The Brazilian Connection in Milton Friedman's 1967 Presidential Address and 1976 Nobel Lecture

Mauro Boianovsky (Universidade Brasilia)
mboianovsky@gmail.com

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Abstract. The paper investigates the role played by Friedman's interpretation of the Brazilian inflation in his 1967 formulation of the natural rate hypothesis and in his 1976 discussion of indexing and other institutional arrangements in the face of chronic inflation. It is argued that, as an empirical economist and in the absence of evidence from industrialized countries, Friedman found in the Brazilian 1964-66 stabilization episode significant support for his argument about inflation acceleration and a shifting Phillips curve. Friedman's interest in the Brazilian inflationary economy prompted him to visit the country in 1973. The context and implications of Friedman's Brazilian travel are also tackled in the paper, for the first time in the literature.

Key words. Friedman, Brazil, inflation, Phillips curve, expectations

JEL codes. B22, B31, E31

Resumo. O artigo investiga o papel que a interpretação de Friedman da inflação brasileira teve na formulação de sua hipótese sobre a taxa natural em 1967 e no seu tratamento em 1976 da indexação e outros arranjos institucionais face à inflação crônica. É argumentado que, como economista empírico e na ausência de evidência vinda de países industrializados, Friedman encontrou no episódio de estabilização brasileiro em 1964-66 suporte significativo para seu argumento sobre aceleração da inflação e instabilidade da curva de Phillips. O interesse de Friedman pela economia inflacionária brasileira o levou a visitar o país em 1973. O contexto e implicações da viagem brasileira de Friedman são também tratados no artigo, pela primeira vez na literatura.

Palavras chave. Friedman, Brasil, inflação, curva de Phillips, expectativas

Códigos JEL. B22, B31, E31

Área ANPEC: Área 1

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1. Some crucial monetary episodes from Brazil

As has been often pointed out, the criticism put forward by Milton Friedman (1968) and Edmund Phelps (1967, 1968) of the stability of the Phillips curve was mainly theoretical, not empirical (see Nelson 2017, pp. 228-29, and references there cited). Friedman (1977, p. 455) acknowledged as much in his Nobel Memorial Lecture. Phelps and Friedman were not aiming to elucidate a riddle posed by empirical evidence. Estimates of the relation between the rate of change in nominal wages (or prices) and unemployment performed relatively well in the 1960s, largely duplicating the nonlinear inverse "successful" (Phelps 1968, p. 680) fitting of British historical data by A. W. Phillips (1958). Indeed, a main purpose of Friedman and Phelps was to "reconcile" the empirical Phillips curve with the theoretical "neutrality axiom of anticipated inflation", as put by Phelps (1968, p. 682). They did that by postulating that the Phillips curve shifts upwards (downwards) with the expected rate of increase (decrease) of prices (or wages), accompanied by convergence of actual unemployment to its "natural" or equilibrium level.

However, Friedman (1968, pp. 8-9) did use a piece of empirical evidence in support of his hypothesis about the role of inflation expectations in determining the position of the (short-run) Phillips curve. He referred to the 1964-66 Brazilian stabilization plan and its perverse effect on employment due to persistent anticipations of inflation. Friedman's (1968) discussion of inflation and unemployment in Brazil is restricted to just one paragraph. But it is a crucial one, as that is also the only paragraph in his 1967 Presidential Address in which Friedman discussed Phillips (1958) and charged him for failing to distinguish between nominal and real wages. The impact of inflation expectations on Brazilian money wages provided a forceful illustration of the instability of the Phillips curve, he claimed. Friedman (1966, p. 59) had referred to the Brazilian episode as "the most dramatic example" of the "fallacy" that there is a lasting trade-off between inflation and employment. In the first draft of his 1967 Address, Friedman (1967a, p. 22) wrote that, for relatively low inflation rates as in the US and the UK at the time, it was easy to interpret the time series as "a trade-off between price-rise and unemployment rather than between acceleration of price-rise and unemployment". Hence, "to distinguish between these, one must look at a broader range of experience. The difference is then patent." It is implicit that the monetary history of countries beset by chronic high inflation, like Brazil and other South American nations, should be able to provide the required evidence.

Friedman was primarily an empirical economist who used general economic principles to scrutinize facts in order to make predictions. As argued by Hirsch and de Marchi (1990), a close reading Friedman's (1953) methodological essay in the context of his economics indicates that he was much closer to the pragmatism of John Dewey than to the falsificationism of Karl Popper. Instead of the Popperian separation between the contexts of discovery and justification of hypotheses, Friedman was concerned with the process of inquiry. From that perspective, theories follow as results of acquaintance with facts, in the sense that empirical investigation is prominent not just in assessing a theory but also in developing it. The empirical basis of theories comes from working back from fact observations to assumptions. He found much inspiration for his economic methodology in Alfred Marshall and Wesley C. Mitchell (see also Backhouse 1996, chapter 11; Hoover 1988, chapter 9.2).

Friedman's work as a monetary economist was dominated by his study about money and business cycle (with Anna Schwartz) for the National Bureau of Economic Research (NBER). The highpoint of that project – started in the late 1940s and continued for more than three decades, until the early 1980s – was their 1963 *Monetary History* (see Hirsch and de Marchi 1990, chapter 10; Hammond 1996). That book epitomized Friedman's methodology, with its stress on historical episodes and rejection of conclusive statistical tests to choose among alternative hypotheses. Friedman's case for the role of money as a prime determinant of economic fluctuations was built on the investigation of selected crucial episodes, such as the contraction of money supply in the US Great Depression in the early 1930s, mentioned in his 1967 Address (Friedman 1968, p. 3). Economic history and economic theory are, therefore, intertwined in Friedman's economics. As put by Hirsch and de Marchi (1990, p. 244), the methodological position that came out of Friedman's work as a monetary economist was that a "rich appreciation of what is to be explained is crucial … dramatic and discriminating tests have almost no place; the marshaling of evidence to strengthen conviction is almost everything". That is consistent with Friedman's 1953 argument that a fruitful hypothesis is

> A way of looking at or interpreting or organizing the evidence that will reveal superficially disconnected and diverse phenomena to be manifestations of a more fundamental and relatively simple structure. (Friedman 1953, p. 33)

Friedman's 1967 Presidential Address has been seen as an exception to the primacy of empirical evidence in his monetary economics. Backhouse (2007, p. 17), for instance, has mentioned the "irony" that Friedman's point about the accelerationist Phillips curve arose out of purely theoretical arguments with no empirical ground. It was only in the 1970s, with the recorded co-existence of rising inflation and unemployment – as well as some evidence of a vertical long-run Phillips curve – in industrialized countries, that Friedman's natural rate hypothesis gained assent (see also Forder and Sømme 2018). As discussed below, the Brazilian monetary experiment, as seen by Friedman, represented a "crucial episode" that provided a forceful illustration of what was to be explained.

