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THE PHILLIPS CURVE IN BRAZILIAN ECONOMY AFTER REAL PLAN

1. INTRODUCTION

The principal objective of this paper is to analyze the possible existence of an inverse relationship between inflation and unemployment, in the Brazilian economy, using updated data after the implementation of the Real Plan.

Using the technical terminology of economics, it can be affirmed that the objective proposed here, consists of estimating the parameters of the Phillips curve prices, for the Brazilian economy.

Economist A. W. Phillips published a work in 1958, showing that for almost one century (1861 to 1957) an inverse relationship was observed between the level of unemployment and the value of nominal wages in England. As a direct relationship exists between the level of nominal wages and the inflation rate, the conclusion was extended in the

sense of the existence of an inverse relationship between the level of unemployment and the inflation rate. This is known as the Phillips curve.

Over the time, the Phillips curve suffered attacks from several critics and improvements on the part of a lot of economists, mainly for the introduction of the elements of expectations in the analysis and a differentiation with relationship to the short and long run. In general, now, it is believed that in long run an inverse relationship between unemployment and inflation doesn't exist, but in the short run a negative relationship can be observed between the two variables. Given the little temporary inclusion of the data that will be used in the study, that forces us to work with monthly data, we can affirmed that the parameters of the brazilian Phillips curve of short run that will be estimated.

President Fernando Henrique's reelection, in November of last year, brought a great debate to Brazil, that in a certain sense is centered on the faith in the existence of the Phillips curve to our country in recent days. As the President introduced the Real Plan, his government's first economic policy (1995-1998) was centered on the maintenance of the drop rates of inflation. However, for the second order (that should last until the year 2002) there is a great national longing for politics that emphasize economical development, the amplification of production and the consequent reduction of unemployment levels.

Though, for many economists, especially the government's members, the reduction of the unemployment can result in the elevation of the inflation rate and reverse the

results obtained with the Real Plan, and could culminate with the turn of the inflationary processes that destroyed the Brazilian economy for more than one decade.

Keeping in mind the existence of that debate, the present study becomes quite interesting, because it could bring the answers for an intriguing subject that is placed: if an eventual reduction of the unemployment in Brazil today will cause some impact on inflation.

The parameters of the Phillips curve of the Brazilian economy will be estimated using the elementary econometrics technique, by models defined in Ordinary Less Square-OLS.

In Brazil, the statistics of unemployment and inflation are calculated for country as a whole and for the main metropolitan areas, so we will work with national data of the economy and with data of the following metropolitan areas: Belo Horizonte (BH), Porto Alegre (PA), Recife (RC), Rio de Janeiro (RJ), Salvador (SV) and São Paulo (SP).

The analysis will begin with the simple graphic observation of inflation and unemployment series. Soon after we will use a simple model, that considers unemployment as the only explanatory variable of the inflation. That model will be repeated in all the analyzed areas.

Then, using only the general data of the Brazilian economy, the model will be expanded by the inclusion of other explanatory variables, such as money, interest rate, public deficit, exchange rate and the level of economical activity.

2– DATA ANALYSIS – THE SIMPLE MODEL

Inflation and unemployment data used in this article were obtained from the Brazilian Institute of Geography and Statistics–IBGE, through research on the webpage of the Sistema of Recovery of Information–SIDRA-IBGE in Internet.

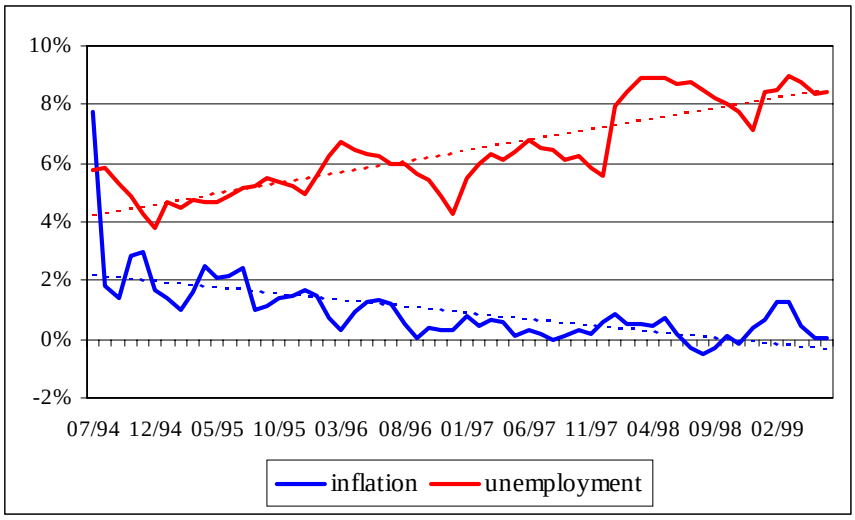
The inflation is represented by the National Index of Prices to the Consumer–INPC, calculated by IBGE at the federal level and for the metropolitan areas.

The rates of unemployment correspond to the Rate of Opened Uenmployment – 30 Days, measured by the relationship among the people that sought work and the economically active population, with a minimum age of 15 years old, considering the period of 30 previous days the researched week. This rate is calculated in the ambit of the Monthly Research of Employment–PME. The information for Brazil as a whole, is obtained by an average of the metropolitan areas.

The analysis can begin by examing the graphic of the inflation and unemployment series. As we observe in the graph below, in the previous years, while the inflation is falling systematically, on the other hand, the unemployment level is increasing, characterizing an inverse relationship among the two variables. In this graph, the dotted line represents a tendency that was calculated by the regression of the data against an index of time.

Graph 1–Brazil – Inflation and Umemployment

Jul/1994 - jun/1999



The apparent inverse behavior between inflation and unemployment can be observed in all the metropolitan areas analyzed, as we can see in the graphs presented in the Appendix II.

Based on these graphs, we also observe that the level of inflation in June of 1994 sounds out of tune significantly with the other data of the series. Due to this fact, in the analysis

that proceeds in this topic, we will not use the information of June of 1994. This way, the analysis will be made considering a sample with 59 observations.

Although inflation and unemployment follow inverse paths, the simple observation of the remain of tendency it is not enough for us to conclude that those two variables maintain an inverse relationship to each other. For us to arrive the this conclusion, we should presuppose the existence of a functional relationship among the variables, to estimate the parameters of this function, to test the statistical significance of the estimates and to reject the hypothesis that the parameters relateing the variables are positive.

The easiest way to make that analysis is using a simple model, in which we ignore all the other economic variables that can influence the analyzed variables, and consider the following function[1]:

(1) $INF = f(UEMP)$

Where: INF = inflation rate

UEMP = unemployment rate

[1] For simplification, we will omit the disturbance term in the formulas that will be present.

The following step consists of defining an appropriate formula to use in the calculations of the regressions. A initial suggestion comes from the Phillips original article, that used a formula similar to the following:

(2) $INF = \alpha\ UEMP^{\beta}$

where α and β are the parameters be estimated.

The corresponds lineal for the equation (2) is obtained by the use of logarithms in the two sides of the equation, what will result in:

(3) $LN(INF) = LN(\alpha) + \beta LN(UEMP)$

However, it is necessary to remember that the inflation rate presents negative values, which makes the use of the logarithms impossible. To solve this problem, we can use the same trick used by Phillips: simply adding a constant to the inflation data.

The only practical consequence of the use of this trick is that the estimate of the parameter α will be added of this same constant, however, it is easy to correct this bias of the estimate. The estimate of the parameter β won't suffer any change. As the inflation data are percentile numbers, we will attribute 1 (or 100%) to the value of the constant.

This way, to estimate the parameters of the equation (2) we should regress the available data in the following equation:

(4) $LN (INF + c) = \alpha' + \beta LN (UEMP)$

This model will be designated as Model ln (INF + c). An inverse relationship between Inflation and unemployment will be confirmed by the fact of the parameter β present an estimate with negative value. One of the advantages of this model is that the parameter β is the elasticity unemployment of the inflation.

We found in the papers of Yang (1992) and Golden (1994) another formula for the functional relationship between inflation and unemployment. Those authors analyze the Misery Index (defined as the sum between the inflation rate and the unemployment rate) considering a Phillips curve of the type:

(5) $$INF = \theta + \phi \frac{1}{UEMP}$$

where θ and ϕ are the parameters to be estimated. To obtain those estimates we should regress the inflation rates and the inverse of the unemployment rates directly.

This model will be designated as Model (1 / UEMP) and an inverse relationship between inflation and unemployment will be characterized by a positive estimate for the parameter ϕ.

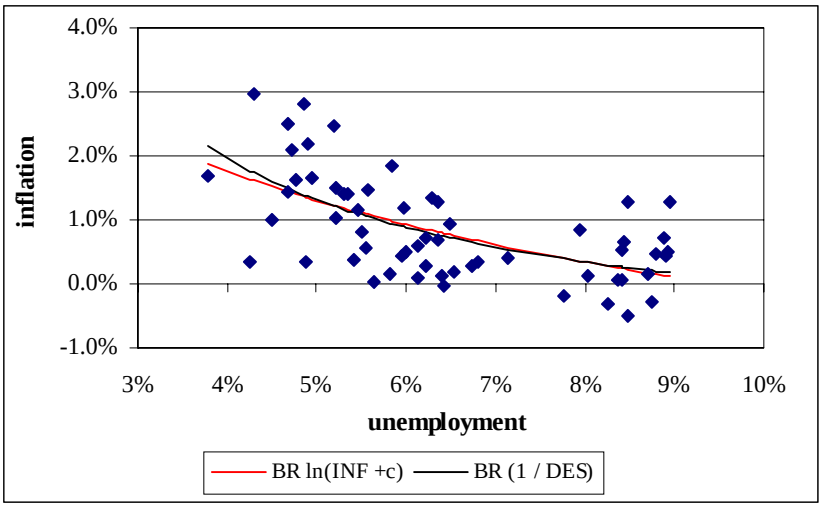
In both models - ln (INF +c) and (1 / UEMP) - the general level of significance will be tested using the Test F. The statistical significance of the parameters β and ϕ, respectively, will be tested with base in the Test t. As the models use just one explanatory variable, the result of the tests F and t are identical.

