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Inflation and economic growth in Latin America: Some panel time-series evidence☆

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ABSTRACT

In this paper we investigate the role of macroeconomic performance, mainly in terms of rates of inflation, in determining economic growth in four Latin American countries which suffered hyperinflationary bursts in the 1980s and early 1990s, but that also differ in terms of development levels. The data set covers the period between 1970 and 2007, and the empirical results, based on panel time-series data and analysis, confirm the anecdotal evidence which suggests that inflation has had a detrimental effect to growth in the region. All in all, we highlight the fact that excessive inflation has clearly offset the Mundell–Tobin effect and consequently the high costs that inflation has had on economic activity in the region.

1. Introduction and motivation

Latin America has been known for its display of high rates of inflation, and even bursts of hyperinflation, in particular shortly after its political transition to democracy in the 1980s and in the first half of the 1990s, and also for presenting erratic economic growth rates during roughly the same period of time. The countries following this, pathological, pattern include; Argentina, Bolivia, Brazil and Peru. In most of these cases, macroeconomic stabilisation took some time to take root. In fact, stabilisation came only in the middle of the 1990s, in the spirit of Alesina and Drazen (1991), with the implementation of particular economic institutions (inflation targeting and fiscal responsibility laws), when, coincidentally enough, growth rates also started showing a positive trend.

Given this background, we investigate the role of macroeconomic performance, mainly in terms of inflation rates, in determining economic growth in the region. More specifically, we use data from Argentina, Bolivia, Brazil and Peru from 1970 to 2007 – a period which captures episodes of reasonably low inflation, rising inflation, high inflation, hyperinflation, and low inflation again – and panel time-series analysis to study whether inflation played any role (either via the Mundell–Tobin effect and its predicted shift from money to financial assets which would drive the interest rates down and consequently increase economic activity, or alternatively via higher macroeconomic uncertainty and volatility, and other distortions which would actually create a hold up problem and possibly offset the Mundell–Tobin effect), in generating growth in Latin America.

Interestingly enough, although the above-mentioned countries differ in terms of economic and institutional development (with Argentina and Brazil being reasonably more developed than Bolivia and Peru), all of them suffered severe hyperinflationary bursts sometime after their democratisation processes. Therefore, in the vein of Sargent et al. (2009), we pay special attention to these four countries in an attempt to better understand and consequently shed some light on a time period which includes the infamous 'lost decade' in South America.

The empirical results robustly suggest that, during the period investigated, inflation has not only been the main macroeconomic determinant of growth in the region, but also that its effect has been clearly a negative one on growth (clearly offsetting the prospective Mundell–Tobin effect). It is therefore fair to say that the lack of certain economic institutions (central-bank independence and a credible fiscal authority), which were implemented in the region only in the second half of the 1990s, combined with the political transitions of the 1980s and some populist tendencies, facilitated the process of generating the easy money used to fund spiralling public transfers, which some would argue led to those hyperinflationary bursts seen in the 1980s and early 1990s, with all their consequences on economic activity, growth and welfare in general.[1]

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[1] For instance, Bittencourt (2009) investigates the case of the Brazilian hyperinflation of the 1980s and early 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.

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In addition, the importance of acquiring a better understanding of a time period which includes, amongst other things, high inflation and severe hyperinflationary episodes is not only because we recently have had a protracted hyperinflationary event in Zimbabwe, with all its consequences on economic activity, but also because there is an ongoing debate in developing countries like South Africa and Argentina about the role, legitimacy and efficacy of independent central banks in conducting monetary policy. For instance, the South African case is interesting in the sense that it is a rather unequal country transitioning to democracy (just like Latin America in the 1980s), in which particular stakeholders heavily lobby for a change in the way the South African Reserve Bank implements inflation targeting. The current Argentinian case, in which the governor of the Banco Central has been recently, and somehow hastily, removed from office, is also interesting given the recurring history of populism and poor macroeconomic performance that this country has experienced in the last 40 years or so. Therefore, it is important to better understand not only the causes, but also the consequences of episodes of macroeconomic mismanagement, so that the mistakes of the past do not happen again.

The contribution of this paper to the literature is that, firstly, we follow the early advice given by Fischer (1993) and Temple (2000), and also the recent analysis by Sargent et al. (2009) of the South American hyperinflationary experiences, and restrict our sample to those diverse Latin American countries which transitioned to more democratic regimes in the 1980s and that suffered hyperinflationary episodes in the 1980s and 1990s to conduct a more disaggregated and 'detailed' *case study* on the subject.

Secondly, we follow the advice by Durlauf et al. (2005), and Sirimaneetham and Temple (2009) and make use of principal component analysis to get independent latent variables with more explanatory power in an attempt to reduce *model uncertainty* in growth analysis.