Friedman was probably briefed about Brazil by other Chicago economists with knowledge of South American economies, particularly Arnold Harberger and Larry Sjaastad, who were frequent visitors to the region since the 1950s (see Harberger 1997). Friedman (1977, p. 464) would refer to Harberger (1966) and Staajstad (1974) as sources about chronic inflation in South America. Harberger took part in the 1963 Rio conference about inflation and growth in Latin America, a major event sponsored by the Economic Growth Center of Yale University (Baer and Kerstenetzky 1964; see Harberger 1964, partly based on his better known 1963 essay about Chile). Indeed, as suggested by Robert Gordon,

> I have always thought that the development of the natural rate hypothesis in Chicago, rather than at Harvard or MIT, reflected the deep involvement of several Chicago economists as advisers to several countries in Latin America, where the lack of correlation between inflation and unemployment was obvious. (Gordon 2011, p. 16)[1]

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[1] As for Phelps, an indirect South American connection cannot be assumed away, as he was worked at the Cowles Foundation, Yale University, from 1960 to 1966, which housed as well the Economic Growth Center, one of the foremost centers for the study of economic development. Werner Baer was the economist in charge of the Latin American agenda of the Growth Center, including the organization of the 1963 Rio conference.

Gordon, however, did not relate that to Friedman's (1966, 1968) remarks about Brazilian inflation.

In December 1973 Milton Friedman and his wife Rose spent a week in Brazil, where he gave lectures and met businessmen and members of the government. Except for a few days in Caracas in September 1969, to attend the Mont Pèlerin Society regional meetings, it was his first time in South America. Friedman's Brazilian trip, briefly recounted in Friedman and Friedman (1998, p. 426) and discussed here in some detail for the first time, is not as well known and certainly not as controversial as his visit to Chile in March 1975. Like Chile, Brazil was a military dictatorship at the time. However, unlike the Chilean case, Friedman and the Chicago School had not played a key role as advisors or in training economic policy makers in Brazil.[2] Upon his return to the US, Friedman (1974a) wrote enthusiastically about the so-called "Brazilian economic miracle" in his *Newsweek* column. In his view, the widespread indexation of economic contracts, the first of its kind in monetary history, was a main factor behind the successful stabilization of the Brazilian economy. By preventing the negative output effects of differences between actual and anticipated inflation, indexation contributed to the very high rates of economic growth achieved by Brazil between 1967 and 1973, he claimed. Friedman (1974a; 1974b) went as far as proposing that indexation should be introduced in the American economy as well. Although Friedman (1977) did not refer to Brazil, the notion, advanced in that lecture, of a short-run vertical Phillips curve under fully indexed economic contracts, as well as the discussion of indexation as part of institutional arrangements to cope with inflation persistency and volatility, may be seen as a reflection of his Brazilian trip.[3]

2. Brazilian inflationary expectations

In September 1958 Friedman attended the ninth meetings of the Mont Pèlerin Society, held at Princeton (New Jersey). The topic of the conference, attended also by some economists from developing countries, was inflation. Eugenio Gudin – the dean of Brazilian economics and Minister of Finance for a short period (September 1954 to April 1955) – gave a talk about the Brazilian experience with chronic inflation, and the political opposition he faced when attempting to bring it down through restrictive monetary policy. That was Friedman's first encounter with Brazilian inflation. Gudin reacted to Friedman's (1958, p. 3) passing remark that steady inflations tended to accelerate.

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[2] Instead of the Chilean "Chicago Boys", Brazilian graduate economic students in the 1960s and 1970s may be described as the "Vanderbilt Boys", as the modernization of economics in the country was heavily influenced by a cooperation agreement between Vanderbilt University and the University of São Paulo, led by Werner Baer after he left Yale for Vanderbilt (Suprinyak and Fernández 2018). Some Brazilian economic students did go to Chicago for their PhDs at the time, though. That included Carlos Geraldo Langoni, who finished his PhD in 1970 and, together with Harberger, accompanied Friedman to Chile in 1975. On that occasion, Langoni lectured about Brazil as a showcase of economic policies supposedly consistent with the Chicago free market credo (Edwards and Montes 2018; Foxley 1980).

[3] See Boianovsky (2018b) on the role of economists' traveling in the formulation of new economic hypotheses throughout the history of thought.

> Prof. Friedman's point that it is almost impossible to keep an inflationary process within bounds … is *not* confirmed by Brazilian experience, where inflation has been and still is running at an average annual rate of 20% for almost ten years. The principle that "a small inflation is like a small pregnancy" has not proved true in the Brazilian case. (Gudin, 1958)

However, Brazilian inflation did accelerate in the early 1960s, as its average annual rate increased from 18% and 28% in 1950-55 and 1955-60 respectively to 62% in 1960-65 (Boianovsky 2012).

Friedman ([1963] 1968, p. 49) would write about Brazilian inflation for the first time in his lectures delivered in Bombay (India). He then distinguished between the relatively mild effects (such as the tax on cash balances) of steady anticipated inflation – as in the case of Israeli 10% average inflation in 1952-62 – and intermittent inflation that proceeds by fits and starts, as in Brazil. Because of long lags in the adjustment of expectations, changes in the rate of inflation (or its turning into deflation) tend to bring about unemployment and misallocation of resources. "One of the clearest examples of this kind of process", asserted Friedman (ibid) "occurred some years ago in Brazil". He probably had in mind Gudin's stabilization experiment of 1954-55, although his description also fits the 1958-59 stabilization plan carried out by Lucas Lopes and Roberto Campos (see Skidmore 1967, pp. 159-60 and 175-76).

