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Democracy, Populism and Hyperinflation[s]: Evidence from Latin America[*]

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Abstract

We test for the populist view of inflation in Latin America between
1970 and 2007. The empirical results—based on the relatively novel
panel time-series data and analysis—confirm the theoretical prediction
that recently elected governments coming into power after periods of
political dictatorship, and which are faced with high economic inequal-
ity, end up generating high inflation and macroeconomic instability.
All in all, we suggest that the implementation of democracy as such
requires not only the 'right political context'—or an appropriately con-
strained executive—to work well, but it also must come with certain
economic institutions (e.g. central bank independence and a credible
and responsible fiscal authority), institutions which would raise the
costs of pursuing populist policies in the first place.

Keywords: Democracy, populism, hyperinflation, Latin America.

JEL Classification: E31, E65, N16, O23, O54.

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1 Introduction and Motivation

Latin America has been known for its high economic inequality and poor macroeconomic performance, and also for a particular propensity to flirt between political dictatorships and more democratic institutions. For instance, in the 1980s, after a spell of dictatorships, a number of Latin American countries re-democratised (Argentina, Bolivia, Brazil and Peru, to mention a few). However, almost immediately after this process of political liberalisation had taken place, high inflation and even severe bursts of hyperinflation also happened in those countries. Macroeconomic stabilisation took some time to take root in the region. In fact, stabilisation came only after a considerable ten-year delay in the 1990s.

With data for Argentina, Bolivia, Brazil and Peru from 1970 to 2007, periods of political dictatorship, re-democratisation, high inflation, hyper-inflation, and then finally macroeconomic stabilisation are captured. We are therefore able to test for the *populist view* of inflation in Latin America, which predicts that in countries with high economic inequality that re-democratise, the coalition coming into power will try to *[re]*distribute income from the rich to the poor. However, this is usually done through higher and unfunded public deficits, or wage and salary increases, which in turn generate higher inflation and macroeconomic instability, and this is known to be detrimental to the welfare of the poor in the first place[1].

The empirical results suggest that during the period of political dictatorship inflation was lower, which indicates that the implementation of democracy seen in the 1980s was, in fact, detrimental to macroeconomic stability. Therefore, the evidence allows us to speculate that the recently elected governments in those countries pursued populist, or the so-called *[re]*distributive, policies that eventually led to poor macroeconomic performance through high rates of inflation and even hyperinflation.

The contribution of this paper is that, firstly, we focus on understanding the hyperinflationary bursts in Latin American countries right after re-democratisation. This entails a disaggregation of the data to pinpoint more

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[1]For instance, Bittencourt (2009) investigates the case of the Brazilian hyperinflation of the 1980s and 1990s, and he suggests that the high rates of inflation seen at the time contributed to increase earnings inequality. Moreover, Easterly and Fischer (2001) suggest that the poor from 38 countries consider inflation to be a more pressing problem than the rich, which suggests that the poor are the ones suffering more with higher inflation.

accurately the impact of democracy on inflation. Secondly, we construct a political index based on principal component analysis, which extracts the common factors of different political regime variables, and that gives a proxy for political regime characteristics with more explanatory power. Thirdly, we make use of the relatively novel panel time-series analysis that deals with interesting empirical issues such as non-stationarity, heterogeneity bias in dynamic panels, economic endogeneity and between-country dependence, issues not covered by the previous studies, and which are therefore believed to improve on previous estimates.

The remainder of this paper is as follows: the next subsection briefly reviews and inserts this paper within the previous literature. Section 2 describes the data and the empirical strategy used, and then reports and discusses the results. Section 3 concludes; it summarises the work, and suggests some *policy* implications and also future work.

1.1 Related Literature

Paldam (1987) presents some early evidence, which does *not* take into account the hyperinflationary bursts of the 1990s, that suggests that civilian governments tend to generate high*[er]* inflation than military ones in Latin America; and Sachs (1989), and Dornbusch and Edwards (1990) descriptively highlight the issue of recently elected governments pursuing redistributive populist policies in Latin America in the 1980s.

Alesina and Drazen (1991) suggest that in more 'polarised' societies, or in societies with higher income inequality, stabilisations are delayed, (i.e. stabilisations come only after some 'political consolidation' takes place, or after an agreement on which group pays for the stabilisation is reached). This is important for the Latin American case, not only because it presents high income inequality, but also because, roughly speaking, stabilisation came only after a ten-year delay following the implementation of democracy. Alternatively, Cukierman *et al.* (1992) suggest that more homogeneous societies rely less on seigniorage, and Veiga (2000) provides evidence that in more fragmented societies, or societies with a large number of political parties in congress, stabilisations are delayed. The latter is also related to the Latin American experience *right* after re-democratisation in which the number of political parties was by far higher than ten years after re-democratisation, which suggests that political fragmentation has been reduced over time, or

alternatively, that a process of political consolidation with less, but more structured political coalitions, have been taking place in the region.

