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ON THE ENDOGENEITY OF INFLATION TARGETING: PREFERENCES OVER INFLATION*

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February 2011

Abstract

Over the last quarter of a century, inflation targeting has become a popular monetary regime. Nevertheless, empirical evaluations of IT have shown contradictory results. Part of the reason is that IT in and of itself constitutes an endogenous decision and thus needs to be properly instrumented. In this paper, we show that preferences over inflation constitute a crucial determinant of IT: countries exhibiting greater inflation aversion are more likely to adopt IT.

Key words: Inflation targeting, Monetary Policy, Monetary Regimes.

JEL Codes: E31, E52, E58, E61.

* The authors appreciate comments and suggestions from Laurence Ball. All remaining errors are ours.

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SOBRE LA ENDOGENIDAD DEL SISTEMA DE INFLACIÓN OBJETIVO: EL CASO DE LA AVERSIÓN A LA INFLACIÓN[*]

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Resumen

En el último cuarto de siglo el sistema de inflación objetivo se ha convertido en un popular régimen monetario. Sin embargo, las evaluaciones empíricas del sistema IO han mostrado resultados contradictorios. Parte de la razón es que la adopción de dicho sistema es endógena y por lo tanto debe ser apropiadamente instrumentada. En este documento mostramos que las preferencias sobre la inflación son un determinante crucial de la adopción del sistema IO: países con una aversión a la inflación más alta son más propensos a adoptar dicho sistema.

Palabras clave: Sistema de Inflación Objetivo, Política Monetaria, Regímenes Monetarios.

Clasificación JEL: E31, E52, E58, E61.

[*] Los autores agradecen los comentarios y sugerencias de Laurence Ball. Todos los errores restantes son nuestros.

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1. Introduction

Close to 30 countries have adopted inflation targeting over the last quarter of a century. Along with the adoption of the Euro, inflation targeting has been the headline of monetary policy regimes during this period of time. A large theoretical literature and many empirical papers evaluating related outcomes have accompanied the process.

While a large part of the theoretical literature claims that a number of benefits are associated with IT (e.g., Svensson 2010), opinions vary widely at the empirical level. On the one hand, some papers are very optimistic regarding IT's performance. For instance, Mishkin and Schmidt-Hebbel (2007), conclude that "[i]nflation targeting seems to help countries achieve lower inflation in the long run, reduce their response to oil price and exchange rate shocks, strengthen monetary policy independence, improve monetary policy efficiency, and obtain inflation outcomes that are closer to target levels. (…) Inflation targeting thus seems to be the natural monetary regime choice, especially for emerging market economies, where the gains from inflation targeting are found to be the largest."

On the other hand, other papers hold more skeptical views. For instance, Ball (2010), studying the performance of those advanced economies that either adopted IT or joined the Euro, concludes that "neither of the two regimes has substantially changed the behavior of output, inflation or long-term interest rates." Likewise, for developing countries, Brito and Bystedt (2010) find "no evidence that inflation targeting (…) improves economic performance as measured by the behavior of inflation and output growth."

Part of what makes an empirical evaluation of IT so difficult is that the adoption of IT is in itself an endogenous decision. Several papers in the literature acknowledge this, and try to address the issue in a variety of (too often unsatisfactory) ways. Thus, for example, in discussing Mishkin and Schmidt-Hebbel's results, Ball (2010) argues that their "results are not credible, however, because of the instrument they use for the IT dummy: the lagged IT dummy."

A serious debate about the real impact of IT on macroeconomic performance needs to discuss the determinants of IT. This paper addresses this issue. To be clear, this is not another paper evaluating the merits of IT; rather, we take a step back and look at the determinants underlying the decision to adopt IT. We propose that the adoption of IT depends, among other things, on a country's preferences with respect to inflation. Our conjecture is that, other things being equal, countries with a greater aversion to inflation will more likely adopt IT regimes.

The literature dealing with the endogeneity of IT has instrumented IT using a variety of variables beyond the one noted above; among these are past inflation, Central Bank independence, fiscal variables and openness. For instance, Gonçalves and Carvalho (2008) run a probit model to instrument for IT, using two determinants of it—inflation and the ratio of debt to GDP. According to them, a country with high inflation and searching for credibility is more likely to implement IT. As for debt, they see two opposing effects. First, countries with high debt prefer to stay away from IT, so as to keep open the possibility of using seignorage to pay debt. On the other hand, they claim that IT–via credibility—could potentially lower real interest rates, thus making the debt burden lighter; the latter effect suggests a positive link between debt and the likelihood of adopting IT. They find that countries with higher average past inflation and lower debt levels are more likely to adopt IT.