> First Brazil experienced a very rapid inflation. Then the Government made a heroic attempt to stop prices from rising by curtailing the printing of money. Initially wages and prices continued to rise for a time and Brazil experienced continued moderate inflation together with a large volume of unemployment. (Friedman [1963] 1968, p. 49)

In an economy with expectations adjusted to past inflation, as was the case of Brazil in the 1950s and 1960s, a sudden interruption of the growth of money supply will cause unemployment, argued Friedman, since wages and prices tend to continue to rise for a time. If the central bank persisted in its tight monetary policy, agents would change their price expectations, and extra unemployment would be eliminated. However, as illustrated by the Brazilian episode, the central bank generally reacts to the (temporary) effects of monetary stabilization on inflation and unemployment by resuming the previous trend in money supply. The outcome is a stop-and-go process accompanied by waste of resources. "People's expectations of rising prices are justified. A ratchet process is set in train by successive abortive attempts to curb inflation" (ibid).

Friedman (1966) came back to Brazilian inflation in a key passage of his critical comment on Solow (1966).[4] With the partial exception of a brief mention in Friedman (1962, p. 284), it was his first ever discussion of the Phillips curve and of the trade-off between inflation and employment. Friedman (1966) attacked the view, ascribed to Solow (1966) and others, that lower unemployment levels could be reached through pressure on aggregate demand and higher inflation rates. From that perspective, the adoption of guideposts etc. was a way to achieve higher employment

[4] Friedman (1966) may be read as an implicit reaction to Samuelson and Solow (1960) as well, which he did not mention on that occasion or before. On the reasons for Friedman's delayed reaction to that well-known article see Nelson (2017, chapters 7 and 13).

and suppress the symptoms of inflation, which Friedman found fallacious. The correct argument, he claimed, was “rather sophisticated”. In order to make his case, Friedman referred again to Brazilian recent monetary history; this time he focused on the stabilization plan carried out in 1964-66 by Roberto Campos after the 1964 military *coup d’état*.[5] Unlike previous plans discussed by Friedman ([1963] 1968), it was relatively successful, even if with significant unemployment costs. Apart from information from Harberger and other Chicago economists with South American links, Friedman may have benefitted from Alexandre Kafka’s (1967) paper, which probably circulated in Chicago the year before. Friedman stated that

> To suggest to you briefly why I say [Solow’s argument] is a fallacy, I ask you to consider the experience of some countries that have gone much further along this line than we have. The most dramatic example I know of is Brazil, which, two or three years ago … was having price inflation of about 90% a year. Through “tight” monetary policies, they cut the rate of inflation down to about 45% a year … Unemployment rose to 15% at least for a time. Now, by Bob [Solow’s] logic you would say that this a trade-off between inflation and unemployment, that the Phillips curve in Brazil is such that in order to maintain an acceptable level of unemployment, you would have to have price inflation of 90 percent a year. I think almost everybody would agree that that is an absurd statement. And so it is. (Friedman 1966, p. 59)[6]

That was followed by Friedman’s (ibid) oft cited phrase that “What is true is that you have a trade-off between unemployment *today* and unemployment *tomorrow*”. The Brazilian experience indicated that there is no long-run “stable trade-off between inflation and unemployment” (p. 60). Friedman’s argument was not based on statistical tests or empirical estimates of the Phillips curve for Brazil (or for other South American countries with similarly high inflation rates), which did not exist at the time, but on the interpretation of a particular monetary episode. Spurred by Friedman’s (1966, 1967) discussion of Brazilian inflation, A.C. Lemgruber (1974) estimated, under Bennett McCallum’s supervision, the first Phillips curve for the Brazilian economy. It was also one of the first econometric exercises for any country indicating a vertical long-run Phillips curve. Lemgruber’s findings have been controversial among Brazilian economists, though, as discussed further in the next section. What the Brazilian 1964-66 episode indicated, according to Friedman, was that, because of inflationary expectations, unemployment could only be kept at relatively low levels if inflation accelerated.

> Go back to the Brazilian case. They could have maintained unemployment low by going from 90% to 100% to 125% to 150% inflation. After a time, they would have gotten to the point where even acceleration of inflation would not keep unemployment low. When they cut it down to 45%, they of course got temporary unemployment. But … as inflationary expectations are broken, you will come back to a higher level of employment. (Friedman 1966, p. 59)

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5 For a Chicago perspective on Campos’s role in the economic reforms introduced in Brazil at the time, see Harberger (1993).

6 Friedman’s numbers for the rate of inflation are not off the mark (cf. Kafka 1967). However, the source of his figure for the rate of unemployment is puzzling, as there was no unemployment data for Brazil at the time. In any event, historians agree that the level of economic activity came down significantly in 1964-66 (see e.g. Fishlow 1973).

Friedman (ibid) forecasted that "it's the same way in the United States". Although there were no similar episodes of high inflation in the US, Friedman generalized the Brazilian case by arguing that monetary expansion could only produce lower unemployment "temporarily", before agents adjusted their expectations.

Shortly after his comment on Solow, Friedman (1967b), while working on the first draft of his Presidential Address, once again used the Brazilian 1964-66 stabilization episode to bring out his thesis that the notion of a trade-off between inflation and employment, as suggested by the Phillips curve, was based on analytical confusion between nominal and real wages. "An extreme and illustrative example of that was offered by Brazil a few years back" (Friedman 1967b, p. 40). "What Brazil illustrates", he argued, "is that what matters is not the level of inflation, but whether it is higher or lower than before" (ibid).

The first draft of Friedman's 1967 Address, dated July 1967, was titled "Can full employment be a criterion of monetary policy?" Indeed, the preliminary program of the 1967 meetings of the American Economic Association in Washington D.C, published in the September 1967 issue of the *American Economic Review*, announced that as the title of Friedman's Presidential Address. Apart from the title, there are other significant changes between the July draft and the final version (see Forder 2018 for some of those differences). The passage in Friedman (1968, pp. 8-9) about Brazil and the Phillips curve is identical with the July draft (Friedman, 1967a, p. 13, section 2 on "analysis"). Towards the end of the draft, in section 3 called "implications", Friedman (1967a, pp. 21-22) discussed the possible objection that it may take a long time for inflation expectations to develop. He suggested that the "time scale" in the US was "rather slow", measured in periods of 4 or 5 years. That contributed to the difficulty to distinguish empirically between inflation and its acceleration. A "broader range of experience" was needed to provide evidence that the relevant trade-off was between inflation acceleration and unemployment. Giving Friedman's reference to Brazil earlier in the draft, the "broader experience" should be found in highly inflationary economies. Indeed, Friedman (1968, p. 11) referred to the supposedly established fact that adjustment of expectations to inflation is much faster in South American countries, with their "more sizable changes", than in the United States.