Considering that in the Test t the null hypothesis is $\beta = 0$ and $\phi = 0$, respectively, if the estimates of the parameters present the wanted sign - negative in the model ln (INF +c) and positive in the model (1 / UEMP) – as we reject the null hypothesis, automatically we will be accepting the hypothesis of an inverse relationship between inflation and unemployment.

The graph below shows the Brazilian data of inflation X unemployment, in the period from August of 1994 to June of 1994. In this same graphic, we present the regression line obtained in the models ln (INF + c) and (1 / UEMP). In the Appendix III, we present similar graphs for the other analyzed areas. In the Appendix IV, we present the results of the regressions of the two models.

Graph 2–Brazil–Inflation X Unemployment

Aug/1994 - Jun/1999



Analysing the information in Appendix IV we notice that in the two models, in all the analyzed areas, the sign of the estimates of the parameters β and ϕ correspond to the expected, negative and positive, respectively. Such result comes in defense of the hypothesis of a negative relationship between inflation and the unemployment.

In all the regressions, analysising the results of the test F and t, we notice that the statistical significance of the parameters can be accepted even at a level of 5%. We can observe that except the metropolitan area of Recife, we could reject the Hypothesis Null-H_0 (the parameters β and ϕ be equal to zero), even if we considered a Level of Confidence of 99%. In the case of Recife, in the model (1 / UEMP), we could consider a Level of Confidence up to 98% and we would still reject H_0.

Comparing the statistical differences between the two models, we observed an increase of R^2 as we pass from the model ln (INF + c) to the model (1 / UEMP), except in the metropolitan area of Recife, where the best result (R^2 = 11.35%) was reached in the model ln (INF + c). In general, the values obtained for R^2 vary from 43.70%, for the city of Belo Horizonte in the model (1 / UEMP), to 8.79%, for the city of Recife in the model (1 / UEMP).

At first, such results lead to the conclusion that the unemployment rate possesses some influence on inflation, because the statistic of the Test F reject the Null Hypothesis that the parameters are equal to zero. However, the results for the coefficient of determination - R^2 - are very low.

Another important result to be analyzed is the Durbin-Watson statistics for autocorrelation of. In all the analyzed areas and in both models, the DW statistic is below 1.070 (obtained in the model (1 / UEMP) for the metropolitan area of Rio de Janeiro) and above 0.670 (obtained in the model ln (INF + c) for the data of Brazil).

Considering a model with an explanatory variable and 60 observations, in agreement with Matos (1997, page 240) the upper and lower limits of Durbin-Watson's test are 1.549 and 1.616, respectively. We noticed, therefore, that in all the analyzed samples enough indications of the presence of positive autocorrelation of first order exist.

According to Matos (1997, page 135) the presence of a positive autocorrelation can induce the researcher to reject the Null Hypothesis of the test t (that means that the variable in the analysis is not statistically significante on the dependent variable) when the correct would be to accept it. So, in the good results previously analyzed on, the influence of the unemployment in the inflation, can be mistaken.

To solve the problem of autocorrelation, we will use the interactive method of Cochrane-Orcutt described in Matos (1997, page 140). This method consists basically in transforming the variables of the model in the following way:

(7) $$X'_t = X_t - r\, X_{t-1}$$

X being any variable used in the model and

(8) $$r = \frac{\sum_{t=2}^{n} e_t\, e_{t-1}}{\sum_{t=2}^{n} e_t^2}$$

To avoid the loss of the first observation, we can do the following:

(9) $$X'_1 = X_1 \sqrt{1 - r^2}$$

Then, we should estimate the model again, using the transformed variables. The results obtained by the use of this technique appear in Appendix V.

Analysing the information of the Appendix V, we notice that when we solve the problem of autocorrelation, both models become statistically insignificant in the metropolitan areas of Porto Alegre, Recife, Rio de Janeiro and Salvador, remaining significant only in Brazil and in the metropolitan areas of Belo Horizonte and São Paulo.

However, in all the areas, the sign of the coefficients met the expectations, providing evidence of an inverse relationship between inflation and unemployment.

In the three areas that still stayed significant statistically, the adjustment degree fell drastically. In Brazil, in the Model (1 / UEMP), the model that had presented the best results in this level, the coefficient of determination - R^2 fell from 37.42% to 10.05%. In Belo Horizonte, R^2 fell from 42.70% to 22.74% in the same model. In São Paulo, considering the Model ln (INF + c), the fall was from 38.54% to 22.66%.

The reason for the low value of R^2 is due to the complexity of the inflationary phenomenon. We know that many other economic variables, besides the unemployment level, influence the level of prices of an economy. Variables as money, interest rate, public deficit,

exchange rate and the level of economical activity, among other, influence, significantly, the price level.

Though, in the models described above, the influence of all those variable in the price level, and consequently in the inflation, are not considered. Just the influence of the unemployment level is analyzed. Even if in some models have obtained favorable results in some areas, these results are not sufficiently strong to reach conclusions on the real impact of the unemployment about the inflation. In that sense, we should expand the model with the inclusion of the other economical variables that can provoke some influence in the general level of prices in the economy and in inflation. This analysis is the next topic.

3–THE EXPANDED MODEL

With the intention of increasing the general level of significance of the analyzed models, we should expand the simple model, given by the equation (1), including another varied explanatory in the model, such as: money, interest rate, public deficit, exchange rate and the level of economical activity. This analysis will be made considering only the general data of the Brazilian economy.

To include all those new variables in the model, we should, initially, substitute inflation for the level of price. Notice that inflation is just the variation of the level of prices

along the time. The level of prices to be used, will be formulated as a index of prices calculated on the inflation rate measured by INPC, used until the present moment, wherin June of 1994 is considered equal to 100.

With the inclusion of these variables, we should also consider the information relative to July of 1994, that had been excluded in the analysis of the previous topic.

This way, the expanded model becomes:

(10) $LP = f(UEMP, M, IR, PD, ER, LEA)$

where:

LP	=	level of price
UEMP	=	rates of unemployment
M	=	amount of money
IR	=	real interest rate
PD	=	public deficit
ER	=	exchange rate
NAC	=	level of economical activity

Considering a formula similar to the one used in the equation (2), the model will be given for:

(11) $LP = \rho\ UEMP^{\gamma 1}\ M^{\gamma 2}\ IR^{\gamma 3}\ PD^{\gamma 4}\ ER^{\gamma 5}\ LEA^{\gamma 6}$

ρ, $\gamma 1$, $\gamma 2$, $\gamma 3$, $\gamma 4$, $\gamma 5$ and $\gamma 6$ being the parameters estimated.

The lineal correspondent of the equation (7) is obtained by the use of logarithms on both sides of the equation, that it will result in:

$$(12) \qquad LN\,(LP) = LN\,(\rho) + \gamma 1\,\ln(UEMP) + \gamma 2\,\ln(M) + \gamma 3\,\ln(IR) + \gamma 4\,\ln(PD) + \gamma 5\,\ln(ER) + \gamma 6\,\ln(LEA)$$

The data of the new variables included in the model were obtained from the Brazilian Institute of Geography and Statistics - IBGE and in the Bulletin of the Central Bank of Brazil. They are presented in the Appendix I.

To use that model, we should define the series of data that will be used in the representation of the several variables involved.

In the case of the variable M (amount of money) we have 4 monetary agregates (M1 to M4) and we could still use the Monetary Base or the total reserves of the banking system. The choice of the correct data series that will should use in the model, will be defined considering which monetary agregade possesses the larger individual correlation with the price indexes, in a simple lineal model.

In a general way, for the Brazilian economy, the monetary agregades are defined as:

M1 = currency outside banks + demand deposits

M2 = M1 + public bonus

M3 = M2 + savings account deposits

M4 = M3 + private securits.

In the Appendix VI we found 4 graphs where we have the series of price index of the Brazilian economy and the 4 monetary agregades, considering the balances at the end of every month. We still traced a line of simple regression among the corresponding variables.

Through this graphic analysis, we noticed that the monetary agregade M4 possesses the largest correlation with the level of prices of the Brazilian economy - the coefficient of determination–R^2 arrives at the level of 89.23%. This way, the data series of M4 will be included in the model defined by the equation (12).

An increase in the quantity of money should promote an increase in the price indexes, so, the coefficient $\gamma 2$ should present a positive sign.

Concerning the interest rate, we could opt between the interest rate of the Public bonus, known as SELIC rate, or some interest rate of other monetary assets of the market. In

the last years, the SELIC rate has been one of the principal instruments of the economic policy used by the Brazilian government, so, we believed that it is not the most appropriate variable to use, and we opted for the real interest rate of the Certificates of Deposits.

It is believed that the real interest rate maintains an inverse relationship with the price indexes, therefore, the coefficient $\gamma 3$ should be negative.

The Public Deficit will be measured by the concept of Cash Balance, that considers in the total of the public revenues: fiscal revenues, revenues with the official operations of credit, the remuneration of the readiness close to the Bank of Brazil and revenues with Certificates of Privatization. On the side of the expense, they are considered the total expenses with Personnel and social responsibilities, the Transfers to states and municipalities, responsibilities of the public bonus, expenses with the official operations of credit and responsibilities of the internal and external debt.

As one can note, in several months, the total of Public Revenues exceeds the total of Expense, so to use the logarithms of the data, we should add a constant to the values of the Public Deficit as we did with inflation on the previos topic. Using values in the order of billion of Real, we assign the value 5 in this constant. Increases in the Public Deficit should promote increases in the prices, therefore, the coefficient $\gamma 4$ should be positive.