Mishkin and Schmitt-Hebbel (2001) also find that inflation positively affects the likelihood of having an IT regime. They find that countries that trade more or have a lower fiscal surplus are more likely to adopt IT. According to them, formal Central Bank independence is also positively associated with the likelihood of adopting IT.

In our paper, we test whether inflation aversion along with the other variables proposed in the literature explain the probability of a country adopting IT. We measure inflation aversion by estimating the impact of inflation on life satisfaction, using empirical specifications inspired, for instance, by Di Tella et al. (2001) or Wolfers (2003). We then estimate whether or not the probability of adopting IT depends on inflation aversion. We indeed find evidence

supporting our conjecture. Our results suggest that the monetary institutions and regimes of a country have deep roots—that is, a country's preference with regards to inflation. In our results, we also show that while inflation aversion is a statistically relevant variable to explain the IT adoption—even when controlling for the other variables—most of them are irrelevant or not robust once inflation aversion enters the regressions.

The results have an obvious application. The growing literature evaluating the impact of IT on macroeconomic performance could use measures of inflation aversion to instrument for IT. Beyond this straightforward application, the large literature evaluating how different institutions affect economic outcomes—themselves often facing endogeneity problems—could utilize such measures of preferences as instruments.

In the context of the paper, a natural question that arises is: what shapes the preferences over inflation? While answering this question is not the main objective of this paper, we do nonetheless end up addressing it, and come up with interesting results. Countries that have not experienced an inflation crisis over the last 30 years exhibit an inflation aversion that increases with past average inflation rates. Having experienced an inflation crisis episode makes average past inflation rates irrelevant.

The remainder of the paper is organized as follows. Section 2 describes our empirical strategy; section 3 describes the data; and section 4 reports and interprets the results. In section 5, we describe several robustness tests and extensions. Section 6 concludes.

2. The Empirical Model

Our main conjecture is that the adoption of inflation targeting depends, among other things, on the level of inflation aversion in a country. Countries with high levels of inflation aversion should adopt institutions designed to fight inflation. Thus, our first task is to estimate the degree of inflation aversion. For this, we follow a strategy inspired by Di Tella et al. (2001). In their seminal paper, Di Tella et al. (2001) show that inflation and unemployment negatively affect self-reported life satisfaction measures. The coefficient linking life satisfaction to

inflation can be interpreted as a measure of the degree of inflation aversion present in the data. We then use the inflation aversion estimates to assess their role as potential determinants of the probability of a country adopting IT.

Thus, our empirical strategy has three stages:

a. Estimate country-year measures of Life Satisfaction;
b. Estimate the inflation aversion of countries—that is, the effect of inflation on Life Satisfaction measures. At this point, we also estimate the determinants of inflation aversion; and
c. Estimate the role of inflation aversion and other variables in explaining the probability of a country adopting Inflation Targeting.

a. Life Satisfaction measures. The first stage focuses on obtaining Life Satisfaction measures. Following Wolfers (2003), we use three measures of Life Satisfaction. The surveys (described in detail in the next section) include the question we are most interested in: "In general terms, would you say that you are satisfied with your life? Would you say that you are: very satisfied, fairly satisfied, not very satisfied, or not at all satisfied?" We code the answers to the question as follows: 1 = "not at all satisfied"; 2 = "not very satisfied"; 3 = "fairly satisfied"; and 4 = "very satisfied"." For each country-year, we compute the following three life satisfaction measures.

- LS1: The simple average of life satisfaction across individuals for each country- year.
- LS2: Following Wolfers (2003) and Stevenson and Wolfers (2008), we run an ordered probit regression on a full set of dummy variables for each country-year. LS2 is the corresponding fixed effect of the ordered probit.
- LS3: This measure is computed in exactly the same way as LS2, but includes micro controls in the ordered probit regressions. In other words, the country-year average satisfaction levels control for the characteristics of the persons interviewed, such as income proxies, marital status, age, employment, education, and so forth.