Moreover, Beetsma and Van der Ploeg (1996) argue that in excessively unequal societies, and Latin America fits the bill again, the government tries to please the median voter, or the poor in this case, via redistribution. Desai, *et al.* (2003) suggest that it all depends on how unequal a country is (i.e. democratisation taking place in unequal countries lead to populist policies and hence high inflation, which is the case in some Latin American countries)[2]. Furthermore, Desai *et al.* (2005), suggest that inequality affects inflation, but conditional on the political structure[3].

Acemoglu, Johnson, Robinson and Thaicharoen (2003) suggest that distortionary macroeconomic policies that retard economic growth (e.g. in terms of high inflation), are symptoms of 'weak institutions', or not properly constrained executives. Furthermore, Acemoglu, Johnson and Querubín (2008) suggest that policy reforms are only successful when the 'political context' is right (e.g. Zimbabwe implemented central bank independence in 1995, however it has been plagued with hyperinflation since 1999 when the constraints on the executive were severely curtailed). Finally, Dutt and Mitra (2008) suggest that excessive inequality leads to political instability, which in turn leads to policy volatility, and therefore lower investment and economic growth.

Essentially, the literature suggests that the implementation of democracy in developing countries should be accompanied not only by the 'right political context', or well-constrained executives, but also by the right economic institutions (e.g. sound fiscal and monetary policies conducted by a responsible and independent treasury and central bank respectively). Above all, the 'right political context' and the right economic institutions should move together in this context, so that the costs of delayed stabilisations could be somehow avoided.

This seems to be the case in Latin America (i.e. a re-democratisation process in an unequal region without much political maturity, at least in terms of number of political parties in Congress during and right after democratisation, and also without the necessary economic institutions in

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[2] In addition, Al-Marhubi (1997), suggests that higher inequality is positively associated with higher inflation rates in a cross-section of countries.

[3] Also, Aisen and Veiga (2006) suggest that political instability, exemplified by the number of government crisis, leads to higher inflation, in particular in developing countries.

place—fiscal rules and central-bank independence came only towards the end of the 1990s—resulted in a long spell of macroeconomic instability in the region, with all its costs to economic welfare)[4].

2   Data, Empirical Strategy, and Results

The data set used covers the period between 1970 and 2007, and four Latin American countries, namely Argentina, Bolivia, Brazil and Peru (i.e. $T = 38$ and $N = 4$). The data on inflation *(INFLAT)* come from the Bureaux of Census of the four countries. The normalised political variables that we use come from the Polity IV data set, which is compiled and provided by the Centre for Global Policy, and they are: democracy *(DEMOC)*, which ranges from 0 (a more democratic country) to 1 (a less democratic one); constraints on the executive *(XCONST)*, which ranges from 0 (a more constrained executive) to 1 (a less constrained one); and political competition $(POLCOMP)$, which ranges from 0 (more political competition) to 1 (less political competition).

With the above information we can, via spectral decomposition, use principal component analysis to extract the common factors, or the linear combinations, of these three normalised Polity IV variables, so that we end up with a proxy for political regime characteristics $(POLITY)$ which contributes to reduce omitted variable problems, or model uncertainty, and which presents more explanatory power. This is potentially important because in this case we are able to reduce the dimensionality of a set of prospective political variables, and we end up with one variable, $POLITY$, that contains most of the information coming from different candidates for political regime characteristics.

The control variables used include the government's share of the real gross domestic product *(GOV)*, the ratio of exports and imports over the real gross domestic product *(OPEN)*, the growth rate of the real gross domestic product *(GROWTH)*, and the liquid liabilities over the real gross domestic product $(M2)$, which are all provided by the Penn World Table (PWT) data set mark 6.3 and World Development Indicators respectively.

Table One presents the correlation matrix, so that we can have an initial

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[4] Alternatively, Crowe (2006) suggests that when democratisation takes place, the 'elite bias' is reduced and macroeconomic stabilisation takes place without much delay.

insight on the behaviour of the data; and what can be seen is that both political regime variables used, i.e. $DEMOC$ and $POLITY$, present negative correlations with inflation. This tentatively suggests that when these countries re-democratised in the 1980s, or when the variables for political regime characteristics decreased in size, macroeconomic performance deteriorated in terms of inflation rates.