The Rate of Exchange used is the Commercial rate for purchase, in the end of the periods. The data was obtained from the Bulletin of the Central Bank. There is not any expectation with relationship to the sign of the coefficient $\gamma 5$, being able to be negative or positive.

Considering the Level of Economical Activity, we opted to use the Index of the Real Value of the Industrial Production, with the Average of 1985 = 100, calculated by IBGE through the Monthly Industrial Research. We should hope the coefficient $\gamma 6$ is positive, because increases in economical activity, in short run, should promote increases in prices.

In the Table 1, we presente the results obtained in this model.

Table 1

Results of Regression to ln(LP) – jul/94 to jun/99

Variable	Coefficient	T valor	t probability	Partial R^2
Constant	-0.506550	-1.124	26.6100%	2.330%
Ln UEMP	-0.064771	-2.232	2.9900%	8.590%
Ln M4	0.393000	13.185	0.0000%	76.640%
Ln IR	-0.049105	-3.190	0.2400%	16.110%
Ln PD + c	0.010206	0.757	45.2600%	1.070%
Ln ER	-0.033530	-0.914	36.4700%	1.550%
Ln LEA	0.073231	1.092	27.9900%	2.200%
R^2	96.5557%	Adjusted R^2	96.1658 %	
F(6, 53)	247.63	F probability	0.0000%	
DW	0.340			

In the Graph 3 below, we present the observed and fitted values of the logarithm of the price indexes.

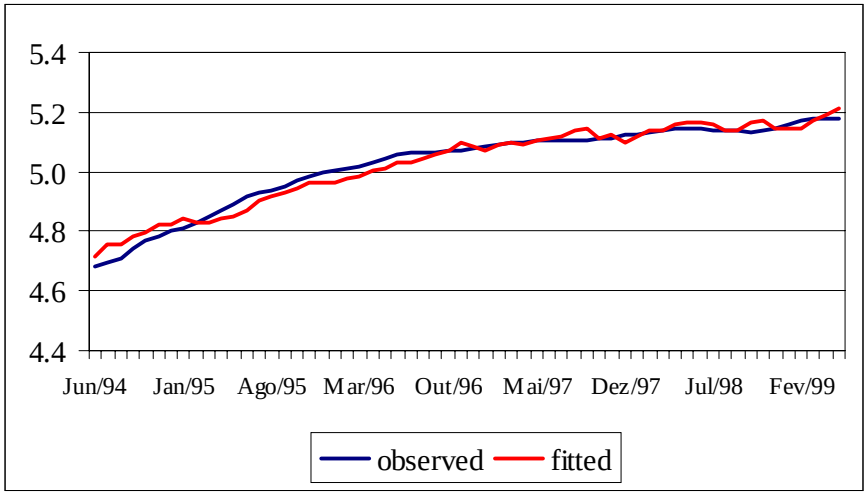
We observe that one can consider the model as statistically significant, as the probability associated to the statistics of the Test F being practically null and R^2 located in the strip of 96.56%.

Graph 3

Brazil–Logarithm of the level of price

Observed and Fitted values

Jul/94 - Jun/99



It can also be observed that the signs of the coefficients assist the hypothesis, and the coefficient relative to the Exchange Rate ($\gamma 5$) presents a negative sign. The variables Public Deficit (PD), Exchange Rate (ER) and Level of Economical Activity (LAE) are not significant, because the Null Hypothesis in the Test t cannot be rejected at the level of significance of 5%, once the probability associated with the statistics of this test are 45.26%, 36.47% and 27.99%, respectively.

It is known that the impacts of the Public Deficit on the Level of Prices depend significantly in the way that the additional deficit is financed. In the model, the financing of the public deficit is not considered. It is important to keep in mind that if the additional deficit is financed through the emission of public titles (mechanism of financing of the public deficit not considered inflationary) the new bonus will be included in the monetary agregade M4. So, the variable M4 will capture the effects of the Public Deficit on the level of prices.

Observing Appendix I data, we notice that the depreciation of the Real in January of 1999 provoked a increase in inflation in the subsequent months, especially in February and March. Though, the results obtained in the model point a negative correlation between inflation and exchange rate, in other words, increases of the exchange should reduce the level of prices and consequently the inflation. That result is plenty curious but this analysis is beyond the objectives proposed for this work.

The fact of the variable Level of Economical Activity is considered as not significant can be explained by the fact that a more economic activity results in high employment level and consequently a lower unemployment. Then, the influence of economic activity on inflation can be captured by the unemployment rate.

Considering that the results indicate that the impacts of the variables PD, ER and LEA on the price level are not statistically significant, we decided to remove those

variables of the model and to calculate the regressions again. In other words, we will estimate the parameters of the following model:

(12) $$LN(LP) = LN(\eta) + \pi 1\ LN(DES) + \pi 2\ LN(M) + \pi 3\ LN(IR)$$

Below we presented the results:

Table 2

Results of Regression to ln(LP) - Jul/94 to Jun/99

Variable	Coefficient	T valor	T probability	Partial R^2
Constant	-0.04750	-0.142	88.7600%	0.0400%
Ln UEMP	-0.07988	-2.921	0.5000%	13.2200%
Ln M4	0.37883	16.991	0.0000%	83.7500%
Ln IR	-0.06024	-4.486	0.0000%	26.4300%
R^2	96.3475%	Adjusted R^2	96.1518%	
F(6, 53)	492.40	F probability	0.0000%	
DW	0.383			

It can be observed that removimg the variables PD, ER and LEA didn't reduce the results of the model. Before R^2 was 96.56%, now this statistics reached 96.35% and the Adjusted R^2 fell from 96.17% to 96.15%.

A fact that gets attention in the results is the Partial R^2 of the variable M4, in the order of 83.75%, an extremely high level. An explanation for this fact elapses of the tendencial behavior that we observed in the price level. We believe that the variable M4 captures a great part of this tendency, for presenting a similar one.

We notice that the DW statistics shows the autocorrelation presence again. In a similar way to the procedure adopted in the previous topic, we will use the Interactive Method of Cochrane-Orcutt to solve the problem.

The table below presents the results obtained in the second interaction, when the problem of the autocorrelation was solved.

Table 3

Results of Regression to ln(LP) - Jul/94 to Jun/99

Second Interaction of the Method of Cochrane-Orcutt

Variable	Coefficient	T valor	T probability	Partial R^2
Constant	0.006729	5.2990	0.00%	33.40%
Ln DES	0.000065	0.0080	99.37%	0.00%
Ln M4	0.391470	174.4010	0.00%	99.82%
Ln IR	0.011943	3.1340	0.27%	14.93%
R^2	99.9584%	Adjusted R^2	99.9561%	
F(6, 53)	44806	F probability	0.00%	
DW	1.630			

As we can observe, the general level of adjustment of the model reached quite high levels, in the order of 99.96%. We also noticed that the variable M4 continues being the variable with largest explanatory power, because Partial R^2 for this variable reaches 99.82%. The real interest rate also appears as an important variable in explaining the fluctuations in price levels, although the coefficient relative to this variable presented a positive sign, contrary to our expectation and contrary to the values obtained in the Tables 1 and 2.

Though, the elimination of the autocorrelation resulted in the rejection of the statistical significance of the unemployment rate on the level of prices, in other words, the fluctuations in the unemployment rate seemingly don't affect the level of prices significantly and consequently inflation.

That conclusion means that the Phillips curve cannot be observed in the Brazilian economy nowadays. So, according to the calculations here presented, politics that increase the level of employment in Brazilian economy can be adopted, therefore the reduction of the unemployment won't necessarily mean irreversible inflationary pressures.

4. CONCLUSIONS

The objective of this work was to analyze the possible existence of an inverse relationship between inflation and unemployment in Brazilian economy, after the implementation of the Real Plan, in a relationship that is known in the economics as the Phillips curve.

The analysis included the data of Brazil as a whole and of the metropolitan areas of Belo Horizonte, Porto Alegre, Recife, Rio de Janeiro, Salvador and São Paulo.

We began to look at graphs of data of the variables (inflation and unemployment) where we can observe that while inflation follows a descending path, unemployment shows ascension. Though, that graphic observation is not enough for us to conclude an inverse functional relationship among the variables in analysis.

To arrive a conclusion of this nature, we should formulate a model in the which inflation is considered as dependent on the unemployment rate. As starting point, we began with the use of a simple model where inflation is considered as dependent only on the unemployment rate.

In the ambit of this model we decided to use two formulas. The first uses the logarithms of the data, in a similar way to the calculations made by Phillips himself; and another that uses, as an explanatory variable, the inverse of the unemployment rate.

The results in both models collaborate with the hypothesis of an inverse relationship between inflation and unemployment, but in general the value of the coefficient of determination (R^2) was very low and statistics DW points to the existence of autocorrelation. To solve the problem of the autocorrelation, we opted to use the Interactive Method of Cochrane-Orcutt.

The technique of Cochrane-Orcutt was capable fo solving the problem of autocorrelation but in the metropolitan areas of Porto Alegre, Recife, Rio de Janeiro and

Salvador, unemployment was considered as not significant in the explanation of the flotations of the inflation.

To solve the problem of the low values of R^2 we decided to expand the model with the inclusion of new explanatory variables, which are: amount of money, interest rate, public deficit, exchange rate and the level of economic activity, besides substituting the inflation rate for the level of prices.

The public deficit, the exchange rate and the level of economic activity were considered as not significant in the determination of the level of prices. In fact, the elimination of those variables doesn't reduce the quality of the obtained results, being R^2 in 96.35% but again the autocorrelation presence was verified.

Using the method of Cochrane-Orcutt to eliminate the autocorrelation, the result was a considerable improvement in R^2, that passed to 99.96%, but the unemployment rate was not considered significant in the determination of inflation.