With these three LS estimates, we proceed to estimate the inflation aversion of each country.

b. Inflation aversion. For the baseline case, we estimate the following regression for each country i in our sample and for each LS measure j:

$$LS_{ijt} = c_{ij} - \gamma_{ij}\pi_{it} + e_{ijt} \qquad (1)$$

where LS_{ijt} is the j measure of Life Satisfaction for country i and year t, c_{ij} is a constant, π_{it} is the inflation rate, and e_{ijt} is the error term. Our parameter of interest, γ, reports the effect of changes in inflation on *LS*. Note that we have chosen a specification where γ is preceded by a negative sign. This is convenient for interpretation purposes. This way, increases in γ can be interpreted as increases in inflation aversion. We estimate a single constant inflation aversion for each country—in other words, inflation aversion will vary across countries but will remain constant within each of them over time. As explained in the next section, our dataset does not go back in time far enough such that we might attempt to estimate time varying inflation aversion coefficients. This remains an interesting task for future research.

c. The determinants of IT. As for the third stage, we are interested in understanding whether the probability of a country adopting IT depends on the inflation aversion estimated in the second stage. In particular, for each LS measure, we estimate the following linear probability model:

$$IT_i = c + \beta_1\hat{\gamma}_i + \beta_2 X_i + u_i \qquad (2)$$

where IT_i takes the value of 1 if country i currently has an inflation targeting regime and zero if otherwise, c is a constant, and $\hat{\gamma}_i$ is the country specific inflation aversion parameter estimated in the second stage. X_i is a vector of variables proposed by other papers in the literature as determinants of inflation targeting. They include per capita GDP, the ratio of debt to GDP, inflation, openness and Central Bank Independence, among others. In our baseline estimations, each of these variables enter the regression as five year averages prior to the IT adoption date if the country is using IT, or to the average IT adoption date if it is not using it. Finally, u_i is the error term.

A few technical notes are necessary at this point. First, note that we chose to estimate equation (2) as a linear model, rather than using nonlinear models such as a probit. The reason for this is that we implement several econometric models that are simpler in their linear setups. Having said that, although we do not report the results here, the main conclusions in the paper remain solid if we estimate equation (2) using a probit.[1]

On the other hand, in equation *(2)*, $\hat{\gamma}_i$ is an estimated variable. It comes from the set of regressions in equation 1. For some countries, $\hat{\gamma}_i$ might be estimated with precision; in others it might not. In order to assess the statistical significance of β_1, we need to take this fact into account. We follow the EIV methodology implemented in Gawande (1997) and Gawande and Bandyopadhyay (2000), and first proposed by Fuller (1987). There, the estimated variable (which is $\hat{\gamma}_i$ in our case) is measured with error and the model is estimated with the observations weighted according to the accuracy with which they were initially measured. Imprecise estimates in (1) (in terms of the associated variance) are corrected by reducing the relevance of the individual estimate while giving greater importance to the mean of the sample estimates. The details are provided in the appendix.

Finally, in equation (2), the true model—that is, the correct combination of the list of determinants—is unknown. We report several small-scale models (OLS or EIV) in order to highlight the role of inflation aversion when combined with the traditional determinants. To assess the robustness of the findings, we also report the Bayesian Model Averaging (BMA) results. This strategy allows us to determine whether or not our findings are robust once the determinants are included in all possible combinations. As in Abiad et al., (2009), when using BMA, we report the average coefficient and the probability that each variable is statistically effective. As discussed in Abiad et al., (2009), with BMA, a variable is effective if its estimated inclusion probability is greater than 50 percent.

[1] The results are available from the authors upon request.

3. Data

Countries: One obvious constraint in the macro literature dealing with Life Satisfaction data is the availability of long-time series of cross-country comparable surveys. In the literature, many of the papers working with Life Satisfaction surveys rely on the Eurobarometer, which contains data from 16 European countries and surveys going back to the early-70s. For our purposes though, the European countries are problematic, in that many of them adopted the Euro in 1999. In connection with this, there is (almost) no point in estimating the probability of a country adopting IT. Thus, we focus on data from Latin American countries, using the sample of countries with Life Satisfaction surveys, found in the Latinobarometro. The countries surveyed in the Latinobarometro, 17 in total, are Brazil, Bolivia, Colombia, Argentina, Mexico, Paraguay, Uruguay, Panama, Ecuador, Peru, El Salvador, Nicaragua, Honduras, Costa Rica, Chile, Guatemala and Venezuela. The IT adoption dates are taken from Svensson (2010).

