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The theory of inertial inflation: a brief history

A teoria da inflação inercial: uma breve história

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RESUMO: Este artigo é a história de como a teoria da inflação inercial foi desenvolvida no Brasil no início dos anos 1980, quando a inflação era muito alta, muito superior à estagflação ocorrida nos Estados Unidos na década anterior. Talvez esse fato explique por que a teoria foi formulada no Brasil e não nos Estados Unidos. Os principais artigos e o livro que definiu a nova teoria são devidamente referenciados. E o autor, que nas décadas de 1980 e 1990 foi ator político, conta também a história da aplicação da teoria, os fracassos e acertos.
PALAVRAS-CHAVE: Inflação; inércia; indexação; plano de estabilização.

ABSTRACT: This paper is the history of how the theory of inertial inflation was developed in Brazil in the early 1980s, when inflation was very high, much higher than the stagflation that happened in the United States in the previous decade. Perhaps this fact explains why the theory was formulated in Brazil and not in the United States. The main papers and the book that defined the new theory are duly referred. And the author, that in the 1980s and 1990s was a political actor, also tells the history of the application of the theory, the failures and successes.
KEYWORDS: Inflation; inertia; indexation; stabilization plan.
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Inflation was around 70 percent a year in 1964 when the military government decided to formally index financial contracts. In the following three years, it has fallen to around 40 percent with the adoption of a strict fiscal policy and, until 1979, Brazilian inflation remained approximately at this level. However, in this year the adoption of a radical monetary policy in the United States aiming to control stagflation raised dramatically the international interest rate and resulted in a major foreign debt crisis in almost all developing countries. In Brazil, the financial crisis was particularly severe because, in the second half of the 1970s, the military government engaged in the growth with foreign indebtedness policy that irresponsibly increased the foreign debt. In 1979, reacting to an increase in inflation, Brazil

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adopted a monetarist policy of prefixing the exchange rate on the assumption that this would change the inflation expectations. As it happened one year before in Argentina and two years later in Chile, this policy based on the rational expectations theory failed. Instead of controlling inflation, it led one year later to the sharp depreciation of the national currency, the moratorium of the foreign debt, and the acceleration of inflation, which jumped to more than 100 percent in 1980.[1]

Brazil was facing a triple economic crisis: the foreign debt crisis, the fiscal crisis of the state associated with public savings that turned negative, and high inertial inflation. In view of the failure of the policy, in 1981 the authoritarian government adopted a conventional stabilization plan, based on strong fiscal adjustment, an increase of the interest rate, and currency depreciation. However, instead of falling, inflation remained around 100 percent, and rose to 200 percent in 1983 due to a second depreciation. Since then, while the indexation of the economy impeded inflation of falling, successive supply shocks led inflation to increase dramatically in the following years despite the economy was facing recession. In this process, indexation also became informal: all prices (not just the legally indexed) started to be increased according to past inflation. And inflation began to be measured monthly: 5 percent, 10 percent, 20 percent a month. The US had also experienced stagflation, but the rates of inflation were much smaller. It is possible that this fact explains why a few Brazilian economists built the new theory, and sometime later economists in the North learned the theory, authored papers not quoting the Brazilians,[2] and included the new theory in textbooks.

This paper is a brief history of the formulation of the theory of inertial inflation. It is the third time I do that, the first in English.[3] I will tell how the ideas about the high inertial inflation that dominated Brazil between 1980 and 1994 emerged. Yoshiaki Nakano and I developed what I assume was the first simple and comprehensive model of the mechanism that made this inflation autonomous of demand. We published several works that preceded the works carried out on the same topic by professors at PUC (the Catholic University in Rio de Janeiro), but many believe that this primacy belongs to them – a belief that can be explained by four factors: first, they also had theoretical contributions to the problem; second, these economists presented their ideas in English and in Washington; third, they participated in 1986 in the formulation of the Cruzado Plan that used this theory for the first time in Brazil; fourth, they formulated the Real Plan, which ultimately controlled Brazil's high inflation.

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[1] This policy of presetting the exchange rate at a level below current inflation was a disastrous reproduction of the more radical policies adopted in Argentina, in the late 1970s, and in Chile, in the early 1980s, with devastating consequences for their respective economies. On the crisis in these two countries, see mainly Dias-Alejandro (1981).

[2] See, for instance, Blanchard (1987).

[3] My previous reports on the discovery of inertial inflation were Bresser-Pereira (1993, 2010), only published in Portuguese. I know of no other studies reporting these ideas other than an excellent but incomplete account by Francisco Lopes (1989).

During the 14 years of high inertial inflation in Brazil, there were only eight economists who knew what inertial inflation was, and all of them made contributions to the problem.[4] I know these questions about developing new ideas are always complicated, but the best way to check them is to consult the written and published works and study the history surrounding these works. In the first section of this paper, I will narrate how the theory arose; in the second section I will briefly summarize the new theory; in the third, I will tell how the idea of the "heroic solution" or the "heterodox shock" to neutralize inertia was born; in the fourth, how the idea of using an indexed currency to control inertial inflation was born; and in the fifth section I will briefly discuss the problem of microfoundations and the method used. About the method, I will show that we came to the theory by observing what was happening, how inflation coexisted with recession, formulated a hypothesis explaining the fact, and checked whether the theory had predictive power. Therefore, the theory didn't result from a hypothetical-deductive, but from a historical-deductive process.[5]