The final result, the insignificance of the unemployment in the determination of the level of prices, collaborated with the low values of R^2 observed in the beginning of the analysis and even with the reject of the statistical significance of the model in 4 of the 7 analyzed samples, meaning that the Phillips curve cannot be observed nowadays in Brazilian economy.

In conclusion, those results mean that the implementation of politics that promote the reduction of the unemployment in Brazil won't provoke pressures sufficiently strong enough at the level of prices, and they can be fully compensated with corrective measures of economic policy.

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APPENDIX I

INFLATION - CONSUMER NATIONAL INDEX OF PRICES – INPC

BRAZIL AND METROPOLITANS AREAS
July of 1994 to June of 1999

DATE	BRASIL	BELO HORIZONTE	PORTO ALEGRE	RECIFE	RIO DE JANEIRO	SALVADOR	SÃO PAULO
07/94	7.75%	8.020%	6.090%	7.710%	8.400%	9.190%	7.500%
08/94	1.85%	2.040%	0.880%	1.090%	1.270%	1.360%	2.560%
09/94	1.40%	1.350%	1.230%	1.080%	0.550%	0.680%	2.090%
10/94	2.82%	2.450%	1.990%	3.140%	1.730%	3.300%	3.350%
11/94	2.96%	2.890%	1.790%	3.340%	2.940%	1.810%	3.450%
12/94	1.70%	2.110%	1.530%	1.620%	1.340%	2.110%	1.610%
01/95	1.44%	1.560%	1.510%	1.940%	1.290%	1.220%	1.420%
02/95	1.01%	0.700%	0.220%	1.230%	1.180%	0.860%	1.480%
03/95	1.62%	1.340%	2.090%	2.220%	1.060%	1.210%	1.800%
04/95	2.49%	2.240%	3.150%	2.330%	2.300%	2.080%	2.980%
05/95	2.10%	2.960%	2.350%	2.260%	1.830%	2.210%	1.700%
06/95	2.18%	1.230%	2.780%	1.280%	3.190%	3.630%	2.170%
07/95	2.46%	1.440%	1.930%	3.200%	1.530%	2.640%	3.630%
08/95	1.02%	1.690%	0.590%	1.090%	0.860%	0.750%	0.890%
09/95	1.17%	1.740%	0.790%	0.260%	1.190%	0.560%	1.180%
10/95	1.40%	1.720%	1.360%	0.810%	1.210%	0.930%	1.760%
11/95	1.51%	1.640%	1.260%	1.420%	1.590%	1.290%	1.980%
12/95	1.65%	1.650%	1.120%	1.700%	2.860%	1.180%	1.850%
01/96	1.46%	1.630%	0.530%	1.830%	2.380%	1.240%	1.640%
02/96	0.71%	1.360%	0.270%	0.340%	0.690%	1.120%	0.660%
03/96	0.29%	0.680%	0.510%	0.060%	0.230%	0.030%	0.410%
04/96	0.93%	0.870%	1.090%	0.990%	0.570%	0.360%	1.670%
05/96	1.28%	1.210%	1.340%	1.230%	1.430%	1.020%	1.250%
06/96	1.33%	1.710%	1.180%	0.550%	1.160%	1.210%	2.010%
07/96	1.20%	1.090%	0.630%	1.390%	1.220%	1.580%	1.670%
08/96	0.50%	0.210%	0.320%	0.820%	0.080%	0.180%	0.520%
09/96	0.02%	-0.130%	0.410%	-0.300%	-0.160%	-0.490%	0.280%
10/96	0.38%	0.630%	0.370%	0.320%	-0.030%	0.170%	0.720%
11/96	0.34%	0.140%	0.140%	0.190%	0.480%	0.310%	0.540%
12/96	0.33%	0.290%	0.060%	0.890%	0.790%	0.030%	0.380%
01/97	0.81%	1.060%	0.410%	0.180%	1.220%	0.890%	1.130%
02/97	0.45%	1.070%	0.150%	0.350%	0.480%	0.210%	0.760%
03/97	0.68%	0.710%	1.020%	0.260%	0.940%	0.420%	0.840%
04/97	0.60%	0.680%	0.900%	-0.160%	0.550%	0.240%	0.780%
05/97	0.11%	-0.050%	0.300%	0.020%	0.010%	0.070%	0.230%
06/97	0.35%	0.340%	0.380%	-0.120%	0.550%	-0.280%	1.000%
07/97	0.18%	-0.080%	0.230%	-0.370%	0.460%	0.390%	0.250%
08/97	-0.03%	-0.230%	0.300%	-0.140%	-0.080%	0.290%	-0.100%
09/97	0.10%	-0.090%	0.290%	0.000%	0.290%	-0.210%	0.120%
10/97	0.29%	0.520%	0.390%	0.070%	0.630%	-0.040%	0.240%
11/97	0.15%	0.280%	0.200%	-0.090%	0.380%	0.180%	0.000%
12/97	0.57%	0.580%	0.460%	2.030%	0.690%	0.250%	0.330%

continue

INFLATION - CONSUMER NATIONAL INDEX OF PRICES – INPC

BRAZIL AND METROPOLITANS AREAS
July of 1994 to June of 1999

conclusion

DATE	BRASIL	BELO HORIZONTE	PORTO ALEGRE	RECIFE	RIO DE JANEIRO	SALVADOR	SÃO PAULO
01/98	0.85%	1.350%	0.290%	1.380%	1.720%	0.660%	0.450%
02/98	0.54%	0.550%	-0.030%	0.590%	0.320%	0.650%	0.750%
03/98	0.49%	0.490%	0.770%	1.030%	0.750%	0.350%	0.220%
04/98	0.45%	0.430%	0.660%	0.830%	0.680%	0.540%	0.260%
05/98	0.72%	0.320%	0.590%	1.460%	0.000%	1.740%	0.700%
06/98	0.15%	0.190%	0.260%	0.040%	0.330%	0.750%	-0.150%
07/98	-0.28%	-0.600%	0.790%	-1.090%	-0.080%	-0.380%	-0.300%
08/98	-0.49%	-0.600%	0.070%	-0.500%	-0.630%	-0.960%	-0.330%
09/98	-0.31%	-0.390%	-0.330%	-0.590%	-0.010%	-1.000%	-0.250%
10/98	0.11%	0.140%	-0.150%	0.160%	-0.210%	0.470%	0.080%
11/98	-0.18%	0.040%	-0.270%	-0.300%	0.100%	-0.250%	-0.340%
12/98	0.42%	0.770%	0.100%	0.600%	0.880%	-0.220%	0.200%
01/99	0.65%	0.330%	0.500%	0.650%	0.150%	0.720%	0.850%
02/99	1.29%	1.550%	1.690%	1.690%	1.110%	0.780%	1.220%
03/99	1.28%	0.960%	2.580%	0.800%	1.670%	1.540%	1.110%
04/99	0.47%	0.220%	1.160%	0.510%	0.740%	0.390%	0.330%
05/99	0.05%	0.080%	0.300%	-0.370%	0.040%	0.040%	-0.010%
06/99	0.07%	0.200%	0.130%	0.590%	0.040%	-0.100%	0.020%

Source: IBGE, SIDRA

OPEN UNEMPLOYMENT RATES

BRAZIL AND METROPOLITANS AREAS

July of 1994 to June of 1999

DATE	BRASIL	BELO HORIZONTE	PORTO ALEGRE	RECIFE	RIO DE JANEIRO	SALVADOR	SÃO PAULO
07/94	5.79%	5.667%	4.579%	7.152%	4.896%	7.743%	6.072%
08/94	5.85%	5.351%	4.805%	7.306%	5.010%	7.224%	6.220%
09/94	5.31%	4.204%	4.425%	6.781%	3.891%	7.194%	6.052%
10/94	4.85%	3.697%	3.933%	5.943%	4.270%	6.826%	5.179%
11/94	4.29%	3.371%	3.619%	5.629%	3.682%	6.677%	4.436%
12/94	3.78%	3.375%	3.154%	4.726%	2.940%	5.962%	4.039%
01/95	4.68%	3.951%	3.467%	6.362%	3.600%	6.258%	5.274%
02/95	4.49%	4.026%	3.945%	5.893%	3.699%	6.188%	4.715%
03/95	4.78%	4.576%	3.529%	5.641%	3.579%	7.098%	5.282%
04/95	4.68%	4.111%	4.379%	6.171%	3.663%	7.323%	4.833%
05/95	4.71%	3.929%	4.647%	6.485%	3.444%	7.333%	4.968%
06/95	4.89%	4.000%	5.107%	6.192%	3.524%	7.146%	5.346%
07/95	5.19%	4.428%	5.223%	6.690%	3.712%	7.097%	5.729%
08/95	5.22%	4.211%	5.539%	6.550%	3.919%	7.151%	5.665%
09/95	5.47%	4.077%	5.501%	5.573%	3.687%	7.462%	6.535%
10/95	5.36%	4.528%	5.396%	5.083%	3.867%	6.814%	6.242%
11/95	5.20%	4.174%	5.182%	4.871%	4.139%	6.492%	5.939%
12/95	4.95%	3.847%	4.783%	4.863%	3.519%	6.747%	5.826%
01/96	5.57%	4.601%	5.759%	5.256%	3.841%	7.237%	6.544%
02/96	6.22%	4.891%	6.490%	6.789%	3.743%	7.231%	7.668%
03/96	6.73%	5.696%	6.878%	7.700%	4.649%	6.529%	8.060%
04/96	6.48%	5.044%	6.958%	6.611%	4.669%	7.187%	7.628%
05/96	6.35%	5.577%	6.687%	6.990%	4.180%	7.377%	7.429%
06/96	6.28%	5.669%	6.504%	6.188%	4.008%	6.976%	7.597%
07/96	5.97%	5.622%	6.687%	6.296%	4.197%	6.811%	6.759%
08/96	5.99%	5.266%	6.482%	8.146%	3.873%	9.251%	6.381%
09/96	5.63%	4.676%	6.323%	7.064%	3.739%	7.883%	6.225%
10/96	5.41%	5.159%	6.201%	5.534%	3.556%	6.868%	6.146%
11/96	4.87%	4.020%	5.501%	4.201%	3.503%	6.720%	5.555%
12/96	4.25%	4.618%	4.580%	3.434%	3.267%	5.655%	4.557%
01/97	5.50%	5.403%	5.534%	4.752%	3.914%	6.876%	6.349%
02/97	5.95%	4.476%	6.032%	6.218%	3.794%	7.388%	7.286%
03/97	6.35%	5.385%	6.679%	5.745%	4.150%	7.874%	7.651%
04/97	6.14%	5.442%	6.168%	4.937%	4.038%	7.462%	7.518%
05/97	6.39%	6.638%	6.242%	6.951%	4.014%	8.527%	7.309%
06/97	6.81%	7.047%	6.538%	8.362%	3.957%	8.284%	7.973%
07/97	6.53%	6.549%	5.569%	7.127%	3.940%	8.811%	7.734%
08/97	6.42%	6.336%	6.526%	7.959%	3.888%	9.640%	7.078%
09/97	6.14%	6.000%	5.768%	7.272%	3.862%	8.378%	7.029%
10/97	6.22%	5.813%	5.595%	6.242%	4.379%	8.162%	7.196%
11/97	5.81%	4.879%	5.398%	6.360%	3.997%	8.530%	6.650%
12/97	5.54%	5.632%	4.675%	5.579%	4.192%	8.395%	5.989%