The control GOV presents the expected positive correlation with inflation, i.e. bigger governments tend to generate higher inflation, and $OPEN$, $GROWTH$ and $M2$ present the expected negative signs against the inflation rates. This is because it is believed that more economically open societies, and countries that grow faster and which possess a more developed financial system tend to present a more stable macroeconomic environment.

Table 1: The Correlation Matrix: Argentina, Bolivia, Brazil and Peru, 1970-2007.

	INFLAT	GOV	DEMOC	POLITY	OPEN	GROWTH	M2
INFLAT	1						
GOV	.333*	1					
DEMOC	-.150	.209*	1				
POLITY	-.142	.226*	.995*	1			
OPEN	-.379*	-.633*	-.305*	-.323*	1		
GROWTH	-.450*	-.166*	.100	.100	.043	1	
M2	-.299*	-.165*	-.426*	-.422*	.368*	.103	1

Sources: Bureaux of Census, Centre for Global Policy, Penn World Table, World Development Indicators and author's own calculations. * represents statistical significance at the 5% level.

In addition, and for the sake of clarity, we plot the data on inflation and political regime characteristics in each country separately. Each panel of Figure One illustrates the fact that when those countries re-democratised in the 1980s, illustrated by a reduction in the indices of political regime characteristics, the inflation rates increased considerably shortly after. Moreover, it is also seen that macroeconomic stabilisation took roughly ten years after re-democratisation to take root in the region.
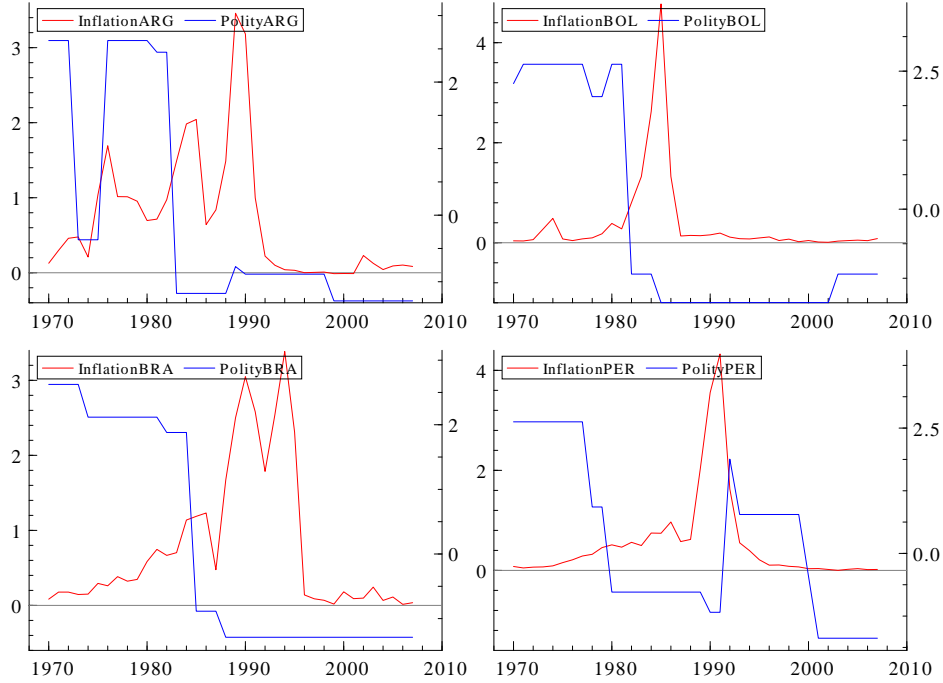
6

Figure 1: Inflation and Political Regime, 1970-2007. Sources: Bureaux of Census, Polity IV and author's own calculations. $Inflation$ is the inflation rate and $Polity$ is the measure of political regime.

Therefore, this initial inspection of the data, with all its caveats, suggests that the process of political liberalisation taking place in the 1980s was followed by high rates of inflation in the region. Moreover, stabilisation was clearly delayed, i.e. it came only well after the first civilian presidents came into office, with the implementation of certain stabilisation plans and other economic institutions.

