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Inflation and political instability in eight Latin American countries 1946-83

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Abstract

The path of consumer price rises is compared with data for the incidence of political change and the frequency of military regimes from 1946 to 1984 for the following countries: Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay and Venezuela. A highly significant connection between the frequency of military government and the level of inflation is found. This appears to be due to two other significant results: (i) The military regimes are relatively unstable ones. (ii) Inflation normally turns upwards under civilian and downwards under military regimes, i.e., the military regimes are relatively strong in fighting inflation. Finally, it is demonstrated that few regimes survive a spell of hyperinflation.

Introduction

The Latin American Continent is known for inflation and for political instability. The purpose of this paper is to analyse the relation between this economic and political characteristic. As shown in Figures 1.1–1.8 we cover 38 years for the following countries: Argentina, Chile, Brazil, Uruguay, Peru, Colombia, Mexico and Venezuela, where the countries are given in the order of declining inflation.[1] The average annual rate of inflation for the eight countries ranges from 69.8% to 5.2%, and also the political histories vary a great deal. Nevertheless, the countries have so much in common as regards socio-cultural background that cross-country comparisons appear to make sense.

We shall ask two basic questions:

(i) Does inflation, or rises in the rate of inflation, cause political changes?
(ii) Are military or civilian governments better in reducing inflation?

The reader will immediately note that the causal direction might be the

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reverse in both cases, and the questions may furthermore be broken up in more categories. Governments, and the way they attain power, are more or less democratic, and furthermore governments may be characterized on a right to left scale. We shall have a great deal to say about the causal direction, a little about the aspect of democracy and less about the right/left scale, as it is hard to operationalize in an objective way.

The analysis will start with a brief summary – Section I – of the vast literature dealing with the political economy of inflation. Then Section II discusses the data. In Section II we also display the data on Figures 1.1–1.8 while Section III gives a number of tables and tests allowing us to see which of the ideas from the literature and impressions from the graphs we can actually prove. Finally, Section IV sums up the main results.

I. What connections between political instability and inflation are we to look for?

1. Our aim is to discuss the connections between two endogenous end-results inflation and political instability. One may therefore see our analysis as dealing with the *reduced forms* including the whole working of the political and economic system. To fill in the full structural model connecting the variables is far beyond the scope of this article – in the present section we shall, however, survey a few of the main ideas appearing in the literature.

a. *The connections from inflation to instability*

2. The three main lines of thought encountered in the literature are probably:

(i) The social emollient pro-inflation argument.
(ii) The cost of inflation family of arguments.
(iii) The direct measurement results in the vote and popularity function literature.

There is a strong dominance of arguments and empirical results where inflation is a problem, so let us start considering (i) where inflation is a solution to a problem.

3. The *social emollient argument* considers a short-run distributional fight, such as a strike where the parts are unable to disentangle themselves without too much loss of face. In some such cases it might be a solution for the government to interfere and allow a 'round' of inflation, giving everybody what they want nominally. It might happen that both parties in the fight gain a bit and that the rest of the society loses; but, of course, the main effect of such an inflationary conflict solution is everybody ending up being cheated in real terms. People can hardly fail to know what is happening,

either immediately or soon enough. For the solution to work in the longer run it is therefore essential that the fighting parts *want* to get out of the fight and use the nominal 'solution' to extricate themselves.

However, it is sometimes argued that the argument generalizes so that inflation – at least up to certain limit – acts as a general social pacifier. The author has found this argument to be *false*, at least when the macro relations between inflation and industrial conflict are analysed.[2] There is no doubt that even at low inflation levels there is a highly significant *positive* relation between inflation and the number of conflicts.

4. A much larger and more well known literature deals with the *cost of inflation*. The two main points are: (1) While many claims as regards the harmful effects of inflation have been made, the empirical results are much less impressive. (2) It appears that *steady*, and thus expected, inflation is much less harmful than *sudden*, unexpected inflation. These two points should be seen in connection with the special structure of the time series for inflation.[3] Such series often have a marked *dual* structure, normally moving quite *gently*, but sometimes the series perform dramatic *boosts* lasting 2–5 years – boosts that may sometimes be as large as to be termed hyperinflations. We expect the steady levels or trends to be less destabilizing politically than the boosts.

Most of the results showing small costs of inflation are from developed countries where the labor markets are known for their strong real wage resistance – at least during the last three decades. For semi-developed countries like the Latin American ones, there appear to be much less real wage resistance in the short run (see Paldam, 1985) so that a boost of inflation does generate dramatic movements in the real wage – i.e., movements in the order of magnitudes of -30% in one year and +30% next year. In these cases there are, of course, great costs of inflation.

5. The point of departure for the third line of thought – i.e., the one concerned with *direct measurement* – is the responsibility hypothesis: People take the government to be responsible for economic conditions. Accepting the hypothesis one can analyse how the *vote for* or the *popularity of* the government (as measured at elections or polls) react to changes in economic conditions. This *VP-function* approach has given rise to a thriving literature (recent surveys are Paldam, 1981 and Schneider, 1984).

One of the main explanatory variables analysed by the VP-functions is the rate of inflation. The results are relatively clear: It *harms* the popularity of a government if inflation rises. The effect wears off within one or two years; but it has often been found to be quite strong: If the rate of inflation doubles, the government might very well lose 3–7% of its support. Two qualifications should be added to this statement: (1) The results are all found in developed low-inflation countries and they do not necessarily generalize. (2) The popularity lost by the inflationary rise may very well be

offset by an improvement in another politically important variable, such as the real growth rate.

Ideally the cost of inflation literature (ii) should explain the findings in the VP-function literature (iii), but the meager findings in (ii) appear to contrast to the findings in (iii) that people do greatly dislike inflation. We shall therefore refer to the VP-function result as if it is a separate one.

6. It is worth mentioning that it is often claimed that hyperinflations are such dramatic events as to cost *long political shadows*, and, in particular, it is easy to find claims by respected historians that the Great German Inflation (in 1922/23) did play a big role in causing the demise of the Weimar Republic a decade later.[4] Such long run effects are very hard to test and they run counter to the standard myopea result in the VP-literature, but it is nevertheless an interesting possibility worth keeping in mind.

b. *The causality from politics to inflation*

7. A huge literature deals with the causes and the mechanics of inflation. A recent survey is found in Frisch (1983) – it totally disregards the Latin American discussion, but the particular Latin American structuralist/monetarist debate is covered by Wachter (1976). Table 1 is a (brave) attempt to survey the literature by presenting the main theories in the form of *seven causal chains*. These chains are easy to mix and often several seem to operate at the time. Each chain should be combined with an inflationary multiplier giving the total inflationary effects of one primary inflationary push through the price-wage spirals, the adjustment chains for relative prices etc. Politics enter into the inflationary processes in three different ways.

(i) In chain 1 inflation is used *deliberately* in the form of the inflation tax, see also item (i) in subsection (a) above.

In all the other chains there is a primary cause for inflation and a secondary monetary accommodation, giving the two ways the political system enters.

(ii) Politics may enter into the causes giving the *primary push*.
(iii) Whether a certain primary push shall be *accommodated* is a political decision.