RANGEL'S THEORY

The fundamental economic Brazilian problem in 1983 was how to control the inflation rate that had reached 200 percent a year. Two recessions and a strong fiscal adjustment brought the public deficit close to zero but had not managed to stabilize prices. The orthodox economists who had applied this therapy were perplexed. I well remember Afonso Celso Pastore, a distinguished orthodox monetarist, then president of the Central Bank, telling me, at the end of 1984, when, as president of Bank of the State of São Paulo, I made him a visit: "Bresser, I don't understand what's going on. I did everything to control inflation, but it doesn't fall." I had given to him, one year before, the originals of the two main papers on the theme.[6] I was tempted to tell him that if he had read the papers, he would not be so perplexing, but I refrained the comment. We had a new theory to explain inflation in Brazil. This theory not only deciphered a relevant economic puzzle but, in addition, it suggested the solution to it, which was not as costly as the orthodox usual macroeconomic adjustment policies because it did not involve a radical reduction of the demand.

My own ideas about Brazilian inflation had their origins in Ignácio Rangel's book, *The Brazilian Inflation* (1963). Rangel (1914-1994) was one of my masters of Brazilian economy and an old friend. His book was a revelation for me. It was a step forward from structuralist developmental theories. He accepted the idea that

[4] They are Mário Henrique Simonsen (1935-1997), Yoshiaki Nakano, Eduardo Modiano (1952-2017), André Lara Resende, Edmar Bacha, Francisco Lafaiete Lopes, Persio Arida, and me.

[5] I will use "work" and "paper" interchangeably, and "article" to indicate lighter texts published in newspapers and newsletters.

[6] Bresser-Pereira and Nakano (1983, 1984a).

inflation had its origins in bottlenecks in the supply of certain goods, but his emphasis was different. Rangel saw inflation as a defense mechanism for the economy, as a way through which economic cycles were moderated and the rate of investment didn't have to fall. While the conventional theory and the structuralist theory adopted by classical-developmental economists assumed that inflation is, in principle, a demand inflation, accelerating in times of economic expansion, Rangel was a dissenter and emphasized the supply side. He assumed a certain monopolistic power of companies, and affirmed that, in the face of crisis or threat of crisis, they sought to protect their rate of profit by increasing profit margins. The ensuing inflation and the orthodox policies adopted, besides inefficient, deepened the economic crisis. As a result, inflation accelerated in the recession to accommodate the demands of economic agents who saw their profits decline while the contractionary policies aggravated the problem. This allowed him to formulate a development cyclical pattern that later became known as the "Rangel curve" – a curve showing that, in the medium term, inflation has an inverse relationship – rather than a direct relationship, as conventional theory claims – with growth.[7]

Therefore, Rangel discovered a specific condition characterizing medium-term high inflation situations in underdeveloped economies. By taking an administrative or cost perspective on inflation – a heterodox line of thought that Gardiner Means (1896-1988) had pioneered in the United States – Rangel's theory made sense to me. My studies of business administration and my interest in large bureaucratic business organizations and their pricing practices confirmed the administrative theory of inflation. In addition, Rangel took a decisive step in understanding the relationship between inflation and money, considering endogenous or passive money supply. It is not the increase in the quantity of money that explains inflation, but inflation induces an increase in the money supply. A few years later, reading a review of ideas about endogenous money (Gerald Merkin, 1982), I found that no economist before Rangel had written so firmly and clearly on the subject, although several such as Wicksel, Keynes, Schumpeter, and Joan Robinson, had suggested the idea. Post-Keynesian economist Basil Moore Jr. was also a pioneer on this matter, but his works date of 1979 and 1988. In the 1960s and 1970s, I adopted Rangel's view of inflation. I just added the idea of distributive conflict, which is also an essential part of the explanation of the inflationary process. However, it was not clear to me that it was necessary to distinguish a defensive conflict, which maintains the inflation stable is a defensive action, from an aggressive conflict in which the economic agent seeks to increase its share of the income and inflation accelerates – something that it would come to me when in the early 1980s I developed the theory of inertial inflation with Yoshiaki Nakano.

During the 1970s, after the oil crisis, a new historical fact emerged in developed economies: stagflation, a chronic or inertial form of inflation. Central economies

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[7] Rangel's curve is already present in *A Inflação Brasileira* [*The Brazilian Inflation*] (1963), but it was only fully exposed in the paper "Recession, inflation and foreign debt" (1985).

saw their inflation rates increase while remaining in recession. The same phenomenon that Rangel had studied and tried to explain ten years earlier, by examining the Brazilian economy, was being repeated in the Global North. There was, however, a fact that neither conventional theories nor Rangel's theory explained: the stability of inflation at certain levels. This phenomenon was universal, but at that time it was particularly visible in the Brazilian economy. For most of the 1970s, inflation remained relatively stabilized at around 40 percent a year regardless of whether the economy was warm or sluggish. However, between 1979 and 1983 this inflation changed to the level of 200 percent per month. Why this autonomy of demand? Why did inflation changed to an increasing level and never fall back? Why, in short, has inflation gone from being just chronic to being high and inertial? Monetarist, Keynesian, and developmental theories were clearly unsatisfactory. Rangel, although explaining the dynamics of acceleration and deceleration of inflation and its independence of the money supply, failed to explain why, then, inflation remained stable for several years at the same level, regardless of excess demand.