In terms of econometric modelling, since we have a $T > N$ data set, the empirical strategy used is based on panel time-series analysis. Firstly, for non-stationarity in the country time-series we use the Im, Pesaran and Shin [IPS (2003)] test, which allows for heterogeneous parameters and serial correlation in the residuals. The IPS test consists of an augmented Dickey-Fuller regression for each variable of each country, and these are then averaged. The moments of the mean and variance of the average $\bar{t}$ are -1.46 and .63

respectively[5].

Secondly, the issue of heterogeneity bias in dynamic $T > N$ panels, which is caused because under wrongly assumed homogeneity of the slopes, the composite disturbance term ends up being serially correlated and therefore the explanatory variables x_s are not independent of the lagged dependent variable y_{t-1}. This is dealt with by the Swamy's (1970) Random Coefficients (RC) estimator, which gives consistent estimates of the expected values. The RC estimator assumes the existence of heterogeneous intercepts *and* slopes, and it consists of a weighted average of α_i and of the $\beta_i s$. The weight is a modified variance-covariance matrix of the heterogeneous parameters[6]. Moreover, the one-way Fixed Effects (FE) estimator also provides consistent estimates in dynamic models when $T \to \infty$, but only when the slopes are homogeneous[7].

All in all, although these countries shared similar macroeconomic characteristics at the time, these estimators account not only for important econometric issues, but also for the fact that some of these countries do present different levels of economic development (Brazil and Argentina are known to be relatively more developed than Peru and Bolivia).

Furthermore, some would justly argue that there is reverse causality present (i.e. high rates of inflation would actually determine regime change in the region, or the democratic transition in this case). We therefore use the Fixed Effects with Instrumental Variables (FE-IV) two-stage Least Squares estimator, with the first lag of the respective political regime variable as the identifying instrument for the contemporaneous political variable being estimated. The estimates provided by the FE-IV estimator are asymptotically consistent and efficient as $T \to \infty$.

We therefore estimate static and dynamic models with different pooled estimators (i.e. the benchmark Pooled Ordinary Least Squares (POLS), FE, RC and FE-IV). The estimated heterogeneous dynamic equation is as follows

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[5] An alternative to IPS (2003) is the test by Levin, Lin and Chu (2002). However, this test assumes parameter *homogeneity*, and therefore does not consider a possible heterogeneity bias present in the data.

[6] The Mean Group estimator, proposed by Pesaran and Smith (1995), is also an alternative. However, this estimator is sensitive to outliers, a problem not faced by the RC estimator.

[7] In addition, GMM-type estimators are not an alternative under $T > N$ for the overfitting problem. See Bond (2002).

$$
\begin{aligned}
INFLAT_{it} \;=\;& \alpha_i + \beta_i POLITY_{it} + \gamma_i GOV_{it} + \delta_i OPEN_{it} \quad\quad (1)\\
& + \epsilon_i GROWTH_{it} + \zeta_i M2_{it} + \varepsilon_i INFLAT_{it-1} + \upsilon_{it},
\end{aligned}
$$

in which $INFLAT$ are the inflation rates, $POLITY$ is the political regime variable which consists of the common factors of $DEMOC$, $XCONST$ and $POLCOMP$, GOV is the share of government in the gross domestic product, $OPEN$ is a measure of economic openness, $GROWTH$ are the growth rates of the gross domestic products, and $M2$ are the liquid liabilities, which is a measure of financial development.

In addition, and given some similar macroeconomic characteristics, we deal with between-country dependence, which is believed to happen through the disturbances being $E(u_{it}u_{jt}) \neq 0$. For that we make use of Zellner's (1962) Seemingly Unrelated Regressions (SUR) estimator, which presents greater efficiency, the greater the correlation amongst the disturbances. The SUR estimates different country time series, which are then weighted by the covariance matrix of the disturbances[8]. Moreover, this estimator provides rather insightful estimates because it disaggregates the analysis even further than the pooled analysis, so that we can have a more in-depth view of the hyperinflationary processes at the time[9]. Equation Two illustrates the equation estimated for each country,

$$
\begin{aligned}
INFLAT_t \;=\;& \alpha_t + \beta POLITY_t + \gamma GOV_t + \delta OPEN_t \quad\quad (2)\\
& + \epsilon GROWTH_t + \zeta M2_t + \upsilon_t.
\end{aligned}
$$

In terms of results, firstly, in Table Two we report the IPS statistics, and they suggest that we can reject the null hypothesis of unit roots and accept in favour of the alternative that at least *one* country of each variable is, in fact, stationary. This implies that no further data transformations are needed, and also that cointegration analysis cannot be pursued.