The passage about Brazil in Friedman's (1968) Address follows immediately his charge that Phillips (1958) implicitly assumed that employees and employers anticipated stable nominal prices, whatever happened to prices and wages. That assumption was patently wrong in the case of inflationary economies like Brazil, he claimed.

> Suppose, by contrast, that everyone anticipates that prices will rise at a rate of more than 75 per cent a year – as for example Brazilians did a few years ago. Then wages must rise at that rate simply to keep real wages unchanged. An excess supply of labor will be reflected in a less rapid rise in nominal wages than in anticipated prices, not in an absolute decline in wages. (Friedman 1968, pp. 8-9)

After stressing the influence of inflation anticipation on the determination of money wages, Friedman discussed its implications for the evolution of unemployment in Brazil during the 1964-66 stabilization plan, along the lines of his 1966 comment on Solow.

> When Brazil embarked on a policy to bring down the rate of price rise, and succeeded in bringing the price rise down to 45 per cent a year, there was a

> sharp initial rise in unemployment because, under the influence of earlier anticipations, wages kept rising at a pace that was higher than the new rate of price rise, though lower than earlier. This is the result experienced, and to be expected, of all attempts to reduce the rate of inflation below that widely anticipated. (Friedman 1968, p. 9)

The Brazilian episode, Friedman argued, illustrated not just the notion of the instability of the Phillips curve, but also, because of the lagged adjustment of expectations, of the overshooting often involved in stabilization policies.[7]

3. Visiting Brazil and praising indexation

Friedman's 1973 visit to Brazil, a few years after his Presidential Address, had been originally scheduled for December 1972, but was postponed due to a heart surgery (Friedman and Friedman 1998, p. 426). By 1973, the Brazilian rate of inflation had fallen to about 15%, and the average rate of economic growth for the period 1967-73 had reached nearly 10%, after the central bank stopped its tight monetary policy in 1967. Friedman's (1974a) travel report compared Brazilian intense growth at the time to other "economic miracles" in post-war Germany and Japan. He was impressed by the introduction of widespread purchasing-power escalator clauses into contracts in the financial, labor, housing and exchange rate markets, as well as in taxation rules. Brazilians called it "correção monetária" ("monetary correction"), a term Friedman (1974b) deployed as the title of his best-known paper on the topic. Price stability was obviously better, but "theory and practice coincide in demonstrating that a true second best" for living with inflation is the widespread use of escalator clauses. Alfred Marshall had advanced the theoretical argument for indexation in 1887. The Brazilian experience, Friedman (1974a) suggested, "parallels Marshall's proposal with amazing fidelity – by the force of necessity, not design". Drawing on his 1967 remarks about the costs of Brazilian stabilization, Friedman claimed that

> Given the inevitable, if temporary, costs of reducing inflation rapidly without such a measure, the Brazilians have been extremely wise to adopt it. I believe that their miracle would have been impossible without the monetary correction. With it, they have been able to reduce inflation gradually from about 30 per cent in 1967 to about 15 per cent now, without inhibiting rapid growth. (Friedman 1974a)

Apart from his *Newsweek* article, Friedman's impressions of his Brazilian tour may be found in an interview given on 4 January 1974 to William Clark, a reporter of the *Chicago Tribune* (Friedman 1974c). Some practical details may be inferred from his correspondence with Eudoro Villela, who sponsored Friedman's trip. Villela was a Brazilian entrepreneur, president of Banco Itaú (one of the largest Brazilian banks) and of "Associação Nacional de Programação Econômica e Social" (ANPES; National Association for Economic and Social Programming), a think tank created in 1964 by Roberto Campos. Friedman arrived in São Paulo on 15 December 1973 and returned to the US a week after. During his stay, he delivered a talk about economic policy on 17 December in São Paulo at ANPES. He also lectured on monetary theory

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[7] Champernowne (1936) provided an early theoretical discussion of overshooting and inflation acceleration (Boianovsky 2018a).

at a university in the same city, and toured Brasilia and Rio. In a letter of 1 August 1973 to Villela, Friedman (1973a) expressed his wish to make real his “proposed trip” to Brazil, canceled the year before. In another letter, Friedman (1973b) discussed his travel plans and wrote that he and Rose were “looking forward to the experience”.

Friedman came to Brazil to learn about the performance of the Brazilian economy and its widespread indexation. Dissemination of Chicago ideas was secondary to that goal. As he said at the beginning of the *Chicago Tribune* travelogue interview, “I was much more interested in what I saw in Brazil then what I said in Brazil!” (Friedman 1974c) By 1968, monetary correction had been extended to virtually every market (see Fishlow 1974). Friedman was “fascinated” by the seemingly ability of Brazilian policy makers after 1967 to fight inflation without increasing unemployment. In his view, indexation set the groundwork for the so-called Brazilian “economic miracle”. Unlike Friedman’s (1966, 1968) description of the 1964-66 stabilization episode, when expectations were slow to adjust, the reduction of the rate of inflation between 1967 and 1973 was not accompanied by recession, but the opposite. This happened because, due to escalator clauses, “they have eliminated the effect of the difference between the rate of inflation that people expected and the rate of inflation you actually have” (Friedman 1974c).