continue

OPEN UNEMPLOYMENT RATES

BRAZIL AND METROPOLITANS AREAS

July of 1994 to June of 1999

conclusion

DATA	BRASIL	BELO HORIZONTE	PORTO ALEGRE	RECIFE	RIO DE JANEIRO	SALVADOR	SÃO PAULO
01/98	7.95%	8.422%	6.746%	9.270%	5.277%	9.580%	9.161%
02/98	8.41%	9.771%	7.924%	6.967%	5.639%	9.880%	9.737%
03/98	8.93%	9.152%	8.699%	9.456%	6.862%	10.640%	9.768%
04/98	8.90%	8.330%	9.051%	11.019%	6.946%	10.452%	9.510%
05/98	8.89%	8.097%	8.598%	10.716%	7.040%	9.796%	9.765%
06/98	8.71%	8.648%	7.975%	10.597%	6.699%	10.462%	9.431%
07/98	8.75%	8.395%	8.588%	10.497%	6.247%	10.501%	9.771%
08/98	8.48%	7.723%	8.396%	10.797%	6.187%	9.666%	9.432%
09/98	8.25%	7.686%	8.156%	10.507%	5.555%	9.861%	9.312%
10/98	8.03%	7.339%	7.441%	9.730%	5.022%	9.364%	9.562%
11/98	7.77%	8.109%	7.180%	9.162%	5.136%	8.470%	8.951%
12/98	7.14%	6.834%	6.660%	7.938%	4.404%	8.603%	8.456%
01/99	8.44%	9.493%	6.468%	8.308%	5.679%	9.108%	10.070%
02/99	8.47%	9.291%	8.443%	8.644%	5.553%	10.398%	9.544%
03/99	8.95%	9.795%	8.721%	9.399%	6.467%	10.604%	9.830%
04/99	8.79%	9.269%	8.037%	9.636%	6.317%	10.933%	9.692%
05/99	8.38%	8.490%	7.551%	9.662%	5.758%	10.796%	9.366%
06/99	8.40%	8.465%	7.235%	8.851%	6.030%	10.742%	9.499%

Source: IBGE, SIDRA

MONETARY AGREGATES

BRAZIL

July of 1994 to June of 1999

billion of Reais

DATE	M1	M2	M3	M4
07/94	10.687	70.093	110.205	152.003
08/94	12.902	71.623	112.774	158.242
09/94	15.844	69.882	111.055	158.760
10/94	16.735	70.874	112.927	165.851
11/94	17.825	70.727	113.619	170.168
12/94	22.773	72.538	117.483	175.136
01/95	18.217	68.410	114.014	181.743
02/95	19.886	71.911	118.064	187.914
03/95	17.082	68.032	115.191	188.176
04/95	17.142	68.882	118.479	190.603
05/95	16.078	69.421	122.249	192.703
06/95	17.622	73.929	129.394	199.666
07/95	17.879	81.778	139.134	211.879
08/95	17.776	88.888	147.105	223.100
09/95	19.069	91.834	150.238	229.575
10/95	19.755	93.213	152.362	233.746
11/95	21.912	100.649	160.389	241.794
12/95	28.493	107.157	170.792	250.616
01/96	23.482	108.711	172.944	254.215
02/96	23.095	114.161	178.914	260.531
03/96	22.985	118.272	183.029	265.330
04/96	23.276	122.995	187.669	268.887
05/96	22.762	130.054	194.285	275.922
06/96	23.513	134.122	198.200	280.187
07/96	23.107	140.463	204.317	285.981
08/96	23.477	144.362	208.116	290.265
09/96	25.143	148.837	213.101	297.387
10/96	23.171	150.274	215.491	303.175
11/96	24.383	157.201	224.189	312.351
12/96	29.807	166.687	238.712	322.140
01/97	33.609	173.956	250.376	326.500
02/97	36.309	178.242	256.295	331.473
03/97	37.135	180.896	260.260	336.382
04/97	35.991	184.012	264.261	339.873
05/97	36.544	185.466	266.544	343.370
06/97	37.482	187.692	269.940	351.302
07/97	35.643	192.760	275.692	357.862
08/97	37.903	194.714	279.049	363.346
09/97	39.240	199.579	285.462	373.821
10/97	39.472	200.180	287.547	380.365
11/97	40.255	195.780	288.397	383.022
12/97	47.728	202.798	299.860	392.754

continue

MONETARY AGREGATES

BRAZIL

July of 1994 to June of 1999

billion of Reais

conclusion

DATE	M1	M2	M3	M4
01/98	42.620	200.508	299.920	396.423
02/98	42.821	207.151	305.023	405.177
03/98	41.922	216.853	314.031	416.894
04/98	42.275	221.464	318.559	418.882
05/98	42.502	226.334	323.720	425.201
06/98	44.060	230.604	329.497	431.146
07/98	43.982	237.659	337.935	438.719
08/98	44.308	238.244	339.719	439.303
09/98	43.934	224.649	327.710	423.481
10/98	43.031	227.503	332.098	428.447
11/98	46.117	241.097	347.302	443.254
12/98	50.707	252.023	359.445	453.348
01/99	49.957	261.576	369.854	463.487
02/99	47.817	263.210	373.516	472.119
03/99	45.497	265.575	376.679	477.487
04/99	44.076	268.809	380.296	479.152
05/99	44.056	274.595	387.033	485.720
06/99	45.901	287.015	398.989	498.867

Source: Boletim do Banco Cetral

MACROECONOMIC VARIABLES

BRAZIL

July of 1994 to June of 1999

DATE	Real Interest Rates of the Dertificates of Deposits % a.a.	Public Revenues R$ billion	Public Expendeture R$ billion	Exchange Rate R$ / US$	Index of Ral Value of Industry Production Mean of 1985 = 100
07/94	70.58%	5.033	4.803	0.938	68.93
08/94	49.44%	5.483	5.129	0.887	77.64
09/94	57.32%	5.620	5.109	0.851	77.58
10/94	53.50%	5.987	5.572	0.844	80.01
11/94	61.00%	6.248	5.813	0.843	81.38
12/94	48.51%	8.016	7.401	0.844	77.94
01/95	50.82%	5.637	5.238	0.840	75.12
02/95	43.27%	6.666	8.370	0.850	71.85
03/95	68.19%	7.177	6.915	0.894	85.67
04/95	61.93%	6.368	5.934	0.911	77.44
05/95	58.29%	7.114	6.983	0.904	81.05
06/95	57.86%	8.693	8.618	0.920	79.21
07/95	55.26%	7.209	7.459	0.934	77.38
08/95	49.07%	7.045	7.037	0.949	83.45
09/95	42.42%	6.881	6.821	0.952	79.83
10/95	38.27%	7.435	8.840	0.961	83.62
11/95	38.32%	7.023	6.942	0.966	82.15
12/95	32.92%	9.046	11.099	0.972	76.22
01/96	33.33%	6.533	9.369	0.978	74.11
02/96	30.62%	7.077	7.854	0.983	73.36
03/96	28.13%	6.647	8.342	0.987	79.24
04/96	24.95%	10.964	9.959	0.992	78.97
05/96	25.27%	8.331	7.689	0.998	83.99
06/96	24.09%	7.395	9.411	1.004	79.36
07/96	22.54%	7.945	7.401	1.010	87.26
08/96	24.88%	7.657	7.226	1.016	87.12
09/96	23.78%	7.340	7.747	1.021	85.69
10/96	23.79%	8.347	9.354	1.027	87.67
11/96	23.82%	7.692	9.132	1.032	83.55
12/96	21.03%	11.204	12.698	1.039	77.66
01/97	22.14%	8.118	9.780	1.045	77.28
02/97	24.12%	8.438	8.033	1.051	74.29
03/97	19.86%	8.547	9.701	1.059	79.07
04/97	20.09%	10.955	10.987	1.063	81.81
05/97	21.45%	10.140	9.157	1.071	81.86
06/97	20.49%	8.401	9.690	1.076	82.45
07/97	20.70%	9.888	9.932	1.083	85.54
08/97	21.20%	10.095	8.863	1.091	86.11
09/97	20.20%	8.844	10.695	1.096	87.86
10/97	21.75%	10.156	11.128	1.102	90.76
11/97	40.14%	9.313	9.702	1.109	81.34
12/97	34.68%	13.139	14.012	1.116	75.29

