of the consumer price index to suit its current needs five times between November 1985 and November 1986.)²²

Many observers have concluded that the Cruzado Plan's failure shows that "heterodox" inflation shocks cannot really work, that only an orthodox program of fiscal and monetary control can ever end Brazil's chronic inflation. At best, the argument goes, a heterodox shock can be helpful if accompanied by appropriate fiscal, monetary and exchange rate measures and if the price freeze is rapidly concluded. This essay has argued that the matter is rather more complicated than this seemingly unobjectionable argument makes it sound. The Cruzado Plan experience, one may argue, was not a clean test of a heterodox stabilization program: the wage increase, given in conjunction with the Cruzado Plan, was destabilizing; it was simply far too large for the price level to resist, even for an economy growing as fast as Brazil's. The wage increase was undoubtedly the largest mistake, and in retrospect it doomed the Cruzado Plan from the start. No conceivable amount of fiscal tightening – or reductions in other aspects of aggregate demand, such as net exports or capital formation – could have overcome the consequences of the resulting consumption spurt. There were further policy miscalculations: the price freeze was maintained too long from an economic (if not a

See Modiano (1986) and various issues of *Conjuntura Econômica*.

short-term political) viewpoint; relative prices badly needed realignment from the outset; monetary policy was loosened too rapidly. More controversially, this essay has argued that the exchange rate may initially have been undervalued, and this generated some inflationary pressure, although the sharp external accounts deterioration suggests that it subsequently became overvalued. No less controversially, this essay has argued that the persisting public sector deficit was relatively less important as a cause of the Cruzado Plan's breakdown; although to be sure, realignment of public enterprise and tighter fiscal policy would have helped matters.

Since the fatal wage increase was not part of the stabilization program *per se*, a theorist may argue that the Cruzado Plan experience is not definitive evidence against heterodox stabilization. It is just possible the Cruzado Plan would have worked, or would have worked better, if real wages had not been raised 8 percent (and more). This is a troubling argument, however. As noted, workers whose wages had just been increased would have had to accept reduced money wages in order to avoid that wage increase. One must ask – as Brazil's president undoubtedly did – whether that was feasible on political grounds. It might have been more feasible not to give a wage increase to workers who recently had had one, but this might have been viewed as unfair: it would have changed the relative wage distribution in an arbitrary way.²³

It might have been possible for the government to avoid providing the real wage increase if the Cruzado Plan had been done in a somewhat different way. If the problem was that money wage cuts were out of the question, the government might have circumvented the difficulty by raising all prices generally by a large percentage before freezing them. This would have enabled it to raise all money wages so as to set their real values equal to the average of their real values over the preceding six months. It might even have been possible for the government to take advantage of such a general price rise to reset the real values of the prices it meant to freeze – for example, so as to set them equal to their average real values over the preceding six months. This would undoubtedly have set the price array equal to something closer to an equilibrium value than simply freezing them accomplished. Even so, one lesson of the Cruzado Plan price freeze is that it would probably have been sensible to keep readjusting prices after the freeze – but raising and lowering prices with each adjustment, so that the overall price level did not rise. If the government had chosen such a strategy of raising all prices before freezing them, it would immediately have made money and nonindex-linked financial assets scarce. The money supply would have had to increase by even more in order to meet higher money demand; but, on the other hand, the monetary authority would have had more leeway in which to allow a money-supply increase without reaching the threshold at which it was inflationary.

On June 12, 1987, with resurgent inflation running at nearly 1,500 percent a year, Brazil attempted yet another heterodox shock. This time, the government's stated ambitions were more modest. There was no promise of "zero inflation", only a more realistic hope of reduced inflationary pressure. The price freeze was clearly advertised as temporary. By this time, the external accounts had begun to recover,

23 For an evaluation of the Cruzado Plan's failure by various policymakers involved in its conception and administration, see: Sardenberg (1987) and Solnik (1987).