8. By far the most easily understood and dramatic type of inflation is (i). It is hard to believe any government can fail to know what it is doing when it uses the inflation tax (although perhaps there are cases of genuine ignorance?). Since, as we have discussed, strong inflation is likely to cause a large drop in the popularity of the government we may safely conclude it is a measure not lightly chosen. Hence (i) might be seen as a measure applied

Table 1. Causal chains in the main explanations of inflation

Market of origin	Primary factor	Main mechanism	Role of money M	Dynamics
Political	1. Public expenditure pressure met by money (inflation tax)	G & M↑ ⇒ p↑↑	Causal?	Strong, easily diverging
	2. Public expenditure pressure	G & T↑ ⇒ p↑ (same as 3)	Accommodating	Weaker
Goods	3. Demand up when capacity pressure	Y↑ ⇒ p↑ (2 is one version)	Accommodating	Weaker
	4. Demand shift and bottlenecks	Y? ⇒ p↑	Accommodating	Strictly limited
	5. Exogenous price rises e.g.	p↑	Accommodating	Strictly limited
Labor	6. Wage push from expectation mechanism	([$u < u_n$] ⇒)p^e↑ ⇒ w↑ ⇒ p↑	Accommodating	Slow, but diverging
	7. Wage push from wage competition	[w_i↑ ⇒ w_j↑ ⇒ w_i↑] ⇒ w↑ ⇒ p↑	Accommodating	Slow, but diverging

Note 1. Y is GNP, G & T public expenditure & taxes, p price rises, p^e expected price rises, w wage rises, M money stock (M1 or M2), u unemployment and u_n natural unemployment. Most of the causal chains easily mix and they are often rather hard to identify in practice.

Note 2. The Latin American monetarist/structuralist debate concentrates on the contrast between a pure monetarist explanation (Chain 1) and a special mixed theory combining Chains 4 & 7.

Note 3. Inflation multipliers omitted.

only in a situation where the political system is subject to *extreme pressures*. Perhaps we have to say that the *true cause* in (i) is these extreme pressures. In a sense we may therefore see chain 1 as a case where accommodation takes place *in advance*.

Once this is done, it is likely to *increase* the (domestic) political pressures for three reasons: (1) the tax element in the inflation reduces the amount of real goods otherwise available to the population, (2) the inflation itself causes the popularity of the government to drop, and furthermore (3) a rapid boost of inflation normally gives a big short-run shift in the income distribution, at least in a less developed country, setting in motion lots of adjustments. Also since chain 1 is easy to understand it is apt to enter into peoples expectations relatively fast. Furthermore, thanks to the lags in the collection of taxes, inflationary boosts are likely to reduce other means of financing public expenditures. The need for applying the inflation tax is, consequently likely to grow once the government has started using it. The result may, therefore, develop into spell of hyperinflation and a rapidly worsening political crisis.

9. Disregarding (i) the *strategic choice* for the government if it attempts to brake inflation at the primary level, where it starts, or afterwards by non-accommodation, i.e., by letting inflation cause a credit squeeze, till it stops by itself. In an environment of low inflation such a process might well take years, but the lag decreases rapidly when the level of inflation goes up. A credit squeeze is an unpleasant braking process and those hit are likely to take *political* action.[5] When the squeeze starts to bite, it therefore shows up as political pressures making it hard to uphold non-accommodation. On the face of it, it appears better to try to hit inflation where it starts.

However, inflation may start everywhere, so a policy of hitting the 'pushers' means that the government has to identify the strategic groups and meter out special interventions speedily. Non-accommodation contrarily can, in principle, be controlled by the central bank, and those hit are very likely to identify themselves. Furthermore it is often argued that the number of primary pushes occurring depends crucially on the extent to which the government manages to convince people that there will be no accommodation.[6]

Whether to prefer the first or the second line of arguments is a difficult choice ending up, in the last resort, as a choice of the politically optimal strategy, but from our point of view there is an important message. A *strong and stable* government will, of course, be relatively credible when pursuing a non-accommodating policy. Then much less primary interferences become necessary and, in the end, a much smaller pressure occurs against the non-accommodation. For a *weak and unstable* government the same good circle turns into a vicious circle. Non-accommodation becomes less

credible and much more interference necessary. In the end there will be much greater pressures against the lid of non-accommodation.

10. One particular form of direct interventions in the inflationary process is worth a few more comments. It is one known under the general label of *incomes policies* – policies that have often played a crucial role in the *stabilization programs* undertaken by the various Latin American governments. A large number of studies of the individual programs are available from various government agencies, international organizations and independent researchers – obviously a brief summary of this whole maze of conflicting evidence is hard to make.

The central point in the various incomes policies is to break inflation through controlling wage rises – there are a number of cases where such direct interventions are clearly visible in the data as a short run effect, but often such short-run dips in the inflation rate correspond to a later rise in the inflation rate when the policy is lifted or when it breaks down. Hence it really remains to be demonstrated that incomes policies are tools adequate to the role they are often given in anti-inflationary programs.[7]

In connection with incomes policies it should be noted that some Latin American governments have followed 'reverse' incomes policies. There is a number of well documented cases where governments have supported income claims of groups in order to build up or strengthen the coalition supporting the government.[8] It is well known that it is difficult to change the distribution of income in the short run, therefore policies of *coalition building* do normally give rise to serious problems of economic imbalances. One has to see such situations as involving a typical trade off between political short-run gain and economic balance.

c. *The policy aspects of the monetarist/structuralist controversy*

11. The main Latin American discussion on inflation has been the monetarist/structuralist controversy as surveyed, e.g., by Wachter (1976). We have already covered the monetarist angle where the growth of the money stock is seen as the main vehicle of inflation. The main structuralist claim is that the Latin American countries are especially inflation prone due to certain *socio-political 'structures'* being relatively strong in these countries. The obvious policy implication being that fundamental structural *reforms* are more important than the *normal technocratic* measures of monetary policy.

Various authors have pointed to different structures, but the three main ones are probably[9]:

(s1) A rigid agricultural mode of production, with large-scale, technically backward farming with distant ownership, producing traditional goods with low income and price elasticities.

(s2) A trade union structure with weak central unions, but small strong unions in certain key sectors.

(s3) A lack of social integration due to relatively large differences in the incomes, ethnic and cultural backgrounds, etc., of the various groups in the societies.

12. All societies are subject to shocks and disturbances due to changes in demand, technologies, world market price changes, the hazards of nature etc. Now (s1) and (s2) argue that the Latin American countries lack flexibility to absorb such shocks and disturbances. I.e. (by causal chain 4 from Table 1) they generate unusually much inflation.

On a similar general level we can see the role of the government as an attempt to move the society away from the various Nash equilibria where it tends to get stuck and to try to reach co-operative solutions – thereby producing a public good.[10] The general policies pursued to keep inflation down has the character of such an attempt. We may now interpret (s3) as a factor making general policies less easy to sell to the population irrespective of how the political market is organized.

13. The structuralist view is easy to criticize. Basically it is suffering from the methodological weakness of being too easy – one always can point to one or another socio-economic structure explaining everything. To be credible the structuralist claims should therefore be operationalized *quantitatively* and it should be demonstrated that the said factors are present in the various countries in some quantitative relation to the level of inflation of the countries. I.e., what exactly are the structural factors explaining that the average level of inflation is 12 times higher in Argentina than in Venezuela? Also, we know that the South European 'Latin' countries have similar levels of inflation as other European countries.

On the other hand, one may say that our findings below – demonstrating very significant links between political instability and inflation, do support the structuralist position. Furthermore, it is worth noting that the governments most devoted to structural reforms have also been the governments which have generated the most dramatic inflations. Mainly, probably because the most reformist (or revolutionary) governments have been far too weak for the tasks they have undertaken.

14. However, even if we accept the structuralist view it is not necessarily contrary to monetarist theory. In fact, we may understand the structural traits as giving the underlying 'natural' levels of growth and unemployment. In this interpretation the structuralist claim simply says that the natural levels are unusually disadvantageous in the Latin American countries. Hence, for the same level of inflation we need a much lower level of growth or higher level of unemployment.

II. The data – and the country figures

1. The analysis uses one economic series only. p_c – the consumer price index. The relation between p_c and some other relevant series is covered in Paldam (1985), where also the data are documented. Our main source is the IFS as published by IMF. These data are linked up with the corresponding series in the ILO Yearbook of Labour Statistics.

The series used are displayed as the heavy lines on Figures 1–8 using a condensed logarithmic scale. Inflation series have a very peculiar structure containing rather dramatic peaks rising many times above the levels of the series. I.e., these series have a very skew distribution where the average is much higher than the median. With certain qualifications, they are approximately log-normally distributed.[11] Therefore we present two averages.