Friedman’s discussion of Brazilian indexation and his campaign for a similar application to the American economy raised critical reactions (see e.g. Fishlow 1974). Two international conferences on indexation were held in São Paulo (1975) and Rio (1981), published in 1977 and 1983 respectively, with papers about the Israeli indexation record as well (see Nadiri and Pastore 1977; Dornbusch and Simonsen 1983). By then, models of wage indexation by Jo Anna Gray (1976; based on her 1975 Chicago PhD thesis, cited by Friedman 1977, who was on her thesis committee) and Stanley Fischer (1977) had become influential. Simonsen (1983) showed, in an extended version of the Gray-Fischer model, that, in the absence of supply shocks, full widespread indexation relieves the output loss of anti-inflationary policies, as price expectations are eliminated from contracts. Full-wage indexation turns the short-term Phillips curve into a vertical line, as argued by Friedman (1974b, 1977) in his papers and implied in his 1974c interview. However, the type of indexed wage contract found in Brazil was based on a staggered rule, with money wages adjusted at time intervals according to previous inflation rate. As modeled by Simonsen (op. cit.), lagged wage indexation, under the assumption of rational expectations, leads to a Phillips relation analogous to the one with adaptive expectations.

There was yet another important difference between Friedman’s indexation system and Brazilian actual experience, as observed by Morley (1977, p. 85). Friedman had in mind ex-post adjustment for past inflation. However Brazilian wage laws introduced in 1965 ruled that wage increases were granted to restore the average purchasing power over a previous period (24 months) and to offset prospective increases in productivity and prices. Mario Henrique Simonsen (1983, p. 119), who devised the original wage formula, later described it as a “rational expectation staggered wage determination rule” instead of an indexation scheme. It acted as an incomes policy instrument, since the Brazilian government decided the expected rate of inflation and the productivity gain, with no room for collective bargaining or strikes under the military regime. In practice, the wage formula squeezed real wages between 1965 and 1967, when future inflation rates were underestimated.[8] This is

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[8] The average real wage rate in the industrial sector dropped 25 per cent between 1964 and 1967 (Simonsen, ibid). Kafka (1967), however, produced some qualitative

distinct from Friedman's (1966, 1968) account of Brazilian 1964-66 recession as the outcome of an increase in real wages due to slow adjustment of workers' price expectations.

Indeed, the application of Phillips curve analysis to the Brazilian labor market, first carried out by Lemgruber (1973, 1974), would be challenged by some Brazilian economists on the grounds that mandatory wage setting rules were effective in determining the pace of wage changes, instead of cyclical excess demand for labor (see Bacha and Lopes 1983). Skepticism was also founded on the notion that Brazil, like other Latin American countries, was a dual economy with perfectly elastic labor supply à la Lewis (Nugent and Glezakos 1982). Fishlow (1973, p. 77) acknowledged the relevance of price expectations in explaining the Brazilian recession of 1964-66, but claimed that it operated in ways distinct from the expectations-augmented Phillips curve approach. That was similar to Morley (1971), who argued that the relation found by Friedman and Schwartz (1963) between changes in money supply and output applied to Brazil, via the effect of credit scarcity on aggregate supply instead of aggregate demand though.

Friedman was, of course, aware of the Brazilian political situation and its effects on trade unions and other aspects of economic and social life. Asked by the *Chicago Tribune* about freedom in Brazil, he replied that "to an outsider" there was the impression of a "good deal of freedom". However, conversation with academic people, he reported, revealed strongly restrictions to freedom of speech and teaching, also showed in censorship to the main newspapers. Brazil, Friedman suggested, was not a totalitarian country (with an "overall control of every aspect of life"), but a dictatorship, in the sense that individuals could do what they wanted, except when "they crossed the government" and were punished for that.

> We would rather have a free society in Brazil, but few countries are able to sustain a free society for a long period. No South American country has been able to do it. Chile came close for a long period, and now look what has happened to Chile. (Friedman 1974c)

The Chilean military *coup d'état* had taken place just two months before Friedman's trip to Brazil. It is noteworthy that Friedman's sponsor, Eudoro Villela, was close to Paulo Egydio Martins, Minister of Industry and Commerce in the previous government, who would become governor of the state of São Paulo in 1974. Martins belonged to a political group led by General Golbery do Couto e Silva, who opposed the military hard line and designed a plan for gradual political decompression implemented after 1974, when he became head of the Brazilian Presidential Staff. As part of his strategy for liberalization, Golbery met with some American scholars who visited Brazil, as the Harvard political scientist Samuel Huntington, who came in 1972 and 1974 (Skidmore 1988, pp. 162-67). Friedman probably met with Golbery in 1973, although he did not mention it in his 1974 interview.[9] He did mention long talks with Antonio Delfim Netto, the Brazilian

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evidence that real wages increased in 1964 because of inflation expectations carried from the previous year, along the lines of Friedman (1968), before wage indexation was fully applied.

[9] My inference is based on letters from J. Palhares dos Santos and Egydio Martins to General Golbery. Palhares dos Santos's letter to Golbery, dated 16 August 1973, attached, under Martins's request, a copy of the correspondence between Friedman and Villela. Palhares dos Santos wrote to Golbery: "It seems to us that it would be

Finance Minister at the time. Delfim argued that empirical evidence indicated that average real wages were on the rise because of increasing productivity, above and beyond minimum wage legislation, which Friedman found convincing. Unlike the 1964-66 period, unemployment at the time was of a "structural", not "cyclical", kind, associated to rigid minimum wages and other rigidities of the Brazilian labor market (Friedman 1974c). That was consistent with Friedman's (1968) definition of the "natural" rate of unemployment.

Three years after his travel to Brazil, Friedman delivered his Nobel Memorial Lecture in Stockholm, when he advanced the view, based on some recent evidence for industrialized countries, of a positively sloped Phillips curve, called "stage 3" of the natural rate hypothesis (Friedman 1977). Such phenomenon could only be explained, he claimed, if the interdependence of economic and political (or institutional) events was taken into account, along the lines of the new political economy (ibid, p. 460). The relevance of institutional changes for monetary dynamics became evident during Friedman's visits to Brazil (1973) and Chile (1975). One of the key issues tackled by Friedman (1977, p. 465) was whether developed countries would continue along their recent increasing inflation path – described as a move toward "the Latin American pattern of chronically high inflation rates", occasionally turned into hyperinflations with political repercussions as in Chile and Argentina – or go back to their pre-World War II pattern of long-run stable or "normal" price level. The relative long-run price stability, in the sense that prices oscillated cyclically around an approximately steady level, went a long way in accounting for the stable Phillips curves estimated for that period, as Friedman (p. 469) observed.[10]