but the fiscal deficit had deteriorated sharply, mainly because prices had accelerated so sharply in early 1987 – setting off the wage trigger repeatedly – that the collection lag had become severe, wage bills had ballooned, and financial charges for public debt had become a special crisis in itself for state and municipal governments. No wage increase was given, although the inflation had driven real wages well below their levels at the end of 1985. The Cruzado was devalued, however, by approximately 10 percent. At this writing, it appears unlikely that the “Bresser Plan” (as it has come to be known, since its principal author was the Finance Minister, Luiz Carlos Bresser Pereira) will permanently reverse the inflation rate. The problem was the devaluation: once again, just as the government accompanied the Cruzado Plan stabilization with an inflationary wage shock, it now accompanied the Bresser Plan with an inflationary devaluation. With the trade surplus reaching monthly records in June and July, the monetary base inevitably came under severe pressure, growing approximately 28 percent in July and probably at a similar rate in August. Once again, the heterodox approach has not had a fair test: when carrying out heterodox stabilization, it is essential to avoid concurrent inflationary shocks, however necessary they are deemed to be.

REFERENCES

- ARIDA, Persio (ed.), *Inflação Zero* (Rio de Janeiro: Paz e Terra, 1986).
- BAER, Werner *The Brazilian Economy: Growth and Development*, second edition (New York: Praeger, 1983).
- BAER, Werner “The Resurgence of Inflation in Brazil: 1974-1986”, *World development*, August 1987.
- BAER, Werner and BECKERMAN, Paul “The Trouble with Index-Linking: Reflections on the Recent Brazilian Experience”, *World Development*, September 1980, pp. 677-703.
- PEREIRA, Luiz Bresser and NAKANO, Yoshiaki *Inflação Brasileira no Pós-Guerra* (São Paulo: Editora Brasiliense, 1984).
- SOUZA, Angelo Jorge de “Inflação de Preços Relativos”, *Conjuntura Econômica*, Abril 1986, pp. 29-30.
- CARNEIRO, Dionísio Dias “The Cruzado Experience: An Untimely Evaluation After Ten Months”, mimeographed, PUC, Rio de Janeiro, January 1987.
- RESENDE, André Lara and LOPES, Francisco L. “Sobre as Causas da Recente Aceleração Inflacionária”, *Pesquisa e Planejamento Econômico*, Abril de 1983.
- LOPES, Francisco L. “Inflação Inercial, Hiperinflação e Desinflação: Notas e Conjecturas”, *Revista da ANPEC*, Ano VII, N^o 8, Nov. 1984.
- LOPES, Francisco L. *O Choque Heterodoxo: Combate à Inflação e Reforma Monetária* (Rio de Janeiro: Editora Campus Ltda., 1986).
- GOMES, Gustavo Maia, “Monetary Reform in Brazil”, mimeographed, Recife, May, 1986.
- GOMES, Gustavo Maia “Poupança e Crescimento Pós-Cruzado”, in *Revista da ANPEC*, Dezembro 1986.
- MARQUES, Maria Sílvia Bastos “O Plano Cruzado: Teoria e Prática”, mimeographed, Rio de Janeiro: Fundação Getúlio Vargas, Março, 1987.

- MARTONE, Celso Luiz "Plano Cruzado: Erros e Acertos no Programa", in **O Plano Cruzado na Visão de Economistas da USP** (São Paulo: Livraria Pioneira Editora, 1986).
- MODIANO, Eduardo **Da Inflação ao Cruzado** (Rio de Janeiro: Editora Campus Ltda., 1986).
- SILVA, Adroaldo Moura da and KADORA, Décio K. "Inflação e preços relativos: medidas de dispersão," **Pesquisa e Planejamento Econômico**, Vol. 12, Nº 1, Abril 1982, pp. 1-22.
- SARDENBERG, Carlos Alberto **Aventura e Agonia: Nos Bastidores do Cruzado** (São Paulo: Companhia Das Letras, 1987).
- SOLNIK, Alex **Por Que Não Deu Certo** (São Paulo: L & PM, 1987).