A the standard *average* over the observations given.
M the antilog to the average of the logs – giving an estimate of the *median* of the p_c-series.

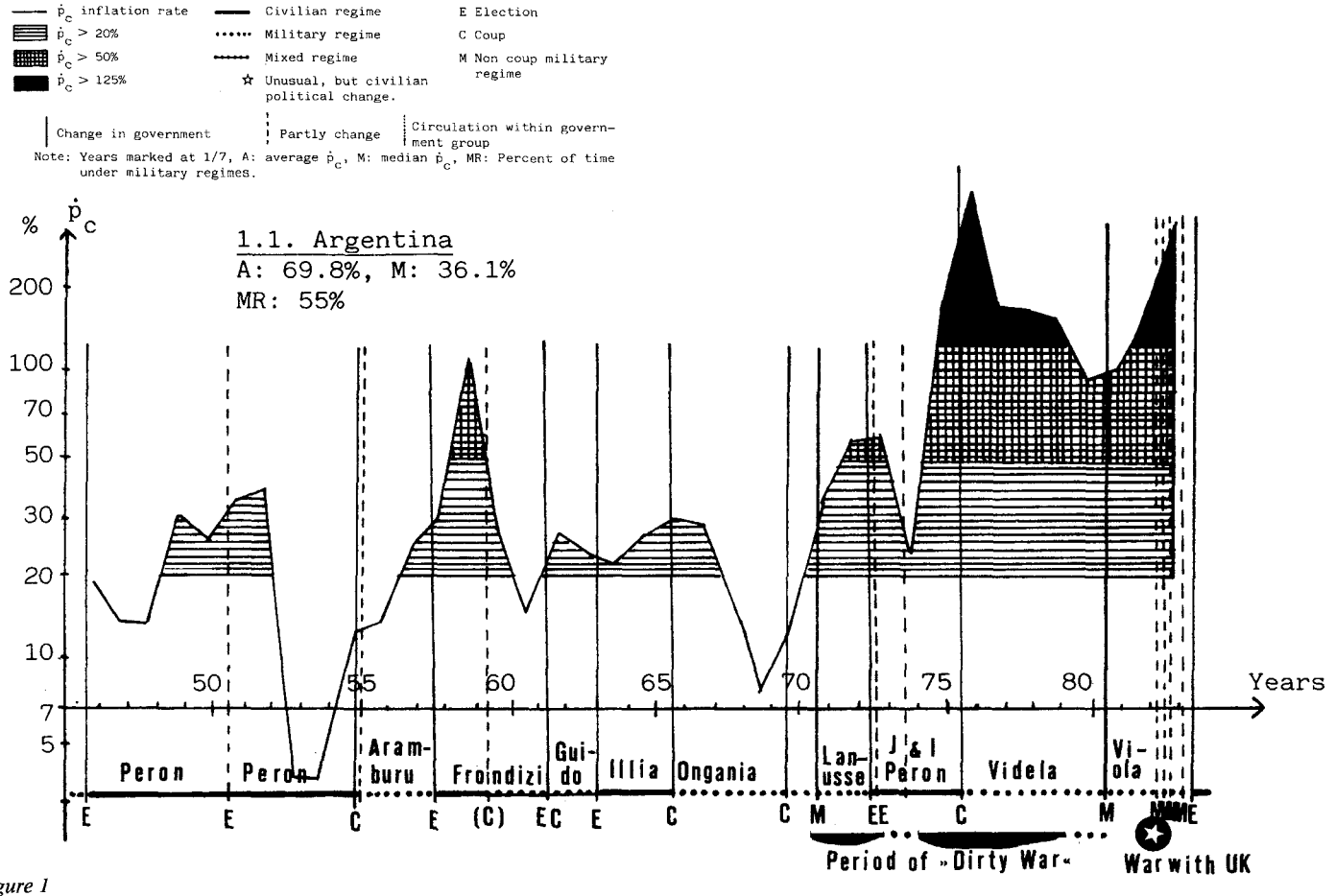
The reader should note that the countries are ranked according to A and M in exactly the same order (τ(A,M) = 1.00, where τ is Kendall's rank correlation coefficient).

2. The political series are much more problematic to put together. It would have been easy if we could have distinguished between the following two archetypes.[12]

> A democratic, civilian government attaining power through a fair election.
> A military dictatorship established after a (bloody) coup.

A few clear cases of either of these archetypes actually exist in our sample, but the *majority* of the governments considered fail to qualify in either group. Many civilian governments attain power through more or less strongly restricted or controlled elections, and most military governments try to obtain some legitimacy through an election or referendum. Furthermore, most military coups are remarkably peaceful affairs. Also sometimes military rulers manage to be re-elected at reasonably fair elections. There are a couple of cases where an elected civilian government is allowed to go on ruling – under supervision – after a coup. Many of the changes from one military government to the next take place according to perfectly peaceful rules, laid out in advance, such as a vote taken in a military council.

During the 38 years, 1946–83, considered, our eight countries have had 65–75 governments depending on the way one defines the unit of a government. We shall use the following definition.


$\dot{p}_c$ inflation rate
$\dot{p}_c$ > 20%
$\dot{p}_c$ > 50%
$\dot{p}_c$ > 125%
Civilian regime
Military regime
Mixed regime
Unusual, but civilian political change.
E Election
C Coup
M Non coup military regime
Change in government
Partly change
Circulation within government group
Note: Years marked at 1/7, A: average $\dot{p}_c$, M: median $\dot{p}_c$, MR: Percent of time under military regimes.
% $\dot{p}_c$
1.1. Argentina
A: 69.8%, M: 36.1%
MR: 55%
200
100
70
50
30
20
10
7
5
50
55
60
65
70
75
80
Years
Peron
Peron
Aram-buru
Froindizi
Gui-do
Illia
Ongania
Lan-usse
J & I Peron
Videla
Vi-ola
E
E
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EC
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C
M
EE
C
M
E
Period of »Dirty War«
War with UK

Figure 1

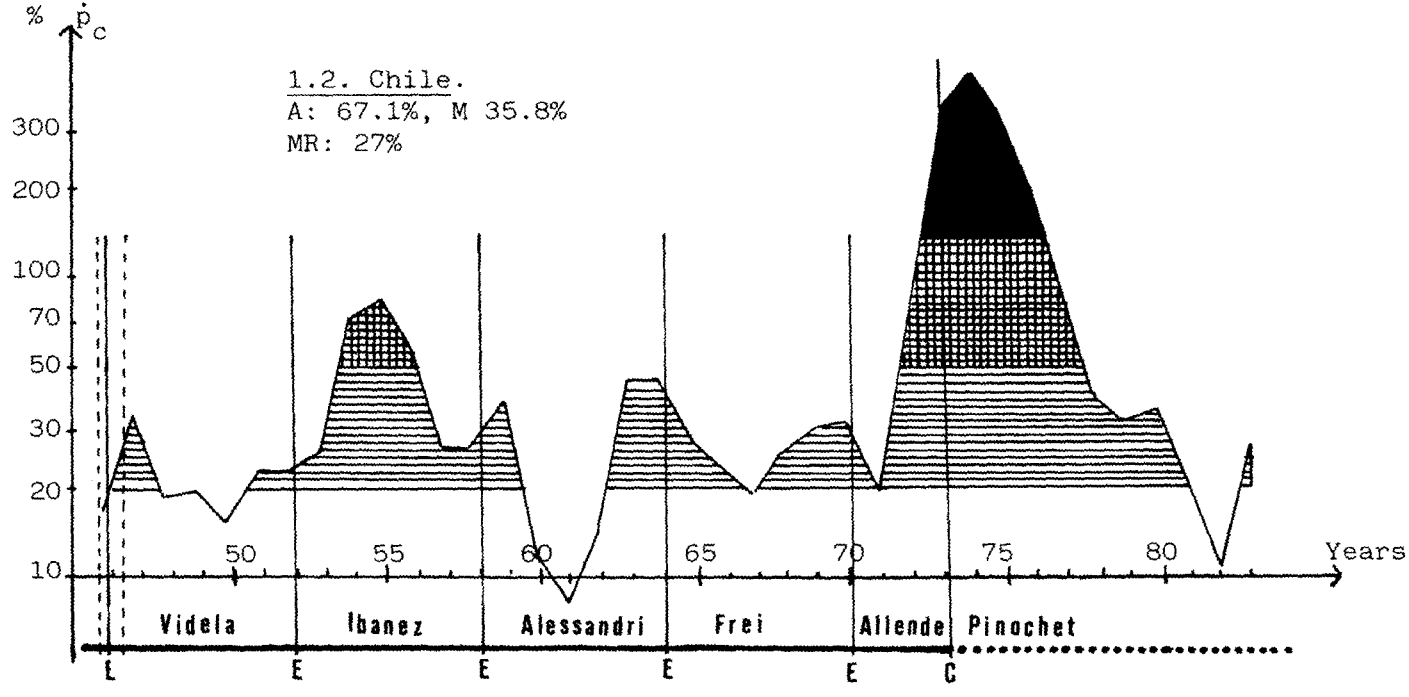
%
$\dot{p}_c$
1.2. Chile.
A: 67.1%, M 35.8%
MR: 27%
300
200
100
70
50
30
20
10
50
55
60
65
70
75
80
Years
Videla
Ibanez
Alessandri
Frei
Allende
Pinochet
L
E
E
E
E
C