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[8] An alternative to SUR is the Common Effects Estimator proposed by Pesaran (2006). However, N is assumed to be large and in our data set $N=4$. Furthemore, Kapoor, M., H. H. Kelejian, *et al.* (2007) propose an estimator that also works best under the $N \to \infty$ assumption.

[9] For a more thorough discussion about panel time-series analysis in general, see Smith and Fuertes (2008).

Table 2: Panel Unit-Root Tests

Variables	IPS Statistics
INFLAT	-2.87
GOV	-2.63
DEMOC	-2.31
POLITY	-2.35
OPEN	-2.51
GROWTH	-3.48
M2	-3.61

The moments of the mean E and variance var of the average $\bar{t}$ are respectively: -1.46 and .63. Source: Im, Pesaran and Shin (2003) and author's own calculations.

Secondly, in Table Three we report the static estimates of $DEMOC$ and $POLITY$ on inflation using the POLS and FE estimators respectively. Columns One and Two make use of the $DEMOC$ variable and it presents negative and statistically significant effects on inflation in both estimated equations. The three control variables present the expected signs and are all statistically significant (i.e. $OPEN$, $GROWTH$ and $M2$ are all negatively associated with the inflation rates). The GOV estimates are positive, but not statistically significant. The F test* suggests the presence of country fixed effects, which indicates that the FE estimator is the most appropriate one in this static instance.

Columns Three and Four make use of the $POLITY$ proxy for political regime characteristics, and it also presents negative and statistically significant effects on inflation in both equations. The three control variables follow the same pattern as before (i.e. $OPEN$, $GROWTH$ and $M2$ all present negative effects on the inflation rates). The GOV estimates are not clear cut in this case either. The F test* confirms the presence of fixed effects, which again makes the FE estimator the most appropriate to be used in this static context.

Table 3: Static Estimates of DEMOC and POLITY on Inflation, 1970-2007.

INFLAT	Static Models			
	POLS (1)	FE (2)	POLS (3)	FE (4)
GOV	.029 (1.40)	.003 (.12)	-.030 (1.44)	.002 (.09)
DEMOC	-1.003 (-4.98)	-1.137 (-5.53)		
POLITY			-.187 (-4.93)	-.125 (-5.56)
OPEN	-.017 (-3.43)	-.040 (-3.29)	-.018 (-3.48)	-.041 (-3.35)
GROWTH	-.074 (-5.53)	-.067 (-4.90)	-.074 (-5.52)	-.067 (-4.91)
M2	-.020 (-3.95)	-.016 (-2.44)	-.020 (-3.89)	-.016 (-2.45)
Constant	1.77 (3.66)	2.87 (3.77)	1.25 (2.68)	2.33 (3.12)
F test	23.64	24.56	23.51	24.67
F test*		2.76		3.00
R^2	.44	.40	.44	.40

T-ratios in parentheses. Number of observations: $NT = 152$. The basic estimated equation is $INFLAT_{it} = \alpha + \beta POLITY_{it} + \gamma GOV_{it} + \delta OPEN_{it} + \epsilon GROWTH_{it} + \zeta M2_{it} + \upsilon_{it}$, in which $INFLAT$ is the inflation rates, $DEMOC$ and $POLITY$ are the political regime variables, GOV is the government's share in the real GDP, $OPEN$ is a measure of economic openness, $GROWTH$ is the growth rates of the real GDP, and $M2$ is a measure of financial development. POLS is the Pooled Ordinary Least Squares and FE is the Fixed Effects estimators.

Thirdly, in Table Four we report the dynamic estimates of $DEMOC$ and $POLITY$ on inflation using the FE and RC estimators respectively. In Columns One and Two we use the variable $DEMOC$, and it presents negative and statistically significant effects on inflation. The three controls, $OPEN$, $GROWTH$ and $M2$, present mostly negative effects on inflation, however they are not all statistically significant. The control GOV presents positive signs and the RC estimates are statistically significant. The Likelihood Ratio (LR) test suggests heterogeneity of intercepts *and* slopes, which indicates that the RC estimator is, in fact, the one delivering the best estimates in this dynamic case.

In Columns Three and Four we make use of the $POLITY$ proxy for political regime characteristics, and it presents negative and statistically significant effects on inflation in both equations. The control GOV presents the expected positive sign, and the RC estimates are statistically significant. $OPEN$, $GROWTH$ and $M2$ present mostly negative effects on inflation,

however they are not entirely significant. The LR test again suggests the presence of heterogeneous intercepts *and* slopes, which makes the RC estimator the best alternative in this context.