Thirdly, we also follow the early advice given by Bruno and Easterly (1998), and to some extent the recent analysis by Bond et al. (2010), and make use of *annual data*, without the usual averaging which would certainly blur our view on the region, to better pinpoint the effects of some macroeconomic variables on growth.

Finally, we take advantage of *panel time-series analysis* – which deals with empirical issues such as non-stationarity, heterogeneity and endogeneity biases, and cross-section dependence in relatively thin panels – to carry out a more specific study on Latin America, which methodologically differs from the previous large cross-sectional and panel studies that treated Latin America either as a dummy or as an outlier to be removed from the sample. This is believed to provide more informative estimates on the topic, and therefore to deepen our knowledge of the region.

The remainder of the paper is as follows: the next section briefly reviews and inserts this paper within the previous literature. Section 3 describes the data and the empirical strategy used, and then reports and discusses the results obtained. Section 4 concludes the paper, it summarises the work, and then it suggests some *policy* implications and also possible future work.

2. Related literature

The literature on inflation and growth has a long and illustrious tradition in economics. De Gregorio (1993) presents some early evidence using a panel of twelve Latin American countries during the 1950–1985 period, and he suggests that inflation is detrimental to economic growth (or that economic agents in general will shift to activities which are 'not the engines of sustained growth'); and Fischer (1993) presents international cross-sectional and panel data evidence for the period between 1961 and 1988 to suggest that inflation indeed outweighs the Mundell–Tobin effect, or that inflation reduces the capital stock in the economy. It is worth noting that, given the date of their publication and the periods covered, these two studies do not account for the hyperinflationary episodes in Latin America of the early 1990s, which would certainly reinforce their results.

Furthermore, Barro (1995) suggests that 'households are thought to perform poorly when inflation is high' and he makes use of international data covering the period between 1960 and 1990, and cross-sectional analysis, to suggest that the high-inflation countries in his sample, mostly in Latin America, drive the negative effects of inflation on growth; and Bullard and Keating (1995) make use of annual time-series data and VAR analysis to reach a similar conclusion (that in the high-inflation country in their sample, inflation negatively affects growth, or that the Mundell–Tobin effect is offset).

Moreover, Clark (1997) uses a panel of eighty five countries between 1960 and 1985, and different specifications and sub-samples, to confirm the above (that economic agents 'devote productive resources to dealing with inflation') and he suggests that there are problems with cross-section regressions – because of the averaging – and that panel analysis might be the way forward. Bruno and Easterly (1998) suggest that, because of the averaging again, there is no long-run relationship between inflation and growth in cross-sectional analysis. Nevertheless, they suggest, using a non-parametric approach and data covering the period between 1961 and 1994 that there is a negative relationship between inflation and growth when inflation reaches their proposed 40% threshold (or an inflation crisis).

In addition, Sarel (1996), Ghosh and Phillips (1998), and Khan and Senhadji (2001) confirm the above negative relationship between inflation and growth once inflation reaches particular thresholds. Finally, Sirimaneetham and Temple (2009) make use of an index for macroeconomic instability, based on principal component analysis, and Bayesian Model Averaging in an attempt to deal with model uncertainty, and they suggest that macroeconomic stability is a necessary condition for economic growth in a panel of 70 developing countries during the period between 1970 and 1999.

Ultimately, the literature suggests that high inflation is detrimental to growth in large cross-section and panel data samples (it either outweighs the Mundell–Tobin effect, or create particular distortions, including increased volatility and uncertainty, which results in a shift to less productive activities and consequently slower growth rates), and in a region like Latin America – which has suffered from chronic income inequality – high inflation and erratic growth certainly display negative effects on overall economic welfare.[2]

Hence, it is fair to say that this paper is a natural development of the previous literature on the subject (we conduct a case study that attempts to pinpoint in more detail the effects of severe macroeconomic conditions on economic activity; we avoid the averaging and make use of annual data, and panel time-series analysis so that we are able to capture more accurately the role of the poor macroeconomic performance seen in the 1980s and early 1990s in Latin America on growth; and we attempt to reduce model uncertainty via principal component analysis). It is therefore believed that we are able to provide informative estimates so that our knowledge on those historical episodes in a very idiosyncratic, and also diverse within, Latin America is deepened.

3. Empirical analysis

3.1. A look at the data

The data set used covers the period between 1970 and 2007, and four Latin American countries, namely Argentina, Bolivia, Brazil and

[2] Other notable contributions include Barro (1998), Fischer (2004) and Easterly (2005), not to mention the growth studies which include inflation as the main proxy for macroeconomic performance. Overall, most of these large cross-section and panel studies reach the conclusion that inflation is detrimental to economic growth. See Temple (2000) for an early survey of the literature.