Figure 2

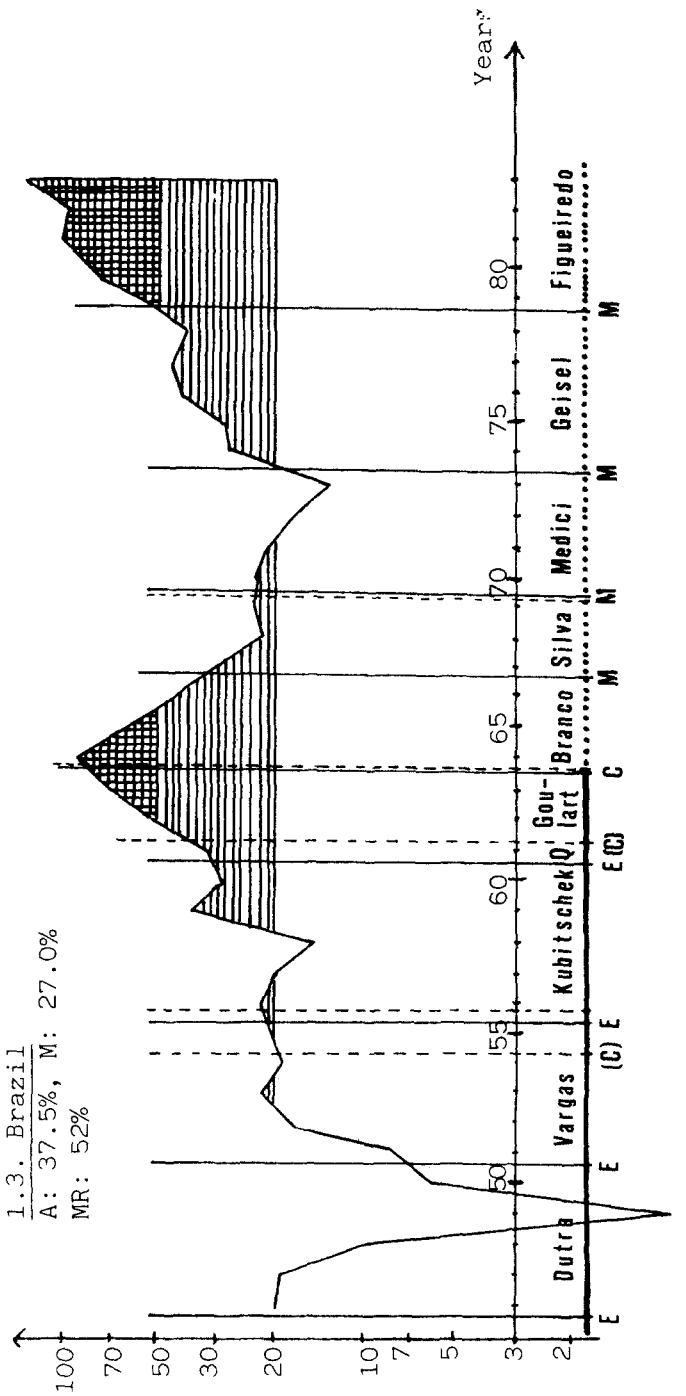
1.3. Brazil
A: 37.5%, M: 27.0%
MR: 52%
100
70
50
30
20
10
7
5
3
2
50
55
60
65
70
75
80
Year
E
Dutra
E
Vargas
(C) E
Kubitschek
E (C)
Gou-
lart
C
Branco
M
Silva
M
Medici
M
Geisel
M
Figueiredo

Figure 3

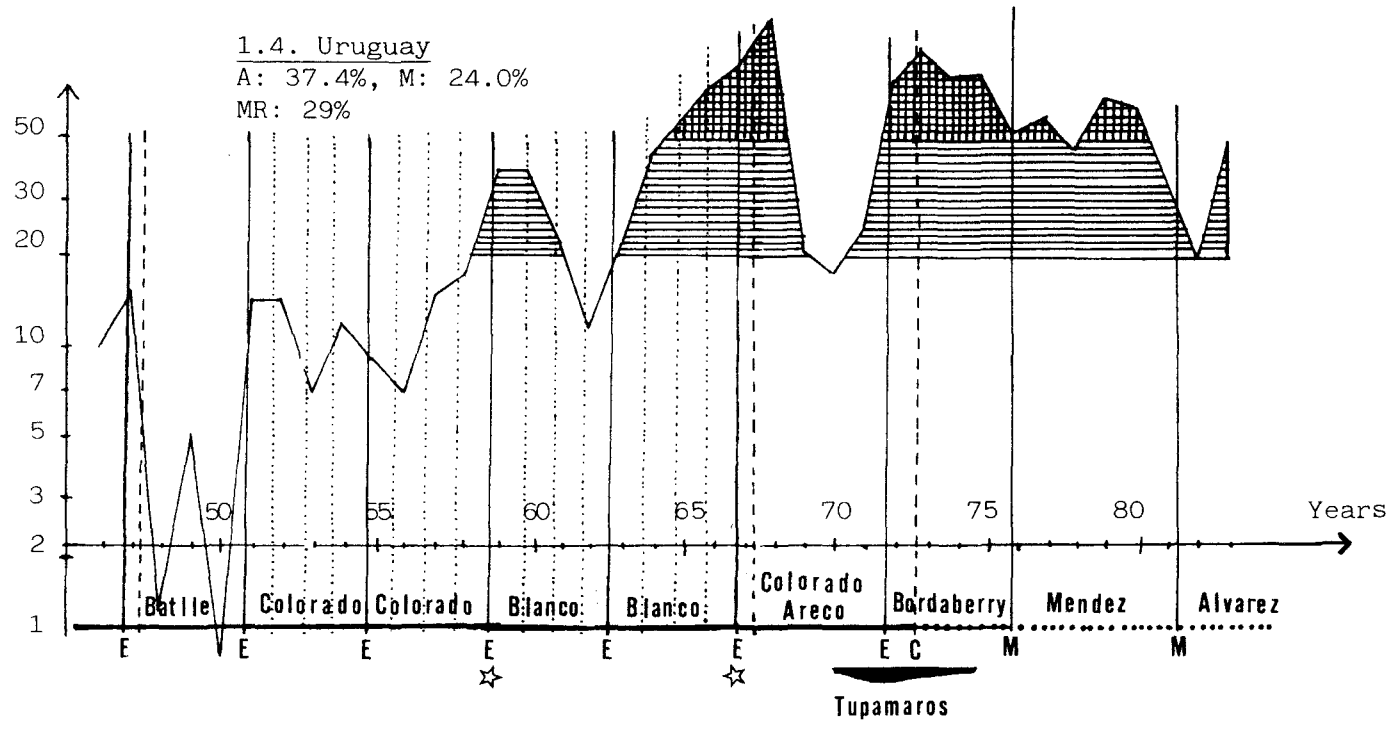
1.4. Uruguay
A: 37.4%, M: 24.0%
MR: 29%
50
30
20
10
7
5
3
2
1
50
55
60
65
70
75
80
Years
Batlle
Colorado
Colorado
Blanco
Blanco
Colorado
Areco
Bordaberry
Mendez
Alvarez
E
E
E
E
E
E
E
C
M
M
Tupamaros