Friedman (p. 464) saw a positively sloped Phillips curve as a transitional phenomenon, lasting while not just expectations but also "institutional and political arrangements" adjusted to chronic inflation. During the transition period, the partial introduction of such arrangements would be associated with higher unemployment produced by the effects of inflation on economic efficiency, as illustrated by the South American record (see also Lothian 2016). Higher inflation would generally be accompanied by higher price volatility and uncertainty – with perverse effects on the working of the price mechanism and hence on economic activity – followed by the development of indexation to try to cope with it. Until such institutional arrangements were introduced, the transition from a monetary system featuring "normal" price level to another one beset by chronic high and variable inflation would display a positive Phillips curve. When (and if) the economy eventually adapted to chronic inflation, through "full indexation" (p. 464) and other arrangements, the long-run Phillips curve would become vertical as in the natural rate hypothesis. Friedman (1977) did not mention Brazil, but his frequent references to indexation and chronic inflation probably resulted from his 1973 visit to that country. Friedman (1977) did not offer a normative argument in support of indexation (as he had done in 1974), but a positive

very important to promote a meeting between [Friedman] and 'our people' … as secret as indicated". Egydio Martins sent Golbery, in an undated letter, documents related to a "follow-up to Professor Friedman's visit to Brazil" (Paulo Egydio Martins Papers, CPDOC-FGV-Rio; my translation). Friedman kept a low profile during his travel to Brazil, which was not reported by the Brazilian press.

10 The notion of "normal" prices was essential to Dennis Robertson's monetary macroeconomics. Friedman may have borrowed it from the Cambridge economist (Boianovsky 2018a).

analysis of indexing and other institutional changes as expected reactions to persistent and variable inflation.

4. Discussion

Friedman's (1966, 1968) references to Brazil in the context of his critical discussion of the Phillips curve have not attracted much attention in the literature. Partial exceptions are Lemgruber (1973, 1974) and Forder (2018), from quite different perspectives. Brazilian economist Antonio C. Lemgruber (1974, pp. 1 and 192) maintained that "post-war Brazilian inflationary experience provided the basic evidence utilized by Friedman in his attack of Phillips curve theories of inflation", and that "the 'informal' evidence of [Friedman's] theory was exactly the Brazilian example" (p. 107). Inspired by Friedman's "casual evidence", Lemgruber (p. 2) set out to test the accelerationist Phillips curve for Brazil (see also Lemgruber 1973, p. 31). By "informal" or "casual" evidence Lemgruber probably meant qualitative pieces of empirical observation, apparently not as rigorous or persuasive as econometric evidence.

Forder (2018, p. 526), on the other hand, claimed that Friedman (1968) discussed the Phillips curve in order to describe the results (not goals) of policy, "and even then only in Brazil". Moreover, Forder (p. 535) held that Friedman did not support his point about expectations by careful theoretical or empirical arguments, as the expectations effect was regarded common knowledge – "of all [Friedman's] discussions, only the mention of the Brazilian case even offered an instance of the expectations effect". Clearly, Friedman did not suggest that Brazilian policy makers in the mid 1960s were trying to exploit a Phillips curve trade-off. However, his reference to wage dynamics in a highly inflationary environment such as Brazil did play a role in his rebuttal of Solow (1966), even if, unlike Lemgruber's interpretation, Friedman did not base his entire case on that.

It is implicit in Forder's assessment that the "Brazilian case" was of a distinct sort from the American or British records, and therefore not as relevant for Friedman's point, which was supposed to apply to industrialized economies. Robert Solow, the explicit target of Friedman's 1966 criticism of the then prevailing interpretation of the Phillips curve and (implicitly) of his 1968 Address as well, said as much in his pioneer econometric evaluation of Friedman's natural rate hypothesis. Upon deriving, for the US and the UK, results that rejected the accelerationist approach and the notion of a long-run vertical Phillips curve, Solow stated:

> I think there is a message here: whatever may be true of Latin-American-size inflations or even smaller perfectly steady inflations, under the conditions that really matter – irregular price increases with an order of magnitude of a few percent a year – there is a trade-off between the speed of price increase and the real state of the economy. (Solow 1969, p. 17)

That clearly was a reaction to Friedman's (1966, 1968) attempted use of the Brazilian inflation to make his point.[11] Solow's reaction was illustrative of the general perception among American and British economists that Latin American high

[11] There were some problems in the way Solow (1969) estimated his equations, as Friedman (1975, p. 24, n. 2) and others would point out, which raised skepticism about his non-accelerationist result.

inflation did not prove Friedman's case. As evidence of inflation acceleration in industrialized economies started to come out, the notion of a Non-Accelerating Inflation Rate of Unemployment (NAIRU), even if not necessarily the natural rate hypothesis, gained prominence.

Even if the Brazilian example did not persuade Solow and others, it did play an important role in the construction of Friedman's argument, as he forecasted that a similar shift of the short-run Phillips curve would take place in the US. Referring to the Phillips curve, Friedman (1977, p. 469) claimed that, "as in any science, so long as experience continued to be consistent with the reigning hypothesis", as it happened until the 1960s, "it continued to be accepted, although, as always, a few dissenters questioned its validity". Friedman's approach to business cycles along NBER lines and his Marshallian methodology, as Hammond (1996, p. 44) pointed out, were behind his view that economists should focus on concrete problems and that observation was more relevant than mathematical elegance and completeness. Friedman believed the "ultimate test of theories was their capacity for predicting data other than those from which they were derived" (ibid). Friedman's use of his Brazilian observation to predict the instability of the American Phillips curve may be seen as an illustration of that.

South American high inflation economies provided illustration of yet another important monetary phenomenon: the "Fisher effect", that is, the impact of inflation expectations on the nominal rate of interest. Friedman saw it as the credit market equivalent of his argument about the influence of inflation expectations on money-wages. Evidence of the Fisher effect came mostly from South American countries such as Brazil and Chile, where high and rising interest rates had been historically associated with fast increase in money supply (Friedman 1968, pp. 6-7). It was only after the mid 1960s, when American investors gave up their previous notion of a "normal" price level, that evidence of co-movement between nominal interest rates and inflation started to show in the US economy as well (ibid; see also Nelson 2017, book B, pp. 138-39).