Table 4: Dynamic Estimates of DEMOC and POLITY on Inflation, 1970-2007.

| INFLAT | Dynamic Models | | | |
	FE (1)	RC (2)	FE (3)	RC (4)
GOV	.004 (.19)	.133 (3.33)	.004 (.18)	.132 (3.39)
DEMOC	-.377 (-2.14)	-.659 (-2.86)		
POLITY			-.070 (-2.13)	-.118 (-2.90)
OPEN	-.026 (-2.74)	-.037 (-.62)	-.026 (-2.75)	-.037 (-.62)
GROWTH	-.049 (-4.56)	-.039 (-2.87)	-.049 (-4.57)	-.039 (-2.93)
M2	.001 (.33)	.007 (-.24)	.001 (.33)	-.007 (-.23)
$INFLAT_{(-1)}$	.584 (9.93)	.432 (5.49)	.583 (9.90)	.436 (5.66)
Constant	1.20 (1.97)	-1.20 (-1.66)	1.02 (1.73)	-1.51 (-2.09)
F test	50.77		50.75	
F test*	1.71		1.73	
Wald test		227.60		231.82
LR test		61.53		61.55
R^2	.64		.63	

T-ratios in parentheses. Number of observations: $NT = 152$. The basic estimated equation is $INFLAT_{it} = \alpha_i + \beta POLITY_{it} + \gamma GOV_{it} + \delta OPEN_{it} + \epsilon GROWTH_{it} + \zeta M2_{it} + \varepsilon INFLAT_{it-1} + \upsilon_{it}$, in which $INFLAT$ is the inflation rates, $DEMOC$ and $POLITY$ are the political regime variables, GOV is the government's share in the real GDP, $OPEN$ is a measure of economic openness, $GROWTH$ is the growth rates of the real GDP, and $M2$ is a measure of financial development. FE is the Fixed Effects and RC the Random Coefficients estimators.

In Table Five we report the estimates of $DEMOC$ and $POLITY$ on inflation using the FE-IV estimator. In columns one and two we regress $DEMOC$ against inflation in static and dynamic specifications, and it presents negative and statistically significant effects on inflation. The controls $OPEN$, $GROWTH$ and $M2$ present negative effects and are mostly significant. GOV presents positive effects, however the estimates are not significantly different from zero. Furthermore, the instruments are significant in the first-

stage regressions and the F* tests indicate the presence of country fixed effects.

In columns three and four we regress the proxy $POLITY$ against inflation and it keeps its significant negative effects on inflation. The controls $OPEN$, $GROWTH$ and $M2$ are mostly negative and significantly different from zero. The GOV estimates are positive, however not statistically significant. Moreover, the instruments are significant in the first-stage regressions, which rules out the possibility of a weak instrument, and the F* test indicates fixed effects.

Table Five: Second-Stage Estimates of DEMOC and POLITY on Inequality, 1970-2007.

INFLAT	FE-IV			
	(1)	(2)	(3)	(4)
GOV	.005 (.18)	.004 (.20)	.004 (.15)	.004 (.19)
DEMOC	-1.29 (-5.06)	-.396 (-1.73)		
POLITY			-.245 (-5.11)	-.075 (-1.75)
OPEN	-.043 (-3.44)	-.026 (-2.72)	-.044 (-3.51)	-.027 (-2.74)
GROWTH	-.064 (-4.60)	-.049 (-4.52)	-.064 (-4.60)	-.049 (-4.52)
M2	-.017 (-2.44)	.001 (.29)	-.017 (-2.46)	.001 (.28)
INFLAT(-1)		.581 (9.32)		.580 (9.28)
Constant	3.02 (3.89)	1.22 (1.94)	2.40 (3.20)	1.04 (1.74)
F test*	3.02	1.68	3.27	1.70
Wald test	238.40	507.26	239.18	507.15
R^2	.39	.63	.39	.63

T-ratios in parentheses, number of observations: $NT = 152$. The basic estimated equation is: $INFLAT_{it} = \alpha_i + \beta POLITY_{it} + \gamma GOV_{it} + \delta OPEN_{it} + \epsilon GROWTH_{it} + \zeta M2_{it} + \varepsilon INFLAT_{it-1} + \upsilon_{it}$, in which $INFLAT$ is the inflation rates, $DEMOC$ and $POLITY$ are the political regime variables, GOV is the government's share in the real GDP, $OPEN$ is a measure of economic openness, $GROWTH$ is the growth rates of the real GDP, and $M2$ is a measure of financial development. The identifying instrument is the first lag of the political regime variable being estimated. FE-IV is the Fixed-Effects with Instrumental Variables estimator.