Figure 4

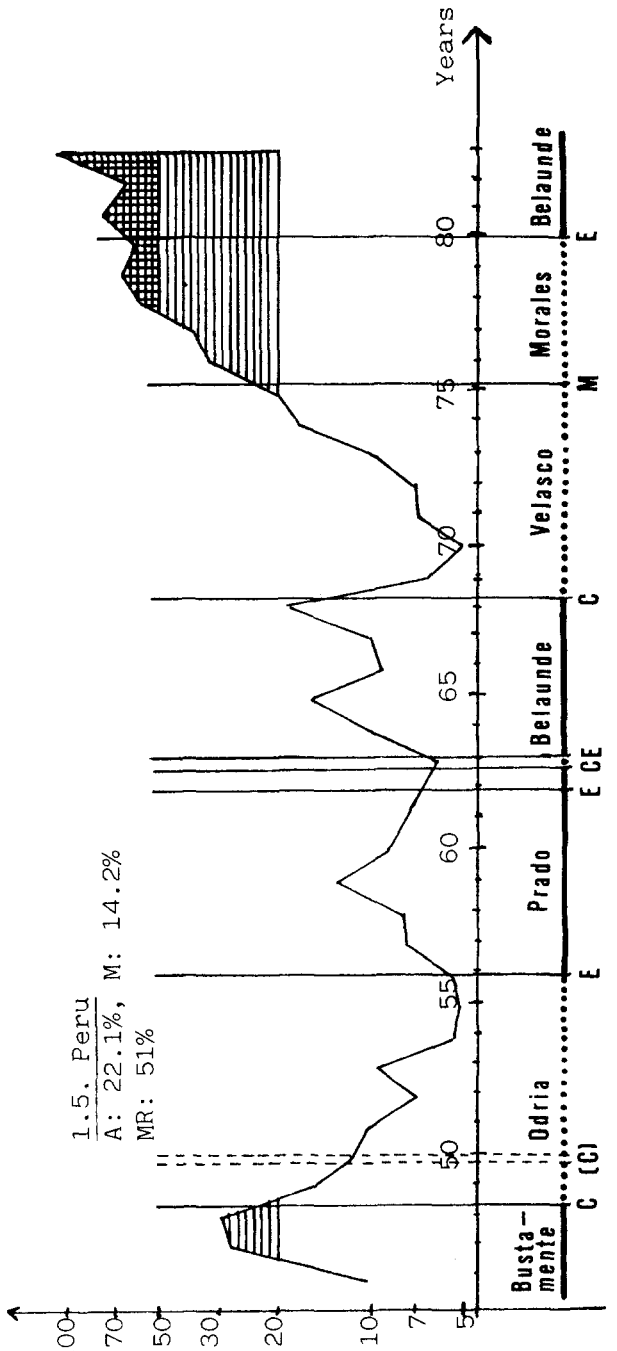
1.5. Peru
A: 22.1%, M: 14.2%
MR: 51%
100
70
50
30
20
10
7
5
50
55
60
65
70
75
80
Years
Busta-mente
C (C)
Odria
E
Prado
E CE
Belaunde
C
Velasco
M
Morales
E
Belaunde

Figure 5

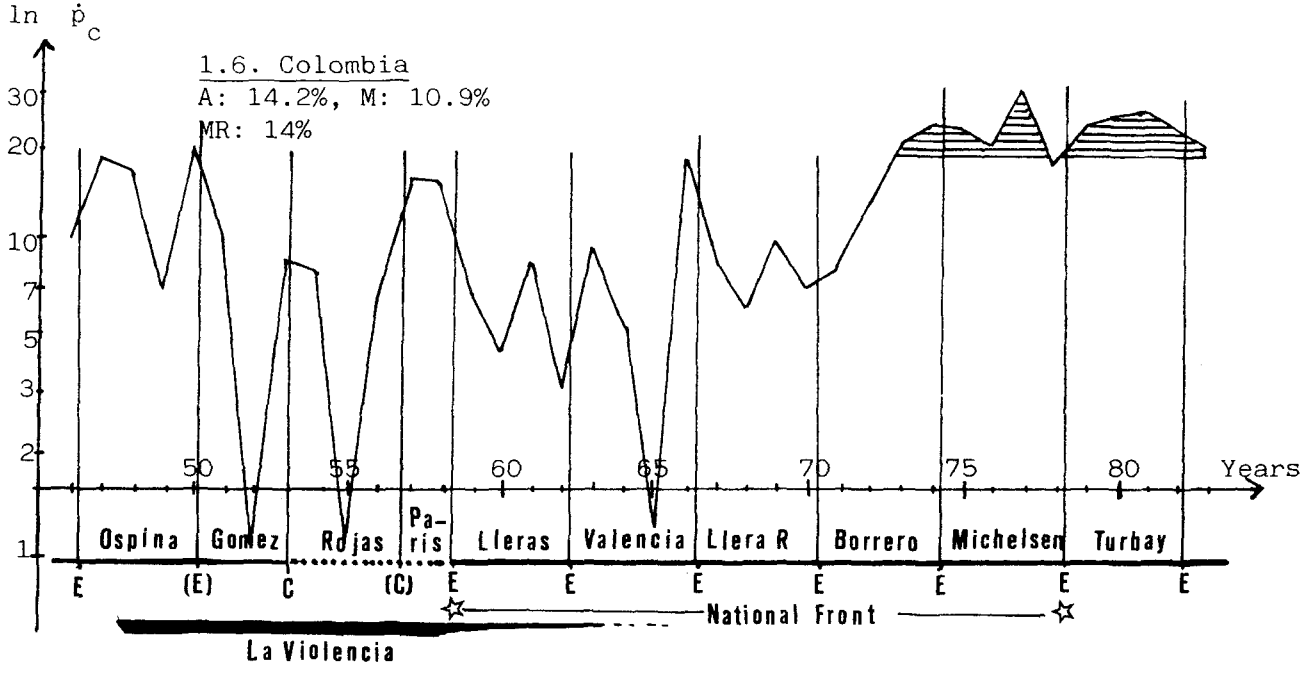
ln ṗc
1.6. Colombia
A: 14.2%, M: 10.9%
MR: 14%
30
20
10
7
5
3
2
1
50
55
60
65
70
75
80
Years
Ospina
Gomez
Rojas
Pa-
ris
Lleras
Valencia
Llera R
Borrero
Michelsen
Turbay
E
(E)
C
(C)
E
E
E
E
E
E
E
National Front
La Violencia