THE NEW THEORY

In 1980, after I had seen inflation jump from 40 to 100 percent a year in Brazil and then stabilize at that level, it began to become clear to me that the theory of administrative inflation was insufficient to explain what was happening. The monopolistic power of corporations allowed them to maintain their margins in recession, but this was not sufficient to explain the maintenance of the level of inflation. The non-competitive sectors of modern economies where corporations dominate are large, but there is also a sizable competitive sector in which firms are unable to maintain their margins.

While teaching a class at Getulio Vargas Foundation, I suddenly had an intuition. Inflation tended to hold up because the formal and informal indexation of the economy led companies to increase their prices in a delayed but automatic manner, regardless the demand. Through this mechanism, companies were able to maintain their profit margins even being competitive, and workers to maintain their wages. And relative prices are kept stable.

The idea that inflation may be informally indexed is already present in "Inflation in state capitalism – and the recent Brazilian experience" (1981). In one of the sections of this paper, in which the theory of administrative inflation remains dominant, I offered the basic explanation for the inflationary inertia: the lagged increase in prices due to the informal indexation of the economy. I wrote:

> The rises in costs and prices do not all occur at the same time in all companies. They occur alternately, in one company and another. This fact is decisive. Let us suppose three companies, A, B, and C, form an economic system, and have as policy to increase their prices rigorously and alternately according to a fixed profit margin. This makes the infla-

> tion rate, once initiated (and nobody knows who did that also defending his margin), become permanent. The combination of fixed margin over cost with alternating price changes does not lead to an increase in the rate of inflation but maintains it at a certain level.

I would, however, only be able to develop the complete model of inertial inflation in the following years, through the works I wrote with Yoshiaki Nakano. He has always been one of my best friends, and my closest companion in intellectual adventures for many years. He was my student, back in the 1960s, and at that time he wrote a term-paper on technological choices and development, which was the first work a student published at RAE – *Revista de Administração de Empresas*. After taking a competitive examination to become a professor at FGV and taking a doctoral course at Cornell University, where he presented a Sraffian thesis on the capitalist system and the Brazilian economy, he returned to São Paulo and became a constant companion of studies. We read together a lot of Marx, Keynes, and Kalecki. Nakano has an extraordinary capacity for study, and his economic culture is broad and deep. Thus, soon after having published the work on inflation in state capitalism, I invited him to write a theoretical work on inflation. The result was "Accelerating, maintaining and sanctioning factors of inflation" (1983), which I suppose to be the founding work of the theory of inertial inflation. In this paper, for the first time, we have a complete model of this type of inflation. The accelerating factors are excess demand or supply shocks; the maintaining factor, formal and informal indexing of inflation; and the sanctioning factor, the money supply. We drafted this paper in the second semester of 1982. After circulating it in photocopied version, we submitted it to the Annual Meeting of ANPEC (National Association of Postgraduate Courses in Economics) in Belém do Pará, in December 1983. As I was unable to travel, Nakano presented the paper, and had Francisco Lopes as one of its discussants. We authored several other articles on the subject and, already in 1984, we collected our paper in the book, *Inflação e Recessão* [*Inflation and Recession*], published in English in 1987 with the title *The Theory of Inertial Inflation*.

In our 1983 model, inflation was defined as inertial regardless of formal indexation. Economic agents permanently seek to rebalance relative prices by correcting their prices while expecting others to do the same. The theory was new, but no idea is new in this world. I was already familiar with the concept of "inflationary feedback" that Mário Henrique Simonsen had developed in a pioneering 1970 study. His model, however, was a combination of monetarist and Keynesian ideas to which an inertial factor was added. A few years after Nakano and I had written our main works on inertial inflation, I discovered that Felipe Pazos had, in 1972, published a book in the United States, *Chronic Inflation*, in which many of the ideas about inertial inflation were already present. Before that, in the structuralist theory of inflation by Loyola (1956) and Oswaldo Sunkel (1957), there was already the idea of the propagation process of an initial price increase.

Meanwhile, economists from PUC in Rio de Janeiro, particularly Francisco Lopes, André Lara Resende, Persio Arida, Edmar Bacha, Eduardo Modiano, and an Argentine visiting professor, Roberto Frenkel, were also developing their ideas on the subject. Yet, prior to our 1983 and 1984 papers, I am not aware of any work these economists published formulating a clear and systematic model of inertial inflation and how to neutralize it. In December 1984, Francisco Lopes came closest to a general analysis of the theory in a remarkable paper on hyperinflation and inertia. Also in December 1984, Arida and Lara Resende presented an excellent paper in English (all the previous papers and book were in Portuguese), "Inertial inflation and monetary reform", at a Washington seminar and gained wide coverage because Ruddy Dornbusch, a heavy weight of the American academy of the time, welcomed and called it the "Larida proposal".

Before that, realizing that these economists had similar ideas to mine, I associated myself intellectually with them – especially with the two younger economists, André and Persio, who had just arrived from their doctorates in the United States. At that moment, for me what was relevant was to control inflation. Questions of authorship were secondary. In 1983 and 1984, I extensively discussed the theory of inertial inflation with them; I hoped they could contribute – as indeed they did, intellectually and practically, to control that curse of the Brazilian inflation.