It is worth mentioning that in most of these static and dynamic equations, GOV does not present clear-cut estimates nor statistical significance,

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which suggests the importance of political regime characteristics, or democracy in this case, as the *main* determinant of inflation in the region at the time.

Finally, when we disaggregate the analysis further and make use of the SUR estimator that takes into account any between-country dependence present in the data, the story the data are telling does not change much. In the first panel of Table Six the $DEMOC$ variable presents negative signs and all estimates are statistically significant. Furthermore, the three control variables present, most of the time, the expected signs (i.e. $OPEN$, $GROWTH$ and $M2$ keep their negative effects, and most of the estimates are statistically significant). The GOV estimates are mostly positive and significant. The Lagrange Multiplier (LM) test of independence suggests that we can not accept the null hypothesis of between-countries *[in]*dependence[10].

When we use $POLITY$ as the proxy for political regime characteristics in the second panel of Table Five, all estimates present the by now expected negative effects on inflation, and all estimates are also statistically significant. Moreover, most controls present the expected signs and are mostly statistically significant. The LM test indicates that we can not accept the null of between-countries independence, which also justifies the use of the SUR estimator in this instance.

It is also worth mentioning that Argentina presents the smallest political estimates amongst all countries, and this is probably because Argentina is the *least* unequal country in the sample. On the other hand, Brazil, perhaps for being the most unequal country amongst the four, presents the largest political regime estimates of all. This perhaps further illustrates the fact that democratisation in unequal countries indeed leads to higher inflation and macroeconomic instability, (i.e. Desai, *et al.* (2003))[11].

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[10]The IPS test reported above assumes the existence of between-country *independence*. An alternative that considers the existence of between-country dependence is proposed by Pesaran (2007), the cross-section IPS (CIPS) test. However, CIPS assumes that $N > 10$ and we have $N = 4$ in our data set. It is therefore thought that the IPS test in this case is slightly biased but still informative and the best alternative available.

[11]For the sake of space we do not report the dynamic SUR estimates, nevertheless, the results are quantitatively and qualitatively similar to the ones in Table Six. Available upon request.

Table 6: SUR Estimates of DEMOC and POLITY on Inflation, 1970-2007

INFLAT	SUR			
	ARGENTINA	BOLIVIA	BRAZIL	PERU
GOV	.116 (3.83)	.204 (2.22)	.332 (4.22)	-.292 (-4.35)
DEMOC	-.591 (-2.31)	-1.06 (-3.15)	-2.06 (-4.98)	-1.08 (-4.76)
OPEN	.038 (2.50)	.035 (1.50)	-.238 (-9.91)	-.054 (-2.79)
GROWTH	-.035 (-2.27)	-.082 (-1.73)	-.026 (-1.35)	-.064 (-5.32)
M2	-.097 (-6.15)	-.032 (-3.12)	.057 (5.31)	-.051 (-2.89)
LM test	14.26			
GOV	.118 (3.94)	.205 (2.22)	.324 (4.08)	-.290 (-4.37)
POLITY	-.108 (-2.24)	-.208 (-3.12)	-.349 (-5.03)	-.212 (-4.83)
OPEN	.040 (2.61)	.034 (1.44)	-.236 (-9.85)	-.054 (-2.80)
GROWTH	-.034 (-2.25)	-.077 (-1.60)	-.032 (-1.70)	-.064 (-5.41)
M2	-.098 (-6.20)	-.032 (-3.06)	.056 (5.22)	-.053 (-3.05)
LM test	15.02			

T-ratios in parentheses. Number of observations: $NT = 152$. The basic estimated equation is $INFLAT_t = \alpha_t + \beta POLITY_t + \gamma GOV_t + \delta OPEN_t + \epsilon GROWTH_t + \zeta M2_t + \upsilon_t$, in which $INFLAT$ is the inflation rates, $DEMOC$ and $POLITY$ are the political regime variables, GOV is the government's share in the real GDP, $OPEN$ is a measure of economic openness, $GROWTH$ is the growth rates of the real GDP, and $M2$ is a measure of financial development. SUR is the Seemingly Unrelated Regressions estimator.