TABLE 1

Brazil: Measures of Growth and Inflation, 1970-1986
(yearly growth rates)

	GDP	Output			Prices		
		Industry	Agriculture	General	Wholesale	Consumer	GDP Deflator
1970	8.8	10.4	1.0	19.8	19.4	20.9	20.4
1971	11.3	12.0	11.3	18.7	20.0	18.1	19.5
1972	12.1	13.0	4.1	16.8	17.7	14.0	22.6
1973	14.0	16.3	3.6	16.2	16.2	13.0	34.3
1974	9.0	9.2	8.2	33.8	34.1	33.8	33.9
1975	3.2	5.9	4.8	30.1	30.6	31.2	47.4
1976	10.1	12.4	2.9	48.2	48.1	44.8	46.2
1977	4.5	3.9	11.8	38.6	35.3	43.1	38.9
1978	4.7	7.2	-2.6	40.5	42.3	38.7	55.6
1979	7.2	6.4	5.0	76.8	79.5	76.0	91.7
1980	9.1	7.3	6.3	110.2	100.8	86.3	102.5
1981	-3.4	-5.5	6.4	95.2	112.8	100.6	92.9
1982	0.9	0.6	-2.5	99.7	97.6	101.8	151.9
1983	-2.5	-6.8	2.2	211.0	234.0	177.9	210.5
1984	5.7	6.0	3.2	223.8	230.3	208.7	234.8
1985	8.3	9.0	8.8	235.1	225.7	248.5	142.4
1986	8.2	12.1	-7.3	65.0	62.6	83.5	

Source: Conjuntura Econômica

TABLE 2
Brazil: Monthly Price Changes

	General Prices		Wholesale	Consumer Prices
	Monthly	Yearly	Monthly	Monthly
1986				
January	17.8	250.4	19.0	15.7
February	22.4	289.4	22.2	21.8
March	- 1.0	242.5	- 1.0	- 0.3
April	- 0.58	217.5	- 1.46	1.1
May	0.32	195.6	0.09	0.79
June	0.53	175.5	0.37	0.62
July	0.63	154.6	0.58	0.58
August	1.33	126.3	1.34	0.88
September	1.09	109.6	0.67	0.95
October	1.4	94.8	1.15	1.01
November	2.5	73.7	2.1	2.1
December	7.6	65.0	7.7	7.5
1987				
January	12.0	57.0	10.5	14.3
February	14.1	55.8	10.4	14.5
March	15.0	69.8	14.1	13.5
April	20.1	105.1	21.0	21.5
May	27.7	160.8	30.7	25.1
June	25.9	226.5	26.3	27.2

Source: Conjuntura Económica.

TABLE 3

a) Industrial Production
(Yearly Growth Rates)

1986	Industry	Manufacturing	Capital Goods	Intermediate Goods	Consumer	
					Dur	NonDur
January	8.3	8.2	11.4	7.2	14.3	8.3
February	9.1	9.0	12.7	7.8	17.1	9.3
March	8.6	8.4	11.6	7.3	17.4	8.7
April	9.8	9.7	15.2	8.1	23.5	8.8
May	10.6	10.6	17.8	8.3	30.7	9.1
June	11.5	11.6	20.8	8.7	33.5	9.9
July	11.7	11.8	21.3	8.8	30.6	10.2
August	11.7	11.8	21.7	8.7	30.0	10.0
September	11.7	11.9	22.0	8.7	27.8	10.4
October	11.4	11.7	22.1	8.6	24.5	10.0
November	11.3	11.7	22.2	8.6	21.5	10.1
December	10.9	11.3	21.6	8.4	20.3	8.9
1987						
January	10.5	10.9	21.1	8.1	18.8	8.1
February	10.5	11.0	20.4	8.2	17.1	8.3
March	11.4	11.9	20.8	9.1	15.0	9.5
April	10.6	11.1	17.7	8.7	10.6	9.6
May	10.1	10.7	16.1	8.6	4.8	9.5

b) Use of Industrial Capacity

		1984	1985	1986	1987	
January		72	77	81	84	
February		74	77	81	83	
July		74	77	82		
November		76	80	86		

Source: **Conjuntura Econômica**.