Self reported Wellbeing: For these 17 countries, the Latinobarometro, an annual survey performed since 1995, has data on self-reported wellbeing. The question of interest, described in the previous section, is available for the years 1997 and 2000-2007.[2] This gives us 153 country-year observations. Altogether, 157.453 persons were interviewed for these country-years. Table A1 in the appendix summarizes the number of observations per country-year available in the sample.

Inflation: The data used to compute inflation aversion coefficients comes from the WDI and correspond to the annual change in the Consumer Price Index (CPI).

Controls: Controls in the third stage of the model include GDP per capita (in constant 2000 US$), trade as a percentage of GDP, inflation, Central Bank independence, government debt, and fiscal balance as a percentage of GDP. The first three variables come from the WDI.

[2] In 2002, rather than inquiring about Life Satisfaction, the question of interest was "In general, would you say that you are very happy, fairly happy, not very happy or not at all happy?" Wolfers (2003), reports that the answers to both questions are highly correlated in the Eurobarometer. We assume the same is true for the Latinobarometro.

Trade corresponds to the sum of total exports and imports as a percentage of GDP. The Central Bank independence index is the Modified Cukierman Index—a weighted average of 18 criteria of Central Bank political and economic independence, using a continuous scale from 0 to 1. Higher numbers are associated with higher levels of independence. For more information on the index, see Jácome and Vásquez (2005). The data on government debt comes from Panizza (2005), who gathered debt data for 89 countries for the period 1993-2005. Debt equals central government debt as a percentage of GDP. Fiscal balance data comes from the IFS, as improved by Brender and Drazen (2004), and is reported as a percentage of GDP with negative numbers corresponding to fiscal deficits. The fiscal balance for Guatemala was taken directly from the IFS.

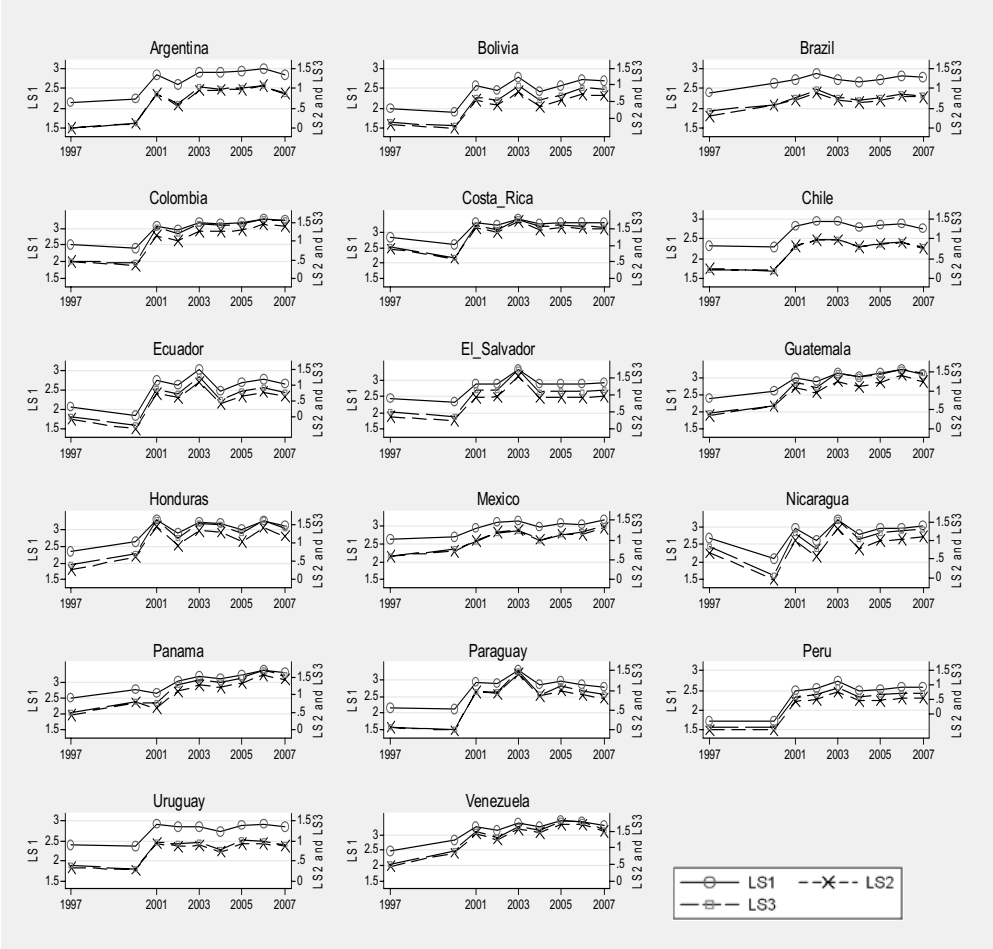
Results

a. LS measures: The first stage focuses on the estimation of three country-year life satisfaction measures. To describe the results of the estimation, we provide descriptive statistics of the three LS measures in Table 1 and depict their evolution over time in Figure 1. Note that the table includes the correlations between the different measures of LS; consistent with the literature, the measures are highly correlated.