When we wrote the 1983 article, which I believe to be the founding paper on the theory of inertial inflation, Nakano and I went down uncharted paths, leaving aside the conventional ideas about inflation, being Keynesian, developmental, or monetarist. Our objective was to explain an inflation that remained stable for several years at high levels regardless of the existence of excess demand. The main idea that came to us was the distinction among the accelerating, the maintaining and the sanctioning factors of inflation. This was a new distinction, which was not present in the international literature on the subject. All theories about inflation centred on its accelerating factors. When theories asked which are the causes of inflation, they explained that this or that accelerated or decelerated the rate of price increase. Monetarists claimed that the increase of the nominal quantity of money caused (accelerated) inflation; Keynesians attributed it to excess effective demand over supply; structuralists, to bottlenecks in supply and the ripple effects of sectoral price increases; the sponsors of cost inflation explained it with the monopolistic power of companies, unions, and the government itself. All were speaking about the factors that accelerated inflation. The post-Keynesians were right in most cases of acceleration of inflation, in certain cases the supply shocks of cost inflation or supply bottlenecks of the structuralist theory applied better; the monetarist theory "seemed" right because inflation and the money supply increase together, but as we will see in the next chapter, they were ignoring that the money supply is endogenous.

The new problem, which was not on the economists' agenda, was to know why inflation remained stable at a certain level. In other words, what were the maintaining factors of inflation? After we asked ourselves this question, the answer became obvious. The stability of the level of inflation stems from the fact that economic agents, in their effort to maintain their share of income, informally index their prices, increasing them in a lagged way. They do this because they know the other agents will do the same and will also informally index their prices. They do it with lags rather than simultaneously because simultaneous price increases only occur when the problem is no longer one of high inflation but of hyperinflation. Through this mechanism of asynchronous price increases, economic agents are simply reaffirming the fundamental principle of economic theory: the tendency towards equalization of profit rates or the equilibrium of relative prices. Inertial inflation thus becomes the outcome of the conflict among companies, capitalists, bureaucrats, and workers to maintain their share of income. This conflict can be aggressive – some agents seeking to increase their share of income – or defensive – agents seeking to maintain their share of income. In the first case, the conflict accelerates inflation; in the second, inertial inflation. In this case, economic agents informally index their wages, rents, and goods and services prices, and in this way relative prices are continually balanced and unbalanced. There is no equilibrium point of relative prices, just an equilibrium vector. Around this vector, prices nominally fix fall in real terms during the period between readjustments and rise at the moment of the readjustment of nominal prices, On the average, economic agents are satisfied with their prices and profits, therefore, with their share of income.[8]

If there is already a formal indexation of the economy, as was the case in the Brazilian economy, the "inertialization" of inflation with the addition of informal indexation will naturally be facilitated. And if companies are mainly oligopolistic, using a pricing policy based on relatively fixed mark-ups, this process will be even more vigorous, but there is no need for monopoly power for inflation to become autonomous from demand. It is enough that economic agents are used to high inflation and know they can increase their prices without prior agreement, even if demand is not heated, because they expect that their competitors will have no alternative but to do the same. In our 1983 article, we emphasized the role of fixed mark-ups, but we gradually came to understand that the key was the informal indexation of the economy; it was the well-founded expectation of economic agents that prices would continue to be increased in line with past inflation even in a situation of recession.

When in 1980 I identified this new type of inflation, and then, in the work with Nakano, we defined it and showed that to control it was necessary to neutralize the chained imbalances of relative prices – we did not initially call it inertial inflation, but of autonomous inflation. We later found that there were already in the North American literature some references to 'inflationary inertia', and that USP professor Adroaldo Moura da Silva (1983) had written an interesting although contradictory article on the subject using this expression. At first, as it was a relatively new phenomenon, the expression "autonomous inflation" seemed appropriate. Autonomous, because autonomous from demand. We also used the expression "inertia" in some of the works, but it was only after the Cruzado Plan that we decided to use this expression as well.

[8] If this vector of equilibrium does not exist, it is a sign that the distributive conflict is more serious, that agents are actively dissatisfied with their share of income. In this case, and if the agents have some monopoly power, we will additionally have an accelerating factor for inflation.

As for the sanctioning factors for inflation, we identified two in our 1983 paper: not only money but also the public deficit. As for money, we weren't inventing the wheel. We were just using the vision of Ignácio Rangel about it and a metaphor. In economy, the liquidity, the quantity of money, is like a lubricant oil that allows the engines of the economy to work well. Thus, the real supply of money must be kept relatively constant. Suppose, now, that in a given country inflation is running at 100 percent a year, and a monetarist government decides that it will keep the nominal money supply fixed. It will not be able to achieve this objective, but let's suppose that it is successful, and the nominal money supply remains constant for one year while inflation continues untouched. In this case, the liquidity in the economy would have been reduced to half and this economy would be in full crisis. I say that the monetary authorities will not be able to maintain the nominal supply of money constant and this example is absurd because the economy defends itself from this liquidity crisis by increasing endogenously the money supply. If in the case of 100 percent a year inflation this metaphor is a strong argument for the natural endogeneity of money, it is stronger in the case of the high inflation that Brazil faced, which was many times higher.

When we have inertial inflation, the money supply is passive. The most that the government can do is interest rate policy; the central bank cannot determine the nominal money supply, it must "accommodate inflation", as monetarists like to say. In this way, the real quantity of money is kept relatively constant, and the recession does not deepen severely and uselessly. In fact, in high inflation the endogeneity is not perfect, the nominal money supply increases less than inflation, as there is an inevitable process of demonetization.