TABLE 4

a) Brazil Yearly Indicators
(billions of US\$)

	Exports	Imports	Trade Balance	Net Interest Payments	Current Account Balance	Reserves
1977	12.1	- 12.0	+ 0.1	- 2.5	- 4.1	+ 7.3
1978	12.7	- 13.7	- 1.0	- 3.3	- 5.9	+ 11.9
1979	15.2	- 18.0	- 2.8	- 5.3	- 10.7	+ 9.7
1980	20.1	- 23.0	- 2.9	- 7.5	- 12.8	+ 6.9
1981	23.7	- 22.1	+ 1.6	- 10.3	- 11.7	+ 7.5
1982	20.2	- 19.4	+ 0.8	- 12.5	- 16.3	+ 4.0
1983	21.9	- 15.4	+ 6.5	- 10.3	- 6.8	+ 4.6
1984	27.0	- 13.9	+ 13.1	- 11.4	+ 0.1	+ 12.0
1985	25.6	- 13.2	+ 12.4	- 11.2	- 0.1	+ 11.6
1986	22.4	- 12.9	+ 9.5			+ 6.8

b) Brazil: Monthly Foreign Economic Indicators

1986	Exchange Rate (Cruzado per US\$)	Exports		Imports		Trade Balance
		(in millions of US\$)		(in millions of US\$)		
January	11.31	1,909.6	1,208.6	(475)*	701.0	
February	13.07	1,751.2	1,123.0	(387)*	628.2	
March	13.84	2,157.3	1,021.1	(238)*	1,136.2	
April	13.84	2,171.5	880.4	(142)*	1,291.1	
May	13.84	2,291.8	951.3	(224)*	1,340.5	
June	13.84	2,000.3	928.7	(186)*	1,071.8	
July	13.84	2,209.1	1,175.3	(225)*	1,033.8	
August	13.24	2,098.9	1,076.4	(191)*	1,022.5	
September	13.84	1,857.0	1,017.0	(195)*	840.6	
October	13.97	1,340.0	1,130.0	(205)*	210.0	
November	14.11	1,300.0	1,180.0	(223)*	130.0	
December	14.55	1,329.0	1,173.0	(156)*	156.0	
1987						
January	15.70	1,259.0	1,130.0	(276)*	129.0	
February	18.32	1,530.0	1,228.0	(271)*	302.0	
March	20.65	1,427.0	1,221.0	(392)*	206.0	
April	23.80	1,660.0	1,140.0		520.0	
May	30.74	2,170.0	1,224.0		946.0	
June	39.90					

Source: **Conjuntura Econômica**; Banco Central do Brasil, **Boletim**

*imports of oil; + in parenthesis, % of parallel rate over official rate.

Wholesale Prices Changes: January 1980 to February 25, 1986
For Selected Products
 (General Wholesale Price Change in Period = 42,119%)

Product	Percentage Price Change
Tomatoes	209,119
Instant Coffee	110,890
Potatoes	108,172
Ground and Roasted Coffee	93,211
Animal Feeds	90,865
Raw Salt	78,488
Coffee Beans	78,480
Shock Absorbers	73,171
Fish	69,518
Radios	69,374
Mechanical Lathes	68,990
Gearboxes	65,775
Oil	65,543
Beans	63,882
Wheat Flour	63,648
Copper Wires	56,785
Portland Cement	56,528
Manioc	53,814
Construction Machinery	53,262
Canned Vegetables	52,541
Pig Iron for Foundry	43,941
Truck and Bus Tires	43,464
Processed Wood	42,355
Refined Salt	42,251
Water-based Paints	41,737
Oil-based Paints	41,483
Acytelene	41,305
Powdered Milk	41,069
Small Trucks and Vans	40,767
Automobiles (78 to 120 HP)	28,749
Color Television Sets	28,496
LPGs	28,141
Detergents	26,697
Raw Petroleum	26,139
Diesel Oil	25,062
Air Conditioners	24,413
Meat	24,090
Refrigerators	22,889

(continued)

TABLE 5 (continued)

Product	Percentage Price Change
Polishers	22,829
Washing Machines	21,732
Reinforcing Bars for Ribbed Concrete	20,982
Refined Soybean Oil	20,676
Manioc Flour	20,303
Blenders	19,305
Reinforcing Bars for Smooth Concrete	18,075
Gasoline	17,891
Industrial Soap	16,476
Milk	15,188

Source: Angelo Jorge de Souza, "Inflação e Preços Relativos", in *Conjuntura Econômica*, Abril 1986, p. 30.