Figure 6

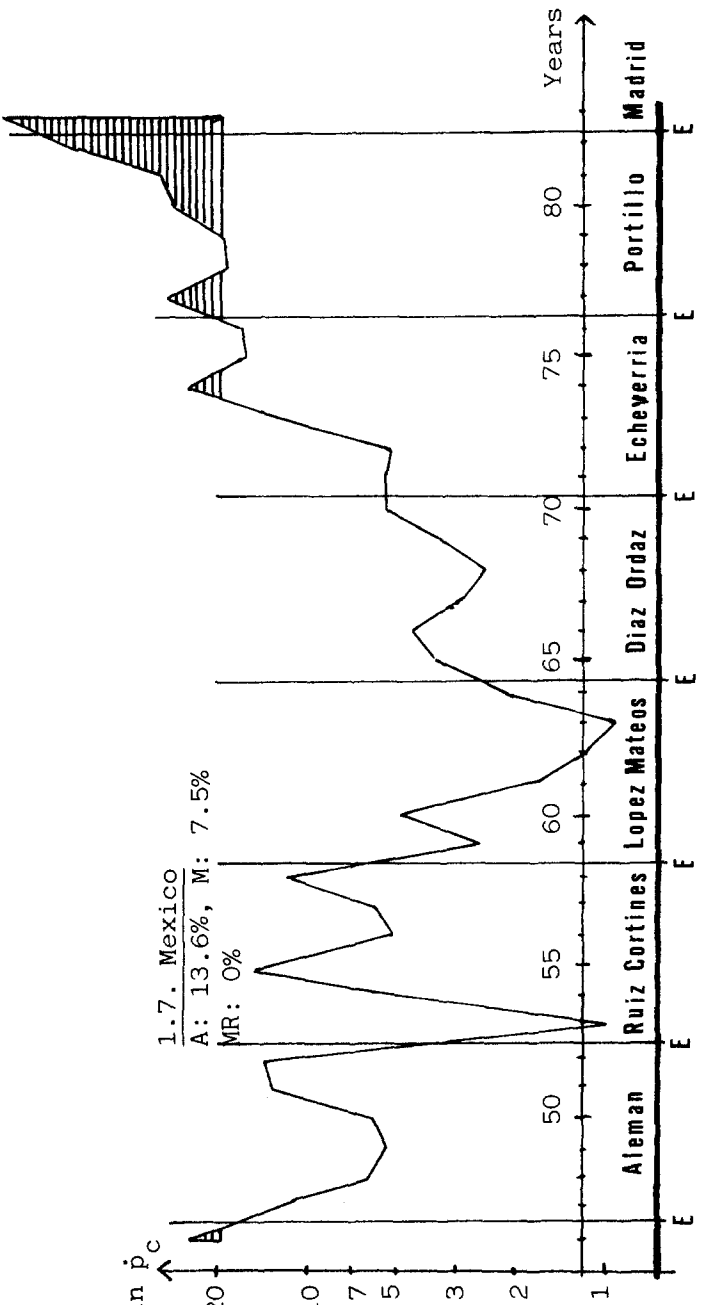
1.7. Mexico
A: 13.6%, M: 7.5%
MR: 0%
ln ṗc
20
10
7
5
3
2
1
50
55
60
65
70
75
80
Years
E
Aleman
Ruiz Cortines
Lopez Mateos
Diaz Ordaz
Echeverria
Portillo
Madrid

Figure 7

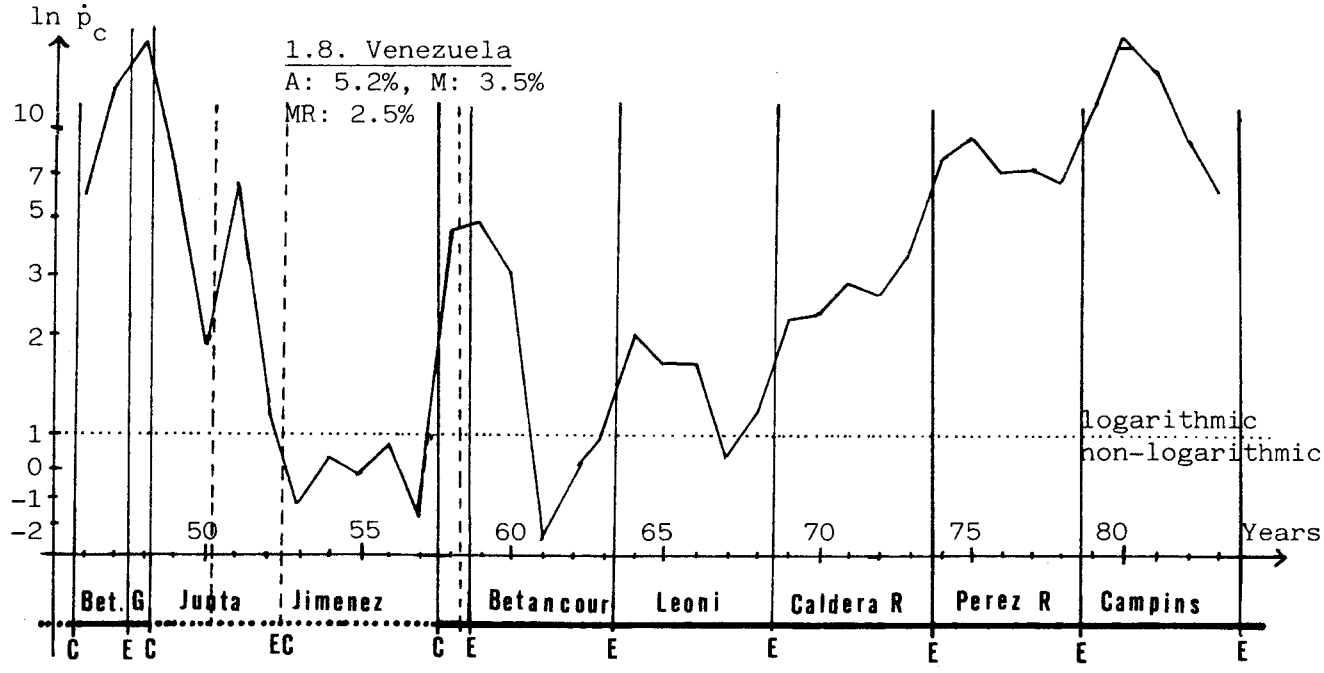
ln $\dot{p}_c$
1.8. Venezuela
A: 5.2%, M: 3.5%
MR: 2.5%
10
7
5
3
2
1
0
-1
-2
logarithmic
non-logarithmic
50
55
60
65
70
75
80
Years
Bet. G
Junta
Jimenez
Betancour
Leoni
Caldera R
Perez R
Campins
C E C
EC
C E
E
E
E
E
E
E

Figure 8

A government is defined as an uninterrupted period under the same leader. I.e., we take a serious election to be an interruption, but not an unsuccessful coup.

We have two clear cases (Argentina 1959 and Uruguay 1973) where a successful coup occurs but where the civilian president is allowed to remain a figurehead – these cases we treat as government changes. Two similar, but more complex, cases occur in Brazil 1954 and 1961 – here we chose to recognize the changes as being from one civilian to another civilian government.

We distinguish between civilian and military governments according to the way they attain power.

A civilian government is taken to be a government attaining power through an *election*, even if this election is not entirely fair according to NW European standards.

A military government is a government that has attained power through a military coup or a selection process within the military.

With these definitions Peron's first (and later) governments come to be termed civilian and the Mendez government (in Uruguay) a military one. By going through our graphs the reader will see that we have been very liberal in accepting elections as elections, even in cases like in Mexico where one party has great advantages, or Colombia (1958–78) where two parties had agreed to make elections almost a formality. However, even a Mexican election is far more of a democratic event than an election in e.g., Russia – and several stories could be told of elections in one-party Latin American countries (such as Uruguay 1959 or Brazil 1985) that gave surprising results.

Finally there is a special problem with coups against military (or other) dictators made with the purpose of returning to an elected civilian type of government. Here we have chosen to term such regimes civilian if they are dominated by civilians and actually carry out their promises reasonably fast – compare here Venezuela 1946/48 and Colombia 1950/58.