The relative novelty in relation to the factors that sanction or validate inflation was the inclusion of the public deficit in this category. According to the Olivera-Tanzi effect, it was already known that the rise in inflation caused a reduction in the real tax revenue. We added a political factor to this technical factor. Since high inflation demands that the quantity of money be increased, why not increase it by running a deficit and financing it with money emissions? The classical argument monetarists used against public deficits when governments in developing countries didn't have a financed public debt, was that they caused inflation; they don't, unless the country achieves full employment, and we have excess demand. Public deficits only cause the acceleration of inflation when the country achieves full employment, and state expenditures cause excess demand. While these countries could not finance deficits with the sale of Treasury bonds, the existence of inertial inflation was an incentive for the government incur populist public deficits.

HEROIC SOLUTION OR UNORTHODOX SHOCK

Discovered and explained the high inertial inflation, a new policy to control it was imposed. Nakano and I started discussing it in the second half of 1983, when we wrote "Administrative policy to control inflation" (1984), our second basic article on inertial inflation – the article in which we propose a way to neutralize inflationary inertia. It was clear to us that conventional stabilization policies did not apply to a type of inflation that was new – or, more precisely, in which the inertial component was so dominant. Given that the economy was already in recession and inflation remained strong, it made no sense to restrict demand. It made even less sense to pretend to control the money supply, since it was endogenous. The attempt to administratively control the prices of oligopolies, although apparently more reasonable, also made no sense, not only due to the inherent difficulties in controlling prices, but mainly because even competitive sectors inertially increase their prices when the practice of informal indexation of the economy becomes dominant. Finally, living with inflation, as the structuralists intended in the 1950s, when inflation was around 20 percent a year, no longer made sense when inflation rose to 5, 10, 20, 30 percent a month, or that is, when inflation became very high, and, despite indexation, disorganizing the entire economic system.

However, we were not facing inflation. When monthly price increases become too high and prices are increased daily, if not hourly, at the same time as they are indexed by the nearest hard currency (dollarized), we have hyperinflation. All prices increase almost simultaneously. When this happens, a monetary reform using a nominal anchor, usually the exchange rate, will ensure that price stabilization is successful, if it also includes a fiscal adjustment that cleans up public finances. To be able to impose the exchange rate anchor, the government must have international reserves in hard currency or have the support of a foreign power that guarantees these reserves. Fiscal adjustment is essential since hyperinflation is always a consequence of a deep fiscal crisis, in which the state no longer has credit, thus losing the capacity to finance its deficit.

In 1982, moderate inertial inflation in Brazil was changing into high inertial inflation, and there was no alternative but to control it administratively, that is, through a policy that controlled the relative price imbalances inherent to inertial inflation. Controlling it indirectly, through fiscal and monetary policy, would only make sense if inflation was not autonomous vis-à-vis demand. But how to administratively control inflation without recurring to case-by-case control of oligopolistic companies? We saw only two possibilities: either the rational expectations policy of prefixing the gradual decline of future inflation accompanied by the definition of guidelines for economic agents to increase their prices at decreasing rates, or a temporary freeze of all prices and salaries accompanied by a correction table of the bills to pay so that companies didn't gain or lose despite the day the price freeze happened.

We believed that a system of price guides can only work when inflation is small enough because the possible losses of companies that follow the price guides defined by the government will be small if the others do not follow them. Let's think about an inflation of three percent a month and another one of 30 percent a month. And suppose that, through price guides, we intend to zero inflation in ten months, reducing from 3 to 2.7 percentage points in price increases in the first case, and from 30 to 27 percentage points in the second case. In the first case, companies will have no difficulty following the guides. If in the first month, the company follows the guide while the others ignore them, the loss it will suffer will be just 0.3 percentage points, while in the second case, 3 percentage points. Therefore, the damage caused by non-compliance with the guides will be ten times greater in the second case, and it is likely that the company will not accept the risk of following the price guidelines.

Nakano and I were inclined to adopt the price freeze. In June 1983, Albert Fishlow, one of the best American economists devoted to economic development, and an old friend, visited São Paulo. He came to my house for dinner together with Nakano. At one point, Fishlow said: "To control Brazilian inflation, just a shock will resolve the problem." My first reaction was disagreement, almost indignation. I thought Fishlow had converted to orthodoxy. "Shock" to me meant orthodox shock, it meant a violent fiscal adjustment and a monetary anchor. And I was persuaded that this kind of policy would not work. Recent attempts in this direction, led by Delfim Netto in 1981, had failed. But soon Nakano and I realized that Fishlow was talking about a price freeze, along the same lines we were considering. We agreed, and the conversation that followed was excellent.

There was, however, a small disagreement between me and Nakano. In the article we were writing, I defended the thesis that we should first propose gradual prefixing, using public price, wage adjustment, and exchange rate adjustments as guides. Only after inflation had surpassed a certain threshold, which I estimated to be at around 300 percent a year, beyond which gradual inflation control would no longer work, it would be convenient to take risks of adopting the price freeze. Instead, Nakano understood that this policy should be adopted even when inflation was below this level. Soon, however, inflation in Brazil overcome 300 percent a year and the problem were solved. In any case, the freeze should be accompanied by a table that reduced the payable bills of the companies according to the due dates of their accounts payable.