Table 1. Summary statistics for LS.

	# Obs.	Average	Standard Deviation	Min	Max	Correlations		
						LS1	LS2	LS3
LS1	153	2,82	0,36	3,46	1,72	1		
LS2	153	0,85	0,46	1,71	-0,56	0,999	1	
LS3	153	0,95	0,48	1,80	-0,46	0,987	0,988	1

Figure 1: LS measures by country and their evolution over time



As explained in section 2, LS3 is based on a regression of the responses people gave to the question regarding how satisfied they were, against micro controls and country-year dummies. The results of this regression are reported in Table 2. They are consistent with similar regressions reported in the literature. For instance, LS grows with income (proxies) and is greater for married people; being unemployed has a large adverse impact on self-reported satisfaction levels.

Table 2. LS3 and micro controls

	Coefficient	Standard Error
Age	-0.020***	0.0014
Age Squared	0.00019***	0.000015
Male	0.0025	0.0069
Head of Household	0.0067	0.0092
Occupation		
Unemployed	-0.23***	0.016
Independent Worker	-0.058***	0.0083
Retired	-0.029*	0.015
Student	0.014	0.015
Unpaid Family Worker	-0.040***	0.011
Education		
Middle School Incomplete	0.031**	0.015
Middle School Complete	0.046***	0.017
High School Incomplete	0.053***	0.016
High School Complete	0.081***	0.018
University Incomplete	0.090***	0.02
University Complete	0.14***	0.023
Superior Institute Education Incomplete	0.096***	0.022
Superior Institute Education Complete	0.099***	0.023
Marital Status		
Single	-0.055***	0.0091
Divorced	-0.10***	0.011
Income Proxies		
Television	0.072***	0.013
Refrigerator	0.086***	0.011
House	0.082***	0.0087
Computer	0.096***	0.01
Washer	0.064***	0.01
Telephon	0.039***	0.0085
Car	0.082***	0.0096
Second House	0.076***	0.012
Drinkable Water	0.000027	0.014
Hot Water	0.067***	0.013
Sewerage	-0.016	0.013
Observations		157.447

Notes: Regression run with an ordered probit. Country-year dummies are included. Base for occupation dummies: independent worker, public and private workers. Base for education dummies: no education. Base for marital status dummies: married.

b. Inflation aversion: In the second stage, we estimate the respective inflation aversion for each LS measure and each country. Before that, we first report the regression results in a pooled sample for each measure of LS on inflation, a constant, and time and country dummies. This regression allows us to check whether or not the result uncovered elsewhere

in the literature—claiming that inflation negatively affects Life satisfactions indices—holds in the pooled sample. The results are reported in Table 3.[3]

The sign on inflation is negative—that is, higher inflation rates cause LS outcomes to deteriorate.[4] The coefficient is significant for all specifications. Consequently, our results are comparable to those obtained elsewhere in the literature.

Table 3. Life Satisfaction and Inflation in LAC.

	LS1	LS2	LS3
Inflation	-0.0026**	-0.0036**	-0.0033*
	[0.0012]	[0.0016]	[0.0017]
Constant	2.93***	0.99***	1.02***
	[0.050]	[0.064]	[0.067]
# of obs	152	152	152
R-squared	0,906	0,902	0,903

Notes: regressions include country and time dummies ***significant at the 1%, **significant at the 5%, *significant a the 10%

As for the country specific regressions of LS_i and inflation, we report the $\hat{\gamma}_i$'s (that is, the inflation aversion coefficients), as well as the summary statistics in Table 4. At the bottom of the same table, we also report the correlations between the three different sets of inflation aversion coefficients. Two results in particular are worth noting. First, the average $\hat{\gamma}$'s are higher for those countries that adopted IT; in fact, the differences are statistically significant. This preliminary result suggests that, indeed, IT countries are more inflation averse. A second interesting result is that the $\hat{\gamma}$*'s* obtained with the different LS measures are highly correlated.