Ultimately, the estimates reported above indicate that the process of re-democratisation of the Latin American countries in this sample was followed by high rates of inflation, and even bursts of hyperinflation. Loosely speaking, the introduction of more democratic political institutions seen at the time was somewhat detrimental to macroeconomic stability, at least in terms of inflation rates. Alternatively, it can be said that unequal societies that implement more democratic institutions must make sure that the executive, even when democratically elected, is well constrained, and also introduce sound economic institutions such as a responsible fiscal authority and an independent central bank, so that hyperinflation does not occur in the first place and stabilisations, when needed, are not delayed. This is particularly important for these Latin American countries, since central bank independence and fiscal responsibility rules were implemented well after de-

mocratisation, i.e. only in the late 1990s.

3   Concluding Observations

We investigated in this paper the role of more democratic regimes in inflation in a panel of Latin American countries that re-democratised in the 1980s. The results, based on the relatively novel panel time-series analysis, suggest that those countries suffered from high rates of inflation and even bursts of hyperinflation right after they re-democratised. Moreover, macroeconomic stabilisations came only after a long and protracted delay. All in all, the *populist view* of inflation, which predicts that newly elected coalitions coming into power in unequal societies end up generating higher deficits and, in turn, higher inflation, is confirmed by the data and analysis conducted here.

The current relevance of carrying out a historical study on the Latin American hyperinflationary experience is that, as we speak, an emerging country like Zimbabwe is suffering from hyperinflation. On the one hand, it can be speculated that the Zimbabwean hyperinflation which started in 1999, coincides with the fact that the constraints on the governing party were severely relaxed (e.g. Acemoglu, Johnson and Querubín (2008)). On the other hand, in a country like South Africa, which possess an independent central bank, there is an ongoing debate about the efficacy, and even legitimacy, of such an economic institution in conducting monetary policy and its impact on economic activity. Moreover, Argentina has also recently been *debating* the role of its own central bank and respective governor in conducting monetary policy. Therefore, the lessons of past hyperinflationary episodes, and their causes and consequences must be not only learned and well understood, but also kept in the minds of policy makers and other stakeholders, so that the mistakes of the past are not repeated again.

Furthermore, the quality of the evidence presented is, to a certain extent, boosted not only because we focus on those rather unequal countries which re-democratised and suffered from hyperinflation in Latin America, but also because we use a novel proxy for political regime characteristics based on principal component analysis, which reduces model uncertainty and has more explanatory power. In addition, we take advantage of the novel panel time-series analysis, which deals with important empirical issues not covered by the previous studies, such as heterogeneity bias in dynamic

panels, economic endogeneity and between-country dependence. It is therefore believed that the analysis conducted here represents a step forward in terms of achieving better and more insightful estimates.

Regarding future work, on the one hand, the inclusion of economic inequality would be a welcome development to this analysis. However data on inequality from Bolivia and Peru are fragmented, which somehow precludes a study on the impact of political regime characteristics *and* inequality on inflation. More realistically, the use of an alternative proxy for 'political consolidation' (e.g. the number of political parties in congress since re-democratisation) would be a feasible alternative to Polity IV variables. Moreover, with extended time series and information on central bank independence we could interact 'political consolidation' with central bank independence to get a proxy for political *and* economic maturity which would bring more explanatory power to this analysis.

On the other hand, the Zimbabwean case is certainly worth investigating. The impact of the reduction on the constraints on the executive and the hyperinflationary episode that followed since 1999 should be further analysed. Finally, a comparison of the Latin American case with the Eastern European transition economies would also be of some interest. Some of those countries suffered from high rates of inflation during the transition from socialism, however those economies were not as unequal as the Latin American ones.

To conclude, the Latin American hyperinflationary experience is informative because it exemplifies an interesting pattern seen in the region at the time. Unequal societies that re-democratise and which still do not have the 'right political context' or enough political maturity, nor the right economic institutions such as an independent central bank conducting sound monetary policy and a credible fiscal authority in place, will end up doing more harm than good in terms of macroeconomic *[in]*stability, which affects mainly the welfare of the poor. Moreover, those Latin American countries took, roughly speaking, ten years to stabilise, which is also an example of a delayed stabilisation. Macroeconomic stabilisation came only when those countries matured their political regimes, and also when they introduced central bank independence, inflation targeting and fiscal responsibility laws in the 1990s[12]. Ultimately, political liberalisation should be accompanied

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[12]For instance, Singh (2006), Singh and Cerisola (2006) and Santiso (2006) highlight the

by some sort of 'political consolidation' and also by the implementation of the right economic institutions.

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importance of the much improved macroeconomic performance in Latin America recently to produce better economic outcomes from the 1990s onwards. Nevertheless, Carstens and Jácome (2005) warn that Brazil still has one of the *least* independent central banks in Latin America.

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