In the work we were writing, "Administrative Inflation Control Policy" (1984), we discussed the two alternatives and proposed that the second alternative should be adopted if inflation continued to accelerate. We have called our proposal of price freeze the "heroic solution". The article was published in the *Brazilian Journal of Political Economy*, at that time called *Revista de Economia Política*, in July 1984. A month later, a small article by Francisco Lopes (1984a) with a firm and courageous proposal for a freeze, which he called a "heterodox shock", was published in the Regional Council of Economy bulletin. I don't think he read our article before writing his note. The article attracted attention, the heterodox shock was better than the heroic solution, and it became widely used.

INDEXED CURRENCY

There was, however, an alternative to the heroic solution or the heterodox shock. This alternative – more elegant from an economic point of view and more difficult to understand – was initially proposed by André Lara Resende, who published in

September 1984, in *Gazeta Mercantil*, the innovative article, "The indexed currency: a proposal to eliminate the inertial inflation". In October 1984, Persio published in the same newspaper, "An ORTN only serves to zero inertial inflation". In these two articles, André and Persio proposed a monetary reform which, for some time, would imply the coexistence of two currencies. In this way, it would be possible for economic agents to redefine their contracts in the new currency by the average of the real prices of the last few months – and there would be no need for a freeze: just the change to the new currency as soon as the conversion period ended. To the extent that the indexed currency was adopted, stabilization would come without trauma.

This alternative had been adopted in Hungary in the 1920s. In November 1984, invited by John Williamson to attend an inflation seminar in Washington, they wrote the paper "Inertial inflation and monetary reform" (Arida and Lara Resende, 1984). Ruddiger Dornbusch was at the seminar and called the proposal "Larida". This article was published in a book in the United States and later translated into Portuguese. Whether because of the quality of the article, or because it was originally published in English, the true language of economics, this work was mistakenly recognized as the founding article of the theory of inertial inflation, when he only found one of the ways to neutralize it. Both the basic theory and the other form of neutralizing inertia had already been presented in my two works with Nakano (1983 and 1984). This alternative was not adopted when Lara Resende and Arida participated in the elaboration of the Cruzado Plan (1986); it was, however, the secret of the success of the Plano Real, ten years later.

But let's go back to 1984. Francisco Lopes, in turn, who had disagreed with his two colleagues at PUC, by opting for a freeze, at the end of the year reached a compromise with them, presenting in December, at the congress of ANPEC, an excellent article, "Inertial inflation, hyperinflation, and disinflation" (1984), in which he presents a systematic framework of the theory and distinguishes inertial inflation from hyperinflation. At the end of that same year, Nakano and I published a full book, *Inflação e Recessão* (1984), which was published in English with the title *The Theory of Inertial Inflation* three years later. In this book we put together all the articles we had written on the subject so far, including two original articles, written in the first half of 1984, one on the curve of Philips and inertia, another on the causes of the acceleration of inflation. Before that, in July 1984, when I was president of the Bank of the State of São Paulo, I visited Argentina in the company of Hélio Jaguaribe and Lara Resende, his son-in-law at the time. On the way back I talked extensively with André, and we were impressed that our ideas coincided on the subject.

In September, the month in which André's article appeared in *Gazeta Mercantil*, I was present at a Congress of Banks in Salvador, Bahia. In this meeting, Mário Henrique Simonsen made a lecture on inertial inflation, and I intervened in the debates. As we left the room, Simonsen, who at that time was more distant from me than he would later become, told me privately and with a certain tone of surprise: "Bresser, you are the only one who understands what is happening with inflation in this Congress". This was not surprising. As far as I know, at that time, besides Simonsen, the only economists who understood what inertial inflation was in Brazil were the five economists from PUC mentioned, Nakano and myself.

At the end of September, I met Arida at the annual meeting of the IMF-World Bank in Washington. We talked at length about our ideas and André's. Persio was fascinated with the idea that it was possible to have a macroeconomic balance with zero public deficit and high inertial inflation. We were in full agreement. The inertial inflation, autonomous of demand, was clear to us. In the analysis of inertial inflation, I gave greater emphasis than Resende and Arida to its structuralist aspects, to the aggressive distributive conflict that accelerated inflation, and to the defensive one that maintained the level of inflation reached, but our ideas were essentially coincident. I had doubts about the operationality of the two currencies; it would be complicated for economic agents to understand the stabilization policy. In relation to Lopes, my positions and Nakano's were closer. Like him, we attached great relevance to the mechanics of price adjustments and the distributive conflict for maintaining the underlying rates of profit and wages. These were real economic problems, not fantasies combining monetarism with rational expectations.