Impressed by his 1973 travel to Brazil, Friedman speculated, in his 1976 Nobel Lecture, whether US inflation was approaching the chronic Latin American pattern. Friedman's trip was prompted by his curiosity about the Brazilian economy and its mechanisms to cope with inflation. However, as he would point out years later, the Brazilian "economic miracle" did not last long (Friedman and Friedman 1998, pp. 426-27). The country was beset in the 1980s and early 1990s by near hyperinflation and balance of payments problems. New currencies were introduced "in the vain attempt to achieve by name changes what required a real commitment to reduce money supply" (ibid). Friedman's critical account of Brazilian monetary reforms (especially the 1994 "Real Plan") missed the point that widespread staggered indexation, together with accommodating monetary and fiscal policies in the face of adverse aggregate supply shocks, had turned Brazilian inflation into a random walk (Simonsen 1983, p. 131). In the 1980s and 1990s, the notion that inflation was predominantly "inertial" gained increasing assent among Brazilian economists, which culminated with the successful 1994 stabilization through monetary reform and end of indexation after a transition period (see Andrade and Silva 1996).

Friedman's ([1963] 1968, 1966, 1968) interest in the Brazilian inflation experience may be also explained by the context of the Latin American "structuralist-monetarist" debate, which reached its climax at the Rio 1963 international conference (Baer and Kerstnetzky 1964). In fact, the term "monetarist" – introduced by Campos (1961), who, like Gudin, sided with the monetarist camp – first gained currency during that debate. The Latin American discussion took place before the monetarist controversy that would soon dominate macroeconomics (Boianovsky 2012; Laidler 2004, sec. 3). Friedman, like some other Chicago economists, was aware of the 1950-60s Latin American debates, and of the relevance of the information provided by aspects of high inflation in that region and the attempts to stabilize it.

References

Andrade, J. and M.L. Silva. 1996. Brazil's new currency: origins, development and perspectives of the Real. *Revista Brasileira de Economia*. 50: 427-67.

Bacha, E. and F. Lopes. 1983. Inflation, growth and wage policy: a Brazilian perspective. *Journal of Development Economics*. 13: 1-20.

Backhouse, R.E. 1996. *Interpreting macroeconomics*. London: Routledge.

Backhouse, R.E. 2007. Milton Friedman and the method and scope of economics. *History of Economic Ideas*. 15:11-21.

Baer, W. and I. Kerstenetzky (eds.). 1964. *Inflation and growth in Latin America.* Homewood (Ill.): Richard D. Irwin.

Boianovsky, M. 2012. Celso Furtado and the structuralist-monetarist debate on economic stabilization in Latin America. *History of Political Economy*. 44: 277-30.

Boianovsky, M. 2018a. Cambridge anticipations of the natural rate hypothesis? Robertson and Champernowne revisited. *History of Economic Ideas*. 26 (forthcoming).

Boianovsky, M. 2018b. 2017 HES Presidential Address: Economists and their travels, or the time when JFK sent Douglass North on a mission to Brazil. *Journal of the History of Economic Thought*. 40: 149-77.

Campos, R. O. 1961. Two views of inflation in Latin America. In A. Hirschman (ed.). *Lain American issues*, pp. 69-79. New York: Twentieth Century Fund.

Champernowne, D. G. 1936. Unemployment, Basic and Monetary: The Classical Analysis and the Keynesian. *Review of Economic Studies*. 3: 201-16.

Dornbusch, R and M.H. Simonsen (eds.). 1983. *Inflation, debt, and indexation*. Cambridge (Mass.): MIT Press.

Edwards, S. and L. Montes. 2018. Milton Friedman in Chile: shock therapy, economic freedom and exchange rates. Unpublished typescript.

Fischer, S. 1977. Wage indexation and macroeconomic stability. *Journal of Monetary Economics*. 3: 107-48.

Fishlow, A. 1973. Some reflections on post-1964 Brazilian economic policy. In A. Stepan (ed.). *Authoritarian Brazil*, pp. 69-118. New Haven (CT): Yale University Press.

Fishlow, A. 1974. Indexing Brazilian style: inflation without tears? *Brookings Papers on Economic Activity*. 1: 261-80.

Foxley, A. 1980. Stabilization policies and stagflation: the cases of Brazil and Chile. *World Development*. 8: 887-912.

Forder, J. 2018. What was the message of Friedman's *Presidential Address* to the American Economic Association? *Cambridge Journal of Economics*. 42: 523-41.

Forder, J. and K. Sømme. 2018. Explaining the fame of Friedman's Presidential Address. Unpublished. Presented at the History of Economics Society Conference, Chicago, June.

Friedman, M. 1953. The methodology of positive economics. In *Essays in positive economics*, pp. 3-43. Chicago: University of Chicago Press.

Friedman, M. 1958. Inflation. Paper for the Mont Pèlerin Society, Princeton, September 1958. Milton Friedman Papers. Hoover Institution.

Friedman, M. 1962. *Price Theory: A Provisional Text*. Chicago: Aldine.

Friedman, M. [1963] 1968. Inflation: causes and consequences. Bombay: Asia Publishing House. As reprinted in *Dollars and Deficits*, pp. 21-71. New York: Prentice-Hall.

Friedman, M. 1966. Comment. In G.P. Schultz and R.Z. Aliber (eds). *Guidelines, Informal Controls, and the Market Place*, pp. 55-61. Chicago: University of Chicago Press.

Friedman, M. 1967a. Can full employment be a criterion of monetary policy? Milton Friedman Papers, Box 49, Folder 10. Hoover Institution.

Friedman, M. 1967b. Must we choose between inflation and unemployment? *Stanford Graduate School of Business Bulletin*. 35: 10-13, 40, 42.

Friedman, M. 1968. The role of monetary policy. *American Economic Review.* 58: 1-19.

Friedman, M. 1973a. Letter to Eudoro Villela. 1 August 1973. Paulo Egydio Martins Papers. CPDOC-FGV-Rio.

Friedman, M. 1973b. Letter to Eudoro Villela. 14 September 1973. Paulo Egydio Martins Papers. CPDOC-FGV-Rio.

Friedman, M. 1974a. Economic miracles. *Newsweek.* 21 January 1974, p. 80.