TABLE 6

a) Money Supply Growth Rates
(monthly growth rates)

1986	Monetary Base	M ₁	M ₂	M ₃	M ₄
January	1.0	- 9.0	2.7	11.3	13.0
February	12.2	14.0	14.5	15.9	16.0
March	36.0	80.1	31.9	14.4	12.0
April	35.3	19.3	6.9	1.4	1.0
May	15.0	15.3	4.4	2.6	3.0
June	10.6	13.9	8.6	5.8	4.0
July	14.1	0.4	1.4	1.7	1.0
August	6.0	6.9	19.5	12.9	5.0
September	2.8	4.8	7.4	6.4	5.0
October	5.2	6.7	10.5	7.4	4.0
November	9.4	4.1	5.4	3.9	1.0
December	3.7	9.3	8.2	6.8	
1987					
January	- 3.6	- 23.2	- 10.4	- 4.5	
February	- 4.7	7.1	7.8	13.5	
March	3.0	10.9	4.1	11.9	
April	10.5	- 11.9	- 2.9	6.6	
May	5.2	11.1	9.4	17.6	

b) Brazilian National Treasury Government Cash Budget Result
(millions of Cruzados)

1986					
January	14,329	June	- 12,357	November	- 33,752
February	20,452	July	- 14,910	December	- 106,134
March	11,047	August	- 19,563		
April	- 9,732	September	- 21,452		
May	- 14,289	October	- 23,784		
1987					
January	447	April	15,519		
February	1,706	May	9,653		
March	14,629				

Source: Conjuntura Econômica.

TABLE 7
Employment, Unemployment and Wages

1986	Industrial Employment (Yearly Growth)	Unemployment (% of Labor Force)	Real Wages (Yearly Growth)
January	9.1	4.18	21.1
February	9.4	4.40	26.1
March	9.3	4.40	44.5
April	9.3	4.39	36.9
May	9.6	4.17	20.7
June	10.5	4.08	18.7
July	10.9	3.76	20.6
August	10.9	3.60	26.0
September	10.9	3.20	32.1
October	10.3	3.50	24.7
November	9.9	2.98	18.5
December	8.9	2.20	18.0
1987			
January	8.0	3.20	5.9
February	7.6	3.30	4.1
March	6.7	3.10	4.6
April	6.4	2.80	3.8
May		3.90	

Source: *Conjuntura Econômica*, and Banco Central do Brasil, *Boletim*.

TABLE 8
Brazil: Interest Rates
 (% por month)

1986	Bank Deposit Certificate	Money Market Overnight Rates
January	18.04	16.74
February	16.12	13.88
March	1.42	1.18
April	1.50	1.25
May	1.83	1.24
June	2.08	1.33
July	2.50	1.94
August	3.33	2.56
September	3.75	2.93
October	4.00	1.87
November	6.83	2.85
December	10.83	5.30
1987		
January	40.00	27.50
February	17.00	15.00
March	40.10	15.68
April	38.96	21.75
May		

Source: Banco Central do Brasil, **Boletim: Conjuntura Economica**.

TABLE 9
Index of Real Prices of Price Administered Sectors

	1983	1984	1985	October 1986	November 1986
Wheat	100	132	99	66	60
Electric Energy	100	96	117	101	96
Telecommunications	100	88	71	60	74
Gasoline	100	119	87	66	96
Diesel Oil	100	123	84	64	58
Alcohol	100	131	96	73	106
Steel Products	100	102	103	75	68
Mail and Telegr.	100	82	80	53	87

Source: Marques (1987), p.42; original sources: Banco Central do Brasil, **Brasil: Programa Econômico - Ajustamento Interno e Externo**, Feb., 1987; Fundação Getúlio Vargas; **Conjuntura Econômica**, Jan. 1987.

Real prices obtained by deflating using the general price index.