MICROFOUNDATIONS AND LATER PLANS

In 1985 I taught a course on inflation, using extremely current texts on inflationary inertia and hyperinflation, which, after the Cruzado Plan, were put together in a book by my student José Marcio Rego (1986). The articles in this book give an idea of the theoretical bases we were using at that time. It was also at this time that I began to make an additional critique of monetarist and neoclassical economic theory – the critique based on the opposition between rational expectations and real expectations. I had always criticized the monetarist position due to money's endogenous character, but I became especially critical when I read Thomas Sargent's (1982) paper on the end of hyperinflations in four countries after the First World War. For him, it was enough for the governments of Germany, Austria, Hungary, and Poland to change the economic policy regime and the corresponding expectations regarding the increase in the money supply for the hyperinflation in these countries to be suddenly brought under control. Even in 1984, when some students were beginning to be inoculated with the virus of rational expectations, I began to develop this criticism. As at that time our basic articles on inertial inflation were already written and published in a book, new ideas about the difference between rational expectations and real expectations were present in the various works that we individually or jointly wrote in the following years. The problem was to define the microfoundation of inertial inflation. According to my developmental perspective, economic agents do not increase their prices just because they expect the competitors to do the same thing, but because they need to increase them to maintain their share of income or, more abstractly, because economic agents acting in the market are supposed to constantly restore the equilibrium of relative prices.

This is the microfoundation of the theory of inertial inflation. It is a rational behavior that has its origin in a concrete fact – the previous price increases. Thus, economic agents have the real expectation that the other agents remain in the circular game of lagged price increases. All seek to maintain their profit margins.

I did not arrive at the inertial inflation theory through a hypothetical-deductive analysis of rational expectations but through the observation of how economic agents behaved – how, in recession, they continued to increase prices. I then looked for rational reasons for this fact, but this was an a posteriori analysis of the rationality behind it rather than the a priori analysis that neoclassical economists do to build their theoretical castles empty of real content.[9] Thus, it was possible to understand that they had real, economic reasons, they developed real expectations – and not mere a priori rational expectations – to act as they did in a context of high inflation informally indexed.

According to the monetarist perspective, in a period of high inflation, it is possible to think of a macroeconomic balance, if expectations are consistent with the increase in prices and the money supply. It is for no other reason that in recent editions of Paul A. Samuelson's classic introductory book on economics, co-signed by W. M. Nordhaus, a section on inertial inflation arising from expectations has been introduced. This kind of explanation for inertial inflation, however, is, on the one hand, an obvious one, on the other, a mistake. It is obvious because it is evident that economic agents increase their prices in a lagged way not only because they need to maintain their share of income, but because they expect that other agents will also do so. Increasing prices when their turn comes is a condition of economic survival for every economic agent.

Economic agents act according to expectations, but it is a mistake to think that it is relatively easy to change their expectations and, therefore, change the decisions they make about prices. Expectations are volatile. Many times, in Brazil there was a "reversal of expectations" – everyone formed expectations that inflation would decrease – but this did not lead agents to reduce the pace of their price increases. The economic agent is always risk-averse, and always defends tooth and nails its share in the income. Trying to change the economic policy regime and expecting agents' expectations to change to the point where they change their price decisions when this is neither what the market demands of them, nor what they really care about, is pure nonsense. In hyperinflations, which Sargent studied, it was possible to control inflation when it became feasible to impose an exchange rate anchor without excessively late or early prices, as the economy was dollarized and prices increased every day if not every hour, resulting, from this fact, a reasonable equilibrium of relative prices. It was not mainly because the economic policy regime and expectations changed, but because it was possible to paralyze inflation in a single day without any big winners or big losers. When inflation is inertial, it is

[9] The critique of neoclassical economics for using the hypothetical-deductive method is in Bresser-Pereira (2009, 2017).

useless to imagine that changing the "economic policy regime" and the consequent change in expectations will solve the problem. Given that inertia is based on lagged price increases, which become mandatory for economic agents because they cannot lose their share of income, only solutions that are neutral from a distributive point of view, that convert relative prices to the equilibrium vector, will be viable. This is why it is so difficult to control inertial inflation.

THE THEORY APPLIED

For a stabilization plan to work, it is not enough to be technically correct and, therefore, respect the equilibrium of relative prices and neutralize inflationary inertia. It is not enough, however, that it has conditions in terms of external finance to combine neutralizing inertia with an exchange rate anchor. There must be also a political decision by the governor to promote fiscal adjustment, and the support of society. These three additional conditions did not exist in 1986, at the time of the Cruzado Plan, which first brought the whole country into euphoria and then collapsed in spectacular fashion. The plan was well conceived in terms of neutralizing inertia, but it failed because it led to an unsustainable currency overvaluation and because it was not combined with the necessary fiscal adjustment. At that time, within the framework of the democratic transition, economic populism had become dominant in Brazil, and it was practically forbidden to talk about fiscal austerity.

Those conditions existed to a lesser degree when, in May 1987, during an acute crisis, I took over the Ministry of Finance. The country had experienced euphoria in the previous year caused by the initial success of the Cruzado Plan in controlling inflation. At the end of the year, however, high inflation was back, the revenues of the companies and units of the Federation that had increased around 30 percent in 1986, had fallen more than that occurred in the beginning of 1987 and faced a deep crisis. In February, as the international creditor banks suspended the renovation of their credit, the country faced default, while the exchange rate, which followed the mini devaluations (crawling peg) regime, had become overvalued and required correction. My first decision as Finance Minister was to promote a 10 percent depreciation of the Cruzado. On the other hand, President José Sarney's political power had significantly diminished due to the collapse of the Cruzado Plan, and he no longer had the motivation to make fiscal adjustments.