Friedman, M. 1974b. Monetary correction: a proposal for escalator clauses to reduce the costs of ending inflation. IEA Occasional Paper # 41.

Friedman, M. 1974c. The Brazilian economic miracle. Economic Cassette Series. Milton Friedman Papers. Hoover Institution. 4 January 1974.

Friedman, M. 1975. Unemployment *versus* inflation? An evaluation of the Phillips Curve. Institute of Economic Affairs. *Occasional Paper* # 44.

Friedman, M. 1977. Nobel Lecture: Inflation and Unemployment. *Journal of Political Economy*. 85: 451-72.

Friedman, M. and R. Friedman. 1998. *Two lucky people – memoirs*. Chicago: University of Chicago Press.

Friedman, M. and A. Schwartz. 1963. *A monetary history of the United States, 1867-1960*. Princeton: Princeton University Press for the NBER.

Gudin, E. 1958. On inflation. Paper for the Mont Pèlerin Society, Princeton, September 1958. Eugenio Gudin Papers. CPDOC-FGV-Rio.

Gordon, R. J. 2011. The history of the Phillips curve: consensus and bifurcation. *Economica.* 78:10-50.

Gray, J.A. 1976. Wage indexation – a macroeconomic approach. *Journal of Monetary Economics*. 2: 221-35.

Harberger, A. C. 1963. The dynamics of inflation in Chile. In C. Christ et al. *Measurement in economics*, pp. 219-50. Stanford: Stanford University Press.

Harberger, A. C. 1964. Some notes on inflation. In Baer and Kerstenetzky (eds.), pp. 319-51.

Harberger, A. C. 1966. The inflation problem in Latin America. A report prepared for the Buenos Aires (March 1966) meeting of the Inter-American Committee of the Alliance for Progress. Published in Spanish as "El problema de la inflación en America Latina", Centro de Estudios Monetarios Latinoamericanos, *Boletín Mensual*, June 1966: 253-69.

Harberger, A.C. 1993. Secrets of success: a handful of heroes. *American Economic Review*. 83: 343-50.

Harberger, A.C. 1997. Good economics comes to Latin America, 1955-95. In A.W. Coats (ed.). *The post-1945 internationalization of economics*, pp. 301-11. Annual supplement to *History of Political Economy*, vol. 28. Durham (NC): Duke University Press.

Hammond, J. D. 1996. *Theory and measurement – causality issues in Milton Friedman's monetary economics*. Cambridge: Cambridge University Press.

Hirsch, A. and N. de Marchi. 1990. *Milton Friedman – economics in theory and practice*. New York: Harvester Wheatsheaf.

Hoover, K.D. 1988. *The new classical macroeconomics*. Oxford: Blackwell.

Kafka, A. 1967. The Brazilian stabilization program, 1964-66. *Journal of Political Economy*. 75: 596-631.

Laidler, D. 2004. From bimetallism to monetarism: the shifting political affiliation of the quantity theory of money. In I. Barens, V. Caspari and B. Schefold (eds.). *Political events and economic ideas*, pp. 9-36. Cheltenham: Elgar.

Lemgruber, A.C. 1973. A inflação brasileira e a controversia sobre a aceleração inflacionária [The Brazilian inflation and the controversy over inflation acceleration]. *Revista Brasileira de Economia*. 27:31-50.

Lemgruber, A.C. 1974. A study of the accelerationist theory of inflation. PhD dissertation. University of Virginia.

Lothian, J.R. 2016. Milton Friedman's monetary economics: theory and empirics. In R. Cord and J.D. Hammond (eds.). *Milton Friedman: contributions to economics and public policy*. Oxford: Oxford University Press.

Marshall, A. 1887. Remedies for fluctuations of general prices. *Contemporary Review*. As reprinted in A.C. Pigou (ed.). 1925. *Memorials of Alfred Marshall*, pp. 188-211. London: Macmillan.

Morley, S. 1971. Inflation and stagnation in Brazil. *Economic Development and Cultural Change*. 19: 184-203.

Morley, S. 1977. Indexing and the fight against inflation. *Explorations in Economic Research*, 4: 76-91.

Nadiri, M.I. and A.C. Pastore (eds.). Indexation: the Brazilian experience. *Explorations in Economic Research*, vol. 4 (1). NBER.

Nelson, E. 2018. *Milton Friedman and economic debate in the United States, 1932-72*. Unpublished book typescript. University of Sydney.

Nugget, J. and C. Glezakos. 1982. Phillips curves in developing countries: the Latin American case. *Economic Development and Cultural Change*. 30: 321-34.

Palhares dos Santos, J. G. 1973. Letter to Golbery do Couto e Silva. 16 August 1973. Paulo Egydio Martins Papers. CPDOC-FGV-Rio.

Phelps, E.S. 1967. Phillips curves, expectations of inflation and optimal unemployment over time. *Economica.* 34: 254-81.

Phelps, E. S. 1968. Money-Wage Dynamics and Labor-Market Equilibrium. *Journal of Political Economy.* 76.4: 678-711.

Samuelson, P.A. and R. Solow. 1960. Analytical aspects of anti-inflation policy. *American Economic Review*. 50: 177-94.

Simonsen, M.H. 1983. Indexation: current theory and the Brazilian experience. In Dorbusch and Simonsen (eds.), pp. 99-132.

Sjaastad, L.A. 1974. Monetary policy and suppressed inflation in Latin America. In R.Z. Aliber (ed.). *National monetary policies and the international financial system.* Chicago: University of Chicago Press.

Skidmore, T.E. 1967. *Politics in Brazil, 1930-1964*. New York: Oxford University Press.

Skidmore, T.E. 1988. *The politics of military rule in Brazil, 1964-1985*. New York: Oxford University Press.

Solow, R.M. 1966. The case against the case against the guideposts. In G.P. Schultz and R.Z. Aliber (eds). *Guidelines, Informal Controls, and the Market Place*, pp. 41-54. Chicago: University of Chicago Press.

Solow, R.M. 1969. *Price expectations and the behavior of the price level*. Manchester: Manchester University Press.

Suprinyak, C. and R. Fernández. 2018. The Vanderbilt Boys' and the modernization of Brazilian economics. Center for Latin American Studies, University of Chicago. Working Paper # 1.