III. Some tables and tests

1. The numbers one reaches by looking at Figure 1 and counting the various types of events are put together in Table 2. In addition we have added the GNP per capita for an arbitrary year a little above the mean of our time period. Between the columns of the table we have calculated all relevant coefficients of correlation – using Kendall's τ over the eight countries. As $\tau(A,M) = 1.00$ – i.e., the averages and medians of inflation over the 38 years have exactly the same order – it is irrelevant whether we use the A og M columns in the subsequent calculations.

The first thing to note is that *all* τ's presented are positive, but few

Table 2. Comparing the numbers from Figure 1

Data for the period: 1946 – 83	Inflation		GNP per capita 73[b]	Military regime in % MR[a]	No of political events			
	Average A[a]	Median M[b]			Govern-ments	Normal change	Coups	Regimes[c]
1. Argentina	69.8	36.1	1640	55	17	14	6	8
2. Chile	67.1	35.8	720	27	6	5	1	2
3. Brazil	37.5	27.0	760	52	12	8	3[d]	2
4. Uruguay	37.4	24.0	950	29	11	9	1	4[e]
5. Peru	22.1	14.2	620	51	9	6	3	5
6. Colombia	14.2	10.9	440	14	11	9	2	3
7. Mexico	13.6	7.5	890	0	8	7	0	1
8. Venezuela	5.2	3.5	1630	25	10	8	3[f]	3
Correlation τ to A:		*1.00*	0.07	*0.57*[g]	0.32	0.07	0.21	0.21
Using Kendall's rank			to GNP:	0.21	0.25	*0.36*	0.21	0.14
Correlation coefficient)				to MR:	*0.46*	0.21	*0.43*	*0.50*[g]

[a] Repeated from Figure's 1.1–1.8.

[b] Taken from World Bank Atlas 1975. Other years tried gave almost same result – the figures in US dollar at official exchange rates.

[c] Changes between civilian and military governments and rare changes marked with *, on Figure 1, within civilian regimes. Note that there are confluence between the last four columns of the table.

[d] Including the two coups 54 and 61 where the civilian regime continued.

[e] Changes in 59 after 98 years of Colorado government, and in 67 and 73.

[f] The coup after the 52 election included.

[g] For 8 degrees of freedom Kendall's τ is significant at the 10% level when it reaches 0.36, at the 5% level at 0.50 and at the 2.5% level at 0.57.

Table 3. Inflationary levels and trends under the various regimes

		Level relative to M	Trend during regime	Note on terminal peak and possible U-form
1. Argentina				
(0) – /46	Military			
(1) 46/55	Civilian (Peron)	Low	Down?	Variable
(2) 55/58	Military	Low	Up	
(3) 58/59	Civilian	High	Up	Peak
(4) 59/63	Military (de facto)	?	Down	
(5) 63/66	Civilian	?	Up?	
(6) 66/72	Military	?	Up?	Clear U
(7) 72/75	Civilian (Peron)	High	Up	Peak
(8) 75/84*	Military (Violence)	High	?	Peak, Clear U
2. Chile				
(1) – /73	Civilian	Low	Up	Peak – stable till 70
(2) 73/–	Military	High	Down	
3. Brazil				
(0) 45*/46	Military			
(1) 46/64	Civilian	Low	Up	Peak, slow upturn
(2) 64/85*	Military	High	?	Peak, clear U
4. Uruguay				
(1) –/59	Civilian (Colorado)	Low	Up	Small peak
(2) 59/67	Civilian (Blanco)	?	Up	Peak, clear U
(3) 67/73	Civilian (Colorado)	?	?	Peak, clear U
(4) 73/85[a]	Military	?	Down	
5. Peru				
(1) –/48	Civilian	?	Up	Small peak
(2) 48/56	Military	Low	Down	
(3) 56/68	Civilian	Low	Up	Small peak
(4) 68/80	Military	High	Up	Peak, slow upturn
(5) 80/–	Civilian (Violence)	High	Up?	
6. Colombia				
(1) –/53	Civilian (Violence)	?	?	
(2) 53/58	Military (Violence)	?	Up?	
(3) 58/–	Civilian (Nat. front)	?	Up?	
7. Mexico				
(1) –/–	Civilian (one-party)	–	Up	Peak, slow rise
8. Venezuela				
(0) –/46	Military			
(1) 46/48	Civilian	High	Up	Small peak
(2) 48/58	Military	Low	Down	Small peak, clear U
(3) 58/–	Civilian	?	Up	

[a] Regime shift just outside the period considered.

significantly so – eight observations do not provide us with much power in cross country tests. However, a fairly clear pattern does emerge. Here it is important that the level of inflation and GDP per capita are two independent qualities. There is a weak tendency for more of all types of political events to occur with higher income, but if we include developed countries and/or the European Latin countries this tendency disappears.

2. Therefore the interesting finding in Table 2 is the highly significant connection between inflation and the time under military rule (MR). Also we note that our MR variable is positively correlated to *all* of the somewhat confluent variables measuring political change. Clearly, in Latin America military systems are *less* stable than civilian ones. Only one military dictator has managed to remain in power for more than a decade – Chile's General Pinochet – and the average 'survival' period of a military ruler is only around 2⅓ year.[13] Various types of military regimes exist, but they do have one basic weakness: the top person of the regime has always attained power through an 'illegal' process that any other ambitious military person may aspire to replicate in one way or another.[14]

Hence, it is no wonder that military regimes are less stable than civilian, and perhaps they are not even 'stronger' while they last. From our limited perspective we may analyse this possibility by studying which type of government is more efficient fighting inflation. This is done in Tables 3 and 4 – they are also crucial when it comes to analysing causality as we shall return to in a moment.

The *levels* are not so interesting to compare as a high level of inflation under a particular regime may have two interpretations: (1) the regime took over when (and perhaps because) inflation was high or (2) the regime has itself generated the high inflation. And, in fact, there is no sign that the levels of inflation are higher under the one or the other type of regimes – as seen in Table 4a.

Table 4. Testing for differences in inflationary levels and trends between regimes

a. Levels:

	Civ.	*Mil.*	Σ
Low	5	3	8
Average[a]	8	4	12
High	4	4	8
Σ	17	11	28

$\chi^2 = 0.57$ p = 75%

b. Trends:

	Civ.	Mil.	Σ
Down	0	5	5
Unclear[a]	6	4	10
Up	11	2	13
Σ	17	11	28

$\chi^2 = 10.87$ p = ½%

[a] All cases in Table 3 with '?'.

3. The interesting point to note is the highly significant difference between the *trends* under the two types of regimes. As the levels are partly inherited from the previous regime, it is basically in the trends that the different policies of the various regimes appear.[15] Hence military regimes are more efficient in curbing inflation, while civilian regimes tend to generate inflation.

Furthermore we shall see that nearly all inflationary *peaks* lead to a change in regime – we have only two exceptions: Chile 1954/56 and Mexico after 1980 where a peak did not lead to a regime shift – in all other cases there was a shift. This is a highly significant correspondence, which we shall return to in a moment.

Finally we have 6 cases where inflation describes a clear U-swing under a certain regime, i.e., they take over after an inflationary peak and manage to bring down inflation for some time. Then the regime 'softens up' and inflation starts to soar again. In most of these cases the 'softening' occurs after the change of the government, where the hard 'coup general' is exchanged by a softer one who wants to popularize the government. I.e., in Argentina general Ongania is exchanged with generals Levingstone and Lanusse and later general Videla is similarly replaced by general Viola.

4. Finally, it is worth looking at the most dramatic inflationary peaks – the ones that may be termed *hyperinflation*[16] – to see what kinds of governments they were associated with. The 9 most dramatic peaks have been:

(i) Chile 1971/75. The peak was generated by the Allende government, which was a coalition of the left incl. the extreme left. It had a very weak parliamentary support and was internally divided. Nevertheless it did try to implement far reaching reforms. The result was a military coup.

(ii) Argentina 1974/76. Generated by the Peronist government after Peron's death. Like the Allende government the Peron government came into power after having raised enormous expectations and being weak from internal disagreement. In addition the expectations were unusually contradictory. The result was a military coup.