Continue

MACROECONOMIC VARIABLES

BRAZIL

July of 1994 to June of 1999

conclusion

DATE	Real Interest Rates of the Dertificates of Deposits % a.a.	Public Revenues R$ billion	Public Expendeture R$ billion	Exchange Rate R$ / US$	Index of Ral Value of Industry Production Mean of 1985 = 100
01/98	35.74%	11.668	11.792	1.123	73.27
02/98	26.89%	9.883	10.532	1.130	71.94
03/98	27.91%	11.178	13.222	1.137	80.95
04/98	20.63%	16.550	13.440	1.144	78.74
05/98	20.71%	10.569	11.394	1.150	81.84
06/98	21.35%	8.979	11.724	1.156	83.24
07/98	22.37%	10.568	10.516	1.163	82.76
08/98	20.60%	16.345	13.069	1.176	82.77
09/98	31.81%	10.246	11.949	1.185	82.64
10/98	38.13%	10.476	12.509	1.192	82.21
11/98	30.49%	9.531	11.828	1.200	79.79
12/98	30.71%	13.098	16.344	1.208	72.53
01/99	32.82%	10.038	11.817	1.982	69.48
02/99	34.56%	11.475	13.173	2.064	68.83
03/99	43.64%	13.793	14.587	1.721	77.86
04/99	27.29%	14.453	14.312	1.660	73.82
05/99	24.22%	11.315	13.402	1.723	77.13
06/99	20.53%	10.607	13.121	1.769	78.45