In June, I launched a new heterodox stabilization plan following the principles of the theory of inertial inflation. The plan, that became known as "Bresser Plan", was an emergency measure, the relative prices were highly unbalanced due to the return of inflation, I didn't count on the support of the president in promoting fiscal adjustment, but I was able to re-establish order in the economy. As inflation gradually returned, around November it was clear that the plan had failed. With the advice of Nakano and of Francisco Lopes, I immediately began to work on a new stabilization plan. Following the thread opened by Lara Resende, my plan was, in early 1988, to use an indexed second money to achieve the neutralization of the inertia. However, in December, when I saw that I would not have the necessary fiscal support to carry out this plan, I resigned.[10] The events that followed proved I was right in leaving the government. Two years later, the president handed Brazil over to his successor with a rate of inflation that was no longer just high but could already be characterized as hyperinflation: in March 1990, the rate of consumer prices was 72 percent, and was accelerating. Before that, at the end of October 1989, an opposition candidate, Fernando Collor de Mello was elected president.

In March the new president issued a radically orthodox and unfortunately misguided stabilization plan, the Collor Plan. The new monetary authorities made new price freeze combined with a huge fiscal adjustment and reduced radically the money supply. But they knew nothing about the theory of inertial inflation, didn't adopt the required conversion table of the bills to pay, and this simple fact led me and Nakano to say the plan would fail. I was sure about that because I knew that the lack of a conversion table had led companies to lose enormously. Pão de Açúcar Supermarkets, the biggest retailing firm in Brazil at that time, had, for instance, lost more than US$ 100 million in the day after the freeze, because it bought on credit and sold on cash. This had certainly happened to many other companies, which would necessarily have to correct their prices in the following months so that relative prices returned to equilibrium – a dynamic equilibrium, it is true, but an equilibrium anyway. In June 1990, Nakano and I presented in the biannual meeting of post-Keynesians the paper with this prediction, "Hyperinflation and stabilization in Brazil: The first Collor Plan". After presenting our work, Nakano and I went to Washington where we still had friends at the IMF and the World Bank. We told them that the Collor Plan had unfortunately failed because it did not neutralize inertial inflation. They, however, based on the rigorous fiscal and monetary adjustment carried out by the Brazilian government, did not agree, and assured us that the plan would be successful. In October of that same year, when inflation had already reached 14 percent a month, Ibrahim Eris said something that reminded me very much of Pastore's 1984 phrase: "it is not the economy that is wrong, is the world".[11] The fact is that the theory had proved its predictive capacity.

After the failure of the Collor Plan, the rejection of price freezes became general. However, it was very clear to me that there were only two alternatives for Brazil: either the country waited that inflation continued to grow and hyperinflation would synchronize prices and allow an exchange rate anchor to solve the problem, or a heterodox measure was adopted which was either a freeze with a table of conversion or indexed money. In 1993, after the failure of three finance ministers, President Itamar Franco called Fernando Henrique Cardoso, who counted with the support of the PUC economists already referred. The result was the 1994 Real Plan,

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[10] For a history of my time at the Ministry of Finance, see the testimony I gave to a team of researchers of the Political Research Institute of Rio de Janeiro headed by Wanderley Guilherme dos Santos: Bresser-Pereira (1992).

[11] This sentence was published in a small first page report in *Gazeta Mercantil*, October 1990.

whose success was due to a reasonable fiscal adjustment, a perfect neutralization of inflationary inertia through the URV (Real Value Unit), and an exchange rate anchor (which should have been much less violent than it was).

My participation in this plan took place only from the outside, supporting and at the same time demanding that they carry it out, because the economic team that formulated the plan was very hesitant to implement it. In February 1994, informed that the team feared that the URV would result in hyperinflation, I wrote an article in *Folha de S.Paulo*, "The objections to the URV-phase" (the three months in which the conversion of prices to URVs would take place).[12] It was a curious article because it criticized nominally some of the fathers of the theory of inertial inflation. I opened the column with "The newspapers report that, after warnings from some reputable economists, such as Mário Henrique Simonsen, Francisco Lopes and Yoshiaki Nakano, the economic team would be re-discussing the idea of the Real Unit of Value. Some of its members would even be willing to skip it, going directly from fiscal adjustment to currency reform with an exchange rate anchor. Legal and operational difficulties related to the introduction of the URV would reinforce this position. Now, although the warnings are understandable, it makes no sense to delete the URV-phase. Doing so means either giving up instead of stabilizing the economy this year, since a simple exchange rate anchor not preceded by the URV phase is unfeasible in Brazil given the lags in price increases". After all, the URV-phase was not skipped, and the plan was fully successful in controlling inertial inflation in Brazil.

My intellectual association with the professors at PUC, however, ended in 1995 when the differences in our views on economics and economic policy became clear. We kept our friendship, but we placed ourselves in opposite camps on theoretical and practical issues. In implementing the plan, even in 1994, they used an unnecessarily rigid exchange rate anchor that irresponsibly appreciated the exchange rate in the first months after the shock, bringing the exchange rate from the parity of R$ 1.00 per dollar to close to R$ 0.80 per dollar. This overvaluation of the exchange rate would cost Brazil dearly, as seen in the balance of payments crises of 1998 and 2002. Second, they kept indexed around 30 percent the administered prices of the monopoly companies of public services and wages. This "leftover" is also costing us dearly because it is difficult to lower inflation in times of economic slowdown and to legitimize recessive policies to control inflation, which would not be necessary if this scourge of indexation had been definitively banned from the Brazilian economy. In 2001, I began to build a new economics and political economy – New Developmentalism.

[12] Bresser-Pereira (1994).

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