(iii) Argentina 1982/85. Generated under very weak, almost chaotic, military rule, the Falkland's war etc. Leading to a return to civilian rule.

(iv) Brazil 1962/65. Generated by the weak, populist government of J. Goulart. Note that the famous high growth period occurred later – during the period where the military coup regime was decellerating inflation.

(v) Brazil 1979/85. Generated by a military regime trying to return Brazil to its high-growth path – leading to a return to civilian rule.

(vi) Uruguay 1964–67. During the second Blanco administration. Leading to a change of constitution and a return to Colorado rule.
(vii) Uruguay 1971/75. Following a typical U-curve after a return to Colorado rule – happened during the period of the Tupamoro's semi-civil war. Leading to coup.
(viii) Peru 1970s. Long soft rise during the reformist Velasco military government, leading to the more conservative Morales' military government, finally giving way to the return of a civilian regime. A main factor in the inflationary process being probably the large public expenditures involved in the comprehensive land reform.
(ix) Mexico 1979/85. Being due probably to the large pressures for public expenditures generated by the knowledge of the size of Mexico's oil reserves.

IV. A summing up

1. Our analysis has demonstrated the strong connection between inflation and political instability in Latin America. Causality appears to work *both* ways. Let us start with the causal direction from inflation to instability.

(A.1) The higher the *level* of inflation the higher is the frequency of military rule and military regimes are relatively unstable.
(A.2) *Boosts* of hyperinflation are very destabilizing. Few Latin American regimes have survived a hyperinflation.

The causality the other way may in the same way be summarized as two items of which the second deals with hyperinflations.

(B.1) While there is a clear tendency for inflation to *grow* under civilian governments, it *falls* under military regimes – at least in the beginning.
(B.2) Most inflationary *boosts* are generated by political problems – by weak governments trying to implement contradictory or overambitious policies.

Note that items (A.1) and (B.1) hinge on the paradoxical character of the Latin American military regimes: on the one hand they appear to be relatively unstable, but on the other hand they are relatively strong in fighting inflation.

This apparent paradox is easy to resolve by any (or a mixture) of the following three hypotheses: (i) Most people dislike military regimes and they

are acceptable only when the real politicians have created chaos in the economy, and then only as long as people have this chaos clearly in mind. (ii) The military way of handling problems works when it comes to fighting a one-dimensional problem as inflation, but it is basically inept when facing the multidimensional problems of a 'normal' economy. (iii) After a while any military system becomes more and more 'civilian', but without the strength derived from the legitimacy of an electorial system.

2. Whatever is the explanation of the paradox it certainly points a dynamic process of interaction between inflation and instability that may help explain such remarkable politico-economic disasters as Argentina, and to a lesser extent, the other high inflation countries in our sample.

Once the civilian regimes come to count on the possibility of a coup they become weaker and hence more inflation prone. The more changes there have been in regimes, the less legitimacy is any regime going to have, so one may get into a situation with high inflation and weak and shifting regimes – add to this a high external debt burden and we have the possibility for a really durable politico-economic crisis.

NOTES

1. The paper is a sequel to Paldam (1985) containing a detailed time series analysis of our inflation data, data on wage rises, money stock changes and real growth rates. Here also the data are documented, discussed and compared to results of a parallel study covering 17 developed countries 1919/80 (see Hylleberg and Paldam, 1985). It should be mentioned that the more detailed background data was available only for the said eight countries – this is the reason for our limited sample.
2. See Paldam and Pedersen (1982 and 1984). Using data for 17 OECD-countries 1919–80, it turns out that the relations between inflation and industrial conflicts are strongly positive in both causal directions.
3. Logically we need not take steady inflation as expected inflations and sudden inflation to be unexpected. Jumps in a time series might be expected and expected jumps may fail to materialize. However, in applied work it is almost inescapable to take the 'gentle' parts of an inflation path as the expected ones and to treat the jumps as the unexpected events. The time series structure of inflation is the subject of Hylleberg and Paldam (1985) and Paldam (1985), where also the relation between the averages and the variance of the country-series is analysed.
4. By raising the price level with a factor of 10^9 the Big German Inflation, wiped out the savings of the middle class, including the pensions of one whole generation. Hereby the inflation aleniated the crucial 'stabilizing' middle class in the society from the Weimar Republic. Here it should perhaps be added that this class – for a variety of reasons – was less enchanted with the Weimar Republic than could be expected from other countries, even before the inflation. Hence, the aleniation process might have been relatively easy in that particular case.
5. In concrete terms a credit squeeze means that some firms – especially some fast growing firms – go bankrupt. Then the workers and management are likely to make a joint appeal to the government and everybody else that may help. It is sometimes important that the

squeeze reaches people and firms through the private bankings system. If the banking system wants to defeat a non-accommodating policy they may very well choose to let the most politically important sectors be the ones most severely hit first.

6. Having reached this point, it is hard not to go one step further. To make non-accommodation credible it appears desirable to attach money to something fixed (a fixed percent rule), or, at least, to something exogenous such as the July mean temperature or gold. Gold having the further advantage of possessing a juju-quality.
7. Outside our time period are the two recent attempts – in Argentina and Brazil (and in Israel as well) to stop inflation by a comprehensive package, including both drastic reductions in the budget deficit (aiming at the long run) and a tough price/wage stop (aiming at the short run). For the analysis of Section III it is interesting to note that both packages are introduced by civilian governments.
8. The most conspicuous case in the Latin American context is the one of the first Peron Government in Argentina (1946–51 and 1951–55), forging the Peron-worker alliance that came to dominate Argentinian politics for the next 30 years. This case has provided a potent example for other rulers to follow, but it has proved difficult to replicate.
9. Structuralist thinking is often combined with dependency theory, where the capitalist world system aggravate the domestic structural characteristics. As regards (s1) the world market is alleged to decide commodity prices making them fluctuate relatively to other prices, thereby necessitating price adjustments generating inflation. In (s2) it is added that the said trade unions face firms in the modern sector which are owned by foreign, multinational corporations using wage scales destroying the possibilities of a balanced structure of earnings.
10. The definition of public goods in the prisoners' dilemma terms is closely related to the Samuelsonian definition commonly in use.
11. The two main qualifications are: (i) Inflation series contain much autocorrelation, being fairly well modelled (see Hylleberg and Paldam, 1985; and Paldam, 1985) by the following ARMA (2, 2)-Process: $(1 - 0.6L - 0.2L^2)\ln p_t = c + (1-0.3L-0.5L^2)\epsilon_t$, where L is the lag-operator, c a country-specific constant and ϵ white noise. (ii) An extra element of variance emerges in the series for small p_c's and there are too many observations below zero.
12. There is a further dimension from left to right. It is rarely a really meaningful dimension, and very controversial to apply in a Latin American context. As we want our results to be as objective as possible we disregard that dimension except in point III.4 below.
13. The Latin American countries outside our country-sample provides further evidence with Paraguay having the longest ruling military dictator as of today and Bolivia having, probably, the world record for regime changes while Equador appears a typical case. Incidentally we may take the longevity of the Pinochet regime as a further indication that great inflations cast long political shadows.
14. A fairly recent attempt to survey and synthesize the vast political science literature on the military role in politics is found in Perlmutter (1977). Here a taxonomy of military regimes is proposed – we are not using this taxonomy here as it would have given too few regimes of each type for our tests. However, it would have helped explaining away some of the outlying cases encountered.
15. In high-inflation countries world market inflation disappears in the p_c series considered, but in some of the low-inflation countries there is a clear external component in the domestic inflation rate.
16. Various authors have discussed when an inflation is big enough to qualify as a hyperinflation. Two criteria are needed: (i) The absolute level should be high – say 25 times higher than the 'normal' level of 4–5% per year known in the OECD area. (ii) The gradient should be high – i.e., the rate of inflation should go up by, say, more than 2.5 times a year.

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