Source: Central Banl and IBGE

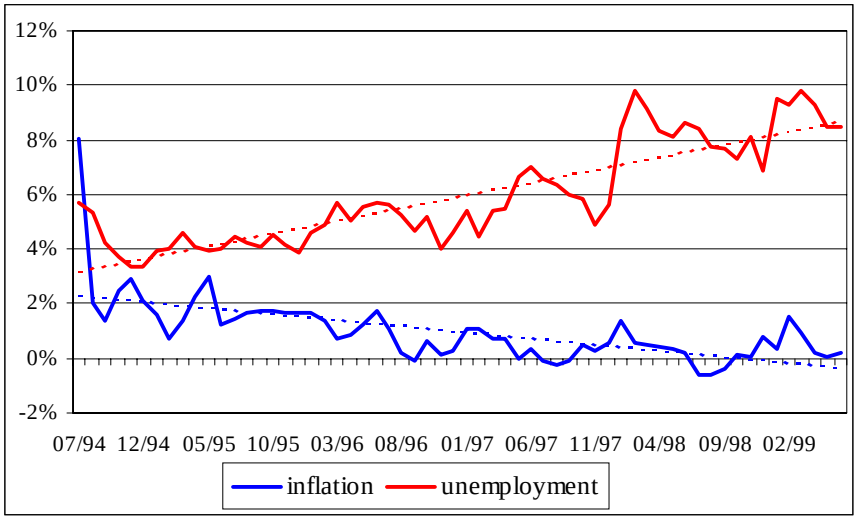
APPENDIX II

INFLATION AND UNEMPLOYMENT

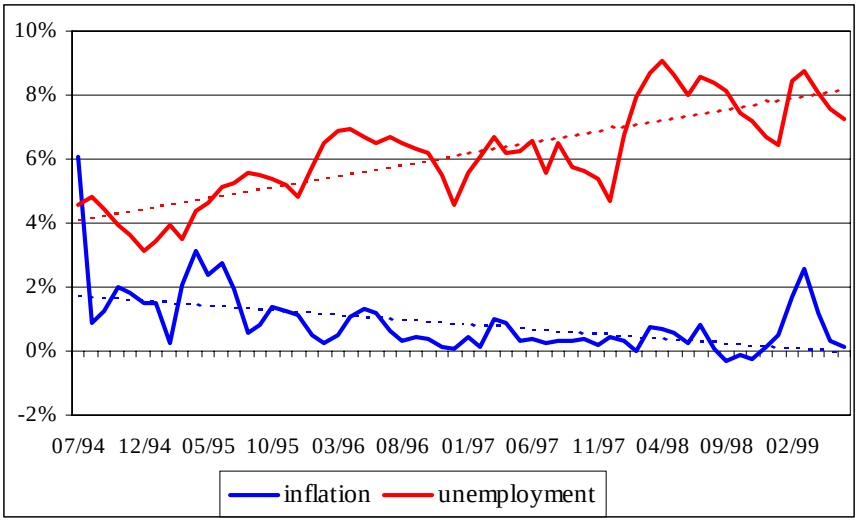
MAJOR METROPOLITANS AREAS OF BRAZIL

July of 1994 to June of 1999

Belo Horizonte



Porto Alegre

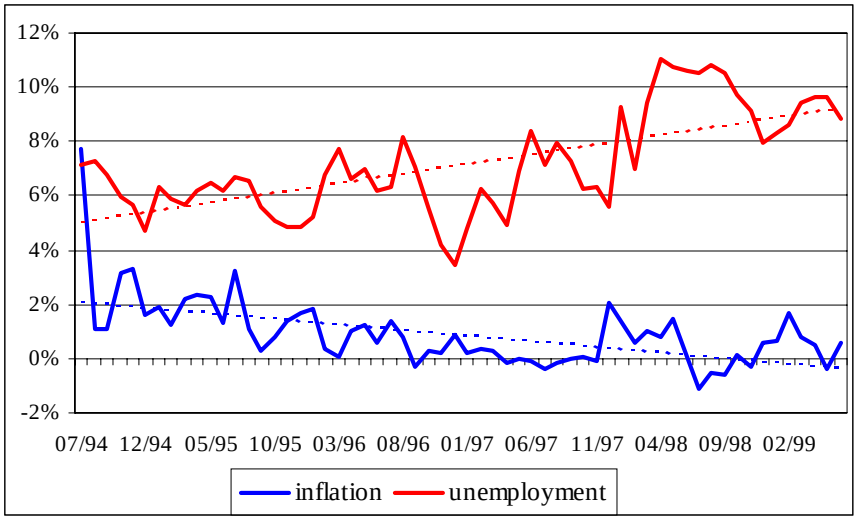


INFLATION AND UNEMPLOYMENT

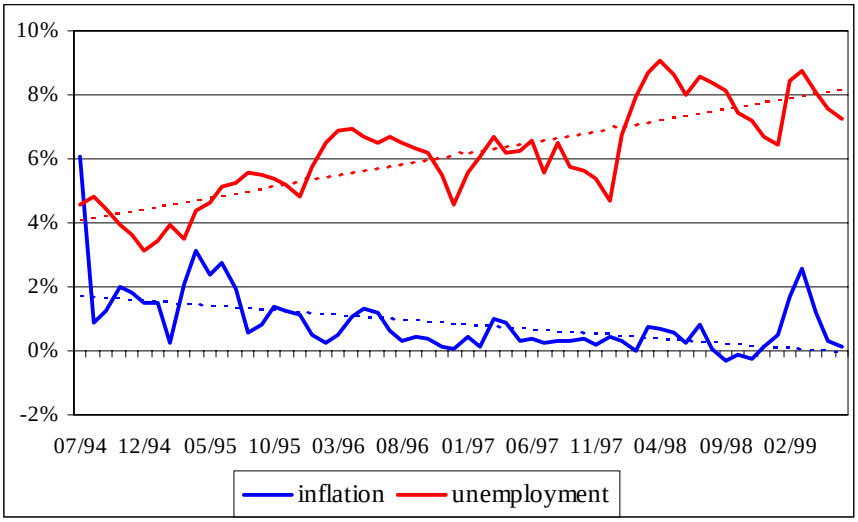
MAJOR METROPOLITANS AREAS OF BRAZIL

July of 1994 to June of 1999

Recife



Rio de Janeiro

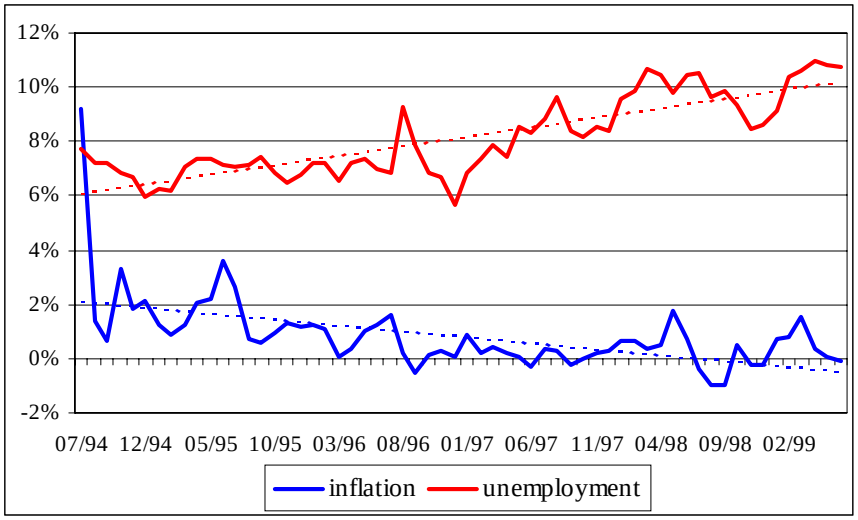


INFLATION AND UNEMPLOYMENT

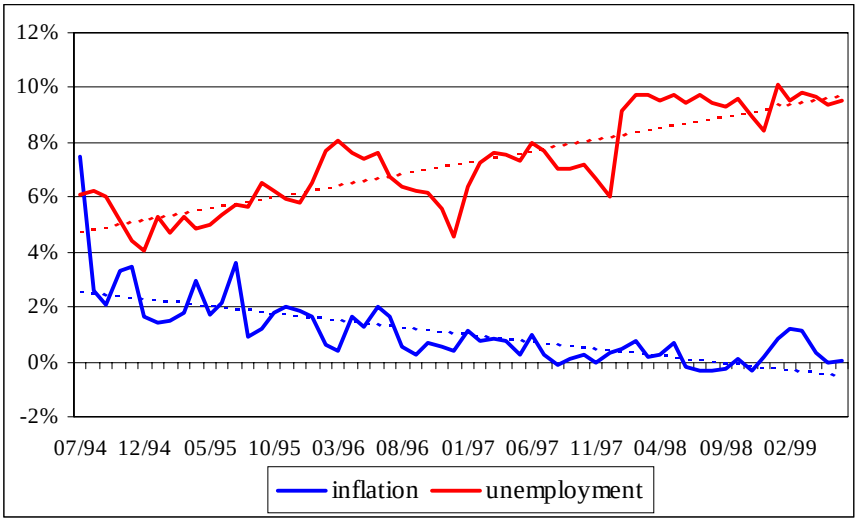
MAJOR METROPOLITANS AREAS OF BRAZIL

July of 1994 to June of 1999

Salvador



São Paulo



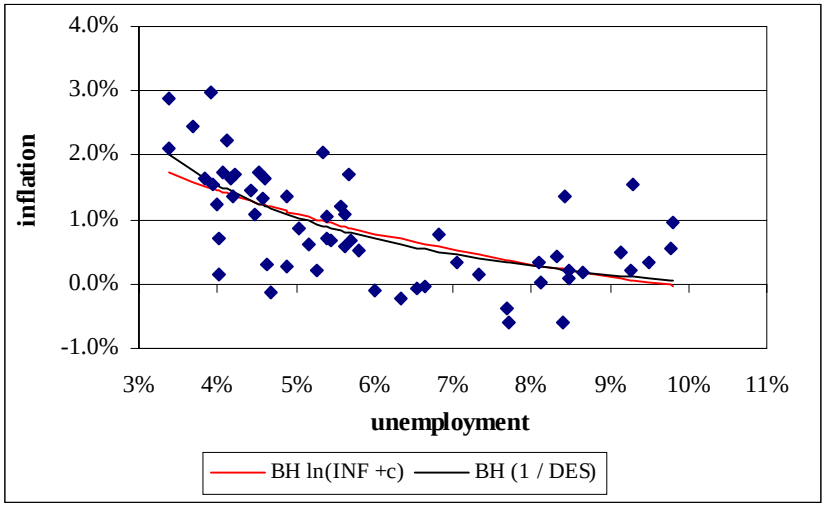
APPENDIX III

INFLATION X UNEMPLOYMENT

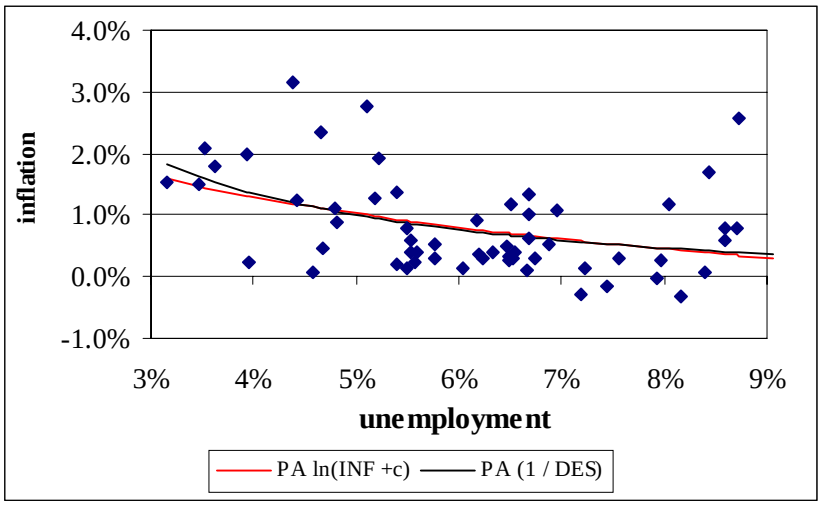
MAJOR METROPOLITANS AREAS OF BRAZIL

August of 1994 to June of 1999

Belo Horizonte



Porto Alegre

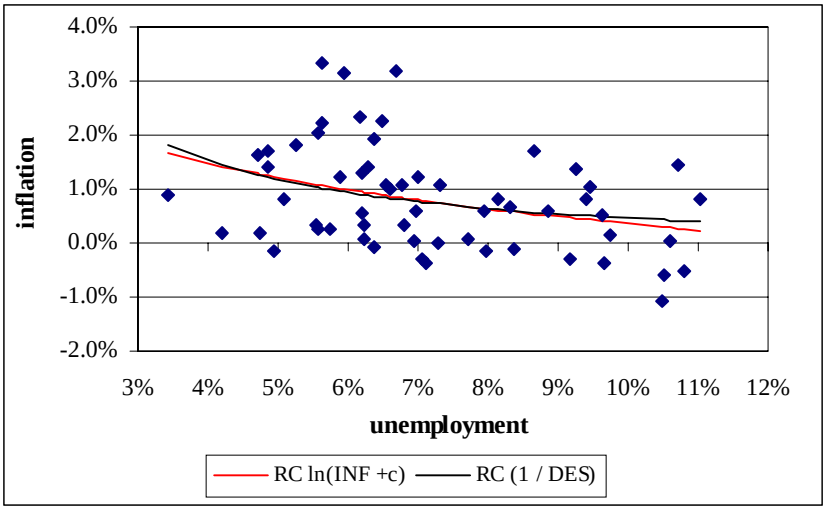


INFLATION X UNEMPLOYMENT

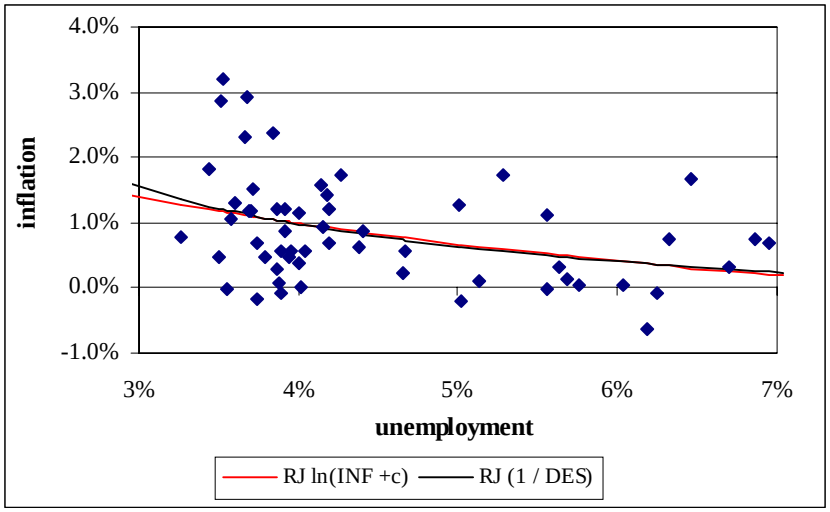
MAJOR METROPOLITANS AREAS OF BRAZIL

August of 1994 to June of 1999

Recife



Rio de Janeiro

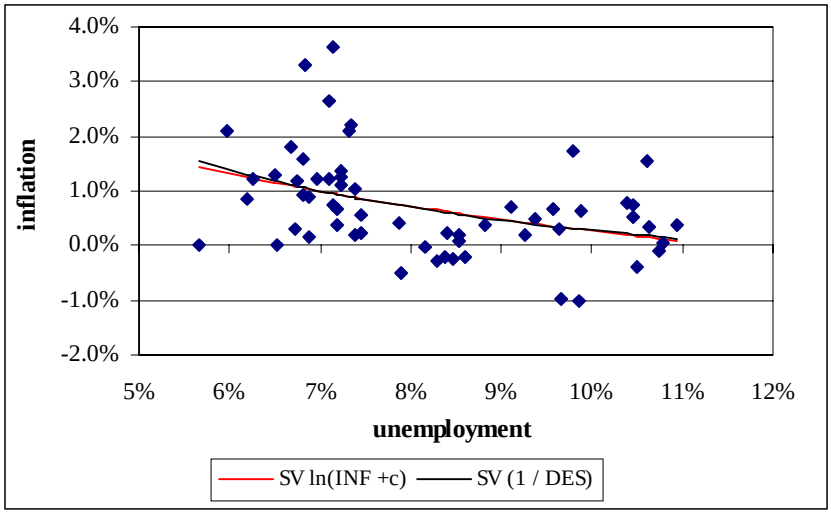


INFLATION X UNEMPLOYMENT

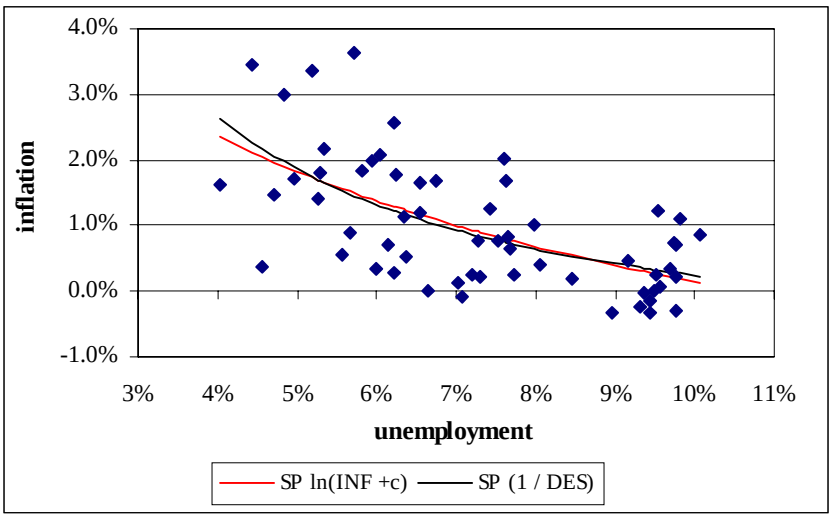
MAJOR METROPOLITANS AREAS OF BRAZIL

August of 1994 to June of 1999

Salvador



São Paulo



APPENDIX IV

Results of Regression

MODEL: ln(INF + c) = *f*(ln(DES*)*) – Aug/94 to Jun/99

Statistic \ Region	Brasil	Belo Horizonte	Porto Alegre	Recife	Rio de Janeiro	Salvador	São Paulo
Constant							
Coefficient - α'	-0.047632	-0.038441	-0.026036	-0.024460	-0.035847	-0.044172	-0.054173
t value	-4.747248	-4.828620	-2.538434	-2.024359	-2.577373	-2.836059	-5.045739
t probabillity	0.0014%	0.0011%	1.3891%	4.7628%	1.2567%	0.6312%	0.0005%
Partial R^2	28.3300%	29.0300%	10.1600%	6.7100%	10.4400%	12.3700%	30.8800%
ln(UEMP)							
Coefficient - β	-0.020221	-0.016440	-0.012088	-0.012178	-0.014195	-0.020352	-0.024125
t value	-5.606043	-5.945074	-3.331868	-2.701808	-3.195484	-3.304665	-5.978650
t probabillity	0.0001%	0.0000%	0.1519%	0.9068%	0.2277%	0.1648%	0.0000%
Partial R^2	35.5400%	38.2700%	16.3000%	11.3500%	15.1900%	16.0800%	38.5400%
R^2	35.5406%	38.2742%	16.3012%	11.3527%	15.1926%	16.0787%	38.5407%
Adjusted R^2	34.4097%	37.1913%	14.8328%	9.7975%	13.7048%	14.6064%	37.4624%
F(1,57)	31.4277	35.3439	11.1013	7.2998	10.2111	10.9208	35.7443
F probabillity	0.0001%	0.0000%	0.1519%	0.9068%	0.2277%	0.1648%	0.0000%
DW	0.670	0.860	0.768	0.884	1.030	0.887	1.060

Results of Regression

MODEL: INF = *f*(1 / DES) – Aug/94 to Jun/99

Statistic \ Region	Brasil	Belo Horizonte	Porto Alegre	Recife	Rio de Janeiro	Salvador	São Paulo
Constant							
Coefficient - θ	-0.012708	-0.009843	-0.004154	-0.002489	-0.007381	-0.013934	-0.013833
t value	-3.412555	-3.388739	-1.187628	-0.531878	-1.493926	-2.156202	-3.359364
t probabillity	0.1190%	0.1279%	23.9906%	59.6878%	14.0711%	3.5301%	0.1398%
Partial R^2	16.9600%	16.7700%	2.4100%	0.4900%	3.7700%	7.5400%	16.5300%
1 / UEMP							
Coefficient - ϕ	0.001291	0.001011	0.000707	0.000710	0.000686	0.001673	0.001623
t value	5.838757	6.651014	3.619796	2.344258	3.291433	3.324933	5.927515
t probabillity	0.0000%	0.0000%	0.0627%	2.2573%	0.1714%	0.1551%	0.0000%
Partial R^2	37.4300%	43.7000%	18.6900%	8.7900%	15.9700%	16.2400%	38.1300%
R^2	37.4253%	43.6959%	18.6910%	8.7935%	15.9708%	16.2444%	38.1346%
Adjusted R^2	36.3275%	42.7081%	17.2645%	7.1934%	14.4966%	14.7750%	37.0492%
F(1,57)	34.0911	44.2360	13.1029	5.4955	10.8335	11.0552	35.1354
F probabillity	0.0000%	0.0000%	0.0627%	2.2573%	0.1714%	0.1551%	0.0000%
DW	0.732	0.975	0.774	0.857	1.070	0.902	1.100

ANEXO V

Results of Regression: Cochrane-Orcutt Interative Method

MODEL: ln(INF + c) = *f*(ln(DES*)*) – Aug/94 to Jun/99

Statistics \ Region	Brasil	Belo Horizonte	Porto Alegre	Recife	Rio de Janeiro	Salvador	São Paulo
Interations	2	2	2	2	1	1	1
Constant e							
Coefficient - α'	-0.004685	-0.008835	-0.000214	-0.005929	-0.008834	-0.008308	-0.019815
t value	-1.819751	-2.528451	-0.074696	-1.018744	-1.182781	-1.373686	-3.185495
t probabillity	7.4050%	1.4251%	94.0718%	31.2629%	24.1806%	17.4918%	0.2344%
Partial R^2							
ln(UEMP)							
Coefficient - β	-0.008513	-0.010552	-0.003011	-0.007789	-0.008043	-0.010072	-0.016964
t value	-2.842562	-3.573988	-0.957046	-1.677017	-1.784051	-1.915500	-4.086538
t probabillity	0.6200%	0.0724%	34.2586%	9.9016%	7.9738%	6.0450%	0.0139%
Partial R^2							
R^2	12.4157%	18.3070%	1.5815%	4.7020%	5.2886%	6.0478%	22.6592%
Adjusted R^2	10.8791%	16.8738%	-0.1451%	3.0301%	3.6270%	4.3995%	21.3024%
F(1,57)	8.0802	12.7734	0.9159	2.8124	3.1828	3.6691	16.6998
F probabillity	0.6200%	0.0724%	34.2586%	9.9016%	7.9738%	6.0450%	0.0139%
DW	1.940	1.960	1.930	2.000	1.870	1.870	1.910

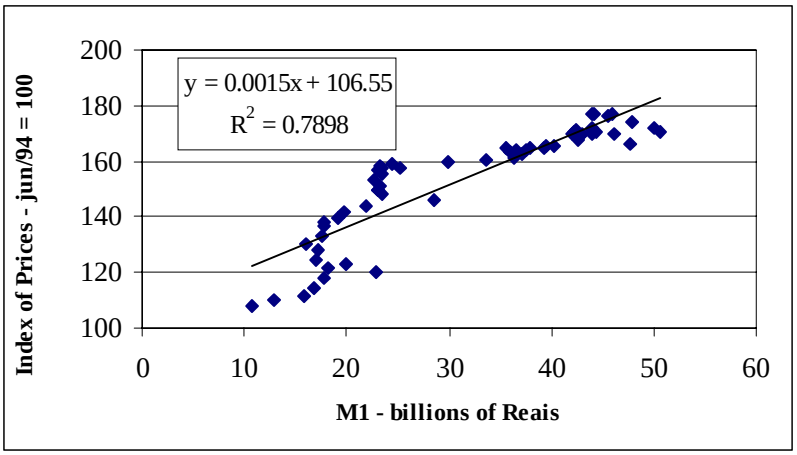
Results of Regression: Cochrane-Orcutt Interative Method

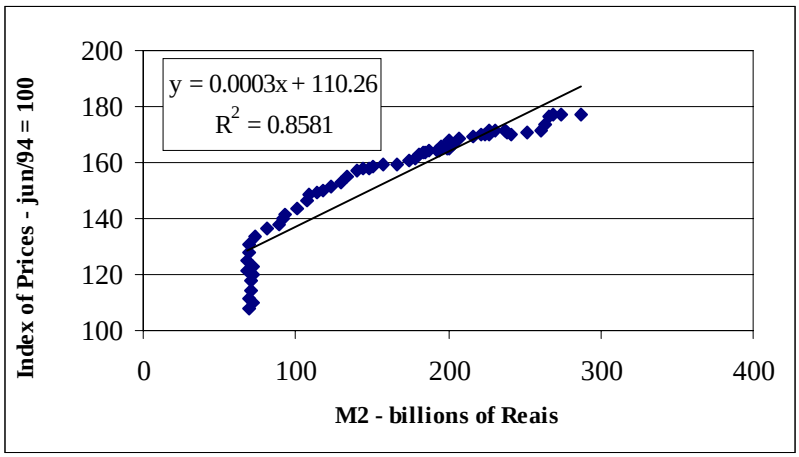
MODEL: INF = *f*(1 / DES) – Aug/94 to Jun/99

Statistics \ Region	Brasil	Belo Horizonte	Porto Alegre	Recife	Rio de Janeiro	Salvador	São Paulo
Interations	2	1	2	2	1	1	1
Constant							
Coefficient - θ	-0.001370	-0.003566	0.000517	-0.000044	-0.001248	-0.003604	-0.005224
t value	-0.767941	-1.715402	0.314762	-0.016807	-0.348454	-1.000682	-1.720386
t probabillity	44.5692%	9.1703%	75.4091%	98.6649%	72.8783%	32.1210%	9.0788%
Partial R^2							
1 / UEMP							
Coefficient - ϕ	0.000743	0.000843	0.000363	0.000547	0.000462	0.001182	0.001283
t value	2.523830	4.096160	1.344247	1.538938	1.683114	1.962396	3.738627
t probabillity	1.4420%	0.0134%	18.4194%	12.9353%	9.7823%	5.4605%	0.0431%
Partial R^2							
R^2	10.0517%	22.7417%	3.0728%	3.9892%	4.7346%	6.3286%	19.6927%
Adjusted R^2	8.4736%	21.3863%	1.3723%	2.3048%	3.0633%	4.6852%	18.2838%
F(1,57)	6.3697	16.7785	1.8070	2.3683	2.8329	3.8510	13.9773
F probabillity	1.4420%	0.0134%	18.4194%	12.9353%	9.7823%	5.4605%	0.0431%
DW	1.930	1.840	1.940	1.990	1.870	1.900	1.890

APPENDIX VI

INDEX OF PRICES X MONETARY AGREGADED





INDEX OF PRICES X MONETARY AGREGADED