[3] Wolfers (2003) and Di Tella (2001), working with data from the Eurobarometer, also include unemployment rates in theses type of regressions. Unfortunately, long time-series of comparable unemployment rates across Latin American countries are not available (see for example, Ball and Hofstetter, 2011).

[4] Recall though that, later, when running this regression country by country, we change the sign linking inflation and LS, so that increases in the coefficient are interpreted as increases in inflation aversion.

Table 4. The $\hat{\gamma}$'s for each LS measure.

Country	γ_1	γ_2	γ_3
Argentina	-0,0121	-0,0147	-0,0164
Bolivia	-0,0042	-0,0038	-0,0092
Brazil*	0,0020	0,0021	-0,0001
Colombia*	0,0573	0,0717	0,0835
Costa Rica	0,0374	0,0503	0,0443
Chile*	0,1119	0,1347	0,1378
Ecuador	0,0088	0,0112	0,0116
El Salvador	0,0325	0,0503	0,0504
Guatemala*	0,0311	0,0414	0,0230
Honduras	0,0611	0,0777	0,0834
Mexico*	0,0302	0,0378	0,0376
Nicaragua	-0,0071	-0,0091	-0,0107
Panama	-0,0978	-0,1294	-0,1251
Paraguay	-0,0482	-0,0616	-0,0650
Peru*	0,1208	0,1572	0,1674
Uruguay	0,0077	0,0092	0,0084
Venezuela	0,0186	0,0242	0,0250
Average	0,021	0,026	0,026
Std Dev	0,052	0,067	0,069
Max	0,121	0,157	0,167
Min	-0,098	-0,129	-0,125
IT			
Average	0,059	0,074	0,075
Std Dev	0,048	0,060	0,067
Max	0,121	0,157	0,167
Min	0,002	0,002	0,000
Non-IT			
Average	-0,0003	0,0004	-0,0003
Std Dev	0,043	0,057	0,057
Max	0,061	0,078	0,083
Min	-0,098	-0,129	-0,125
Correlations			
γ_1	1		
γ_2	0,9987	1	
γ_3	0,9956	0,9956	1

* IT Regime

As mentioned in the introduction, at this point, a natural question that arises is: what determines inflation aversion?[5] While one could come up with many alternatives to explain this variable, we focus here on those variables related to past inflation. Why is this? Conventional wisdom has regarded the Bundesbank as a classic inflation hawk. Some economists trace these anti-inflationary preferences to the infamous hyper-inflation of 1923. Along a similar line, we test here whether past inflation experiences shape current inflation preferences. In order to do this, we built two variables: the one, a measure of past average

[5] One of the first papers to attempt a response to a similar question is Fischer and Huizinga (1982).

inflation computed as a geometric average; the other, an inflation crisis dummy that takes the value of 1 if, in the past, the country experienced an inflation crisis as defined by Bruno and Easterly (1998)—that is, if it experienced at least two consecutive years of annual inflation greater than 40%. Otherwise, the dummy takes the value of 0. We built these two variables for three different time frames, 1970-2000, 1980-2000 and 1990 to 2000. We then use them to evaluate whether the inflation history over the last three-, two- and one decade(s) has shaped preferences with regards to inflation. The results with $\hat{\gamma}_1$ as the dependent variable are reported in Table 5.

Table 5. Determinants of Inflation Aversion

Time Window for Crisis Dummy:	1970-2000	1980-2000	1990-2000
Geometric Growth rate of CPI (1990-2000)	0.00717**	0.00541	0.00503
Crisis Dummy	0.120**	0.0697	0.0749
Interaction	-0.00735**	-0.00548	-0.00515
Constant	-0.0804*	-0.0448	-0.0430
R-squared	0.369	0.181	0.192
Geometric Growth rate of CPI (1980-2000)	0.00584*	0.00591*	5.58e-05
Crisis Dummy	0.115**	0.0816	0.00402
Interaction	-0.00595*	-0.00588*	-2.90e-05
Constant	-0.0729	-0.0625	0.0173
R-squared	0.288	0.227	0.004
Geometric Growth rate of CPI (1970-2000)	0.00639*	0.00389**	0.00113
Crisis Dummy	0.117*	0.0709*	0.0378
Interaction	-0.00652*	-0.00395**	-0.00120
Constant	-0.0752	-0.0447	-0.00633
R-squared	0.261	0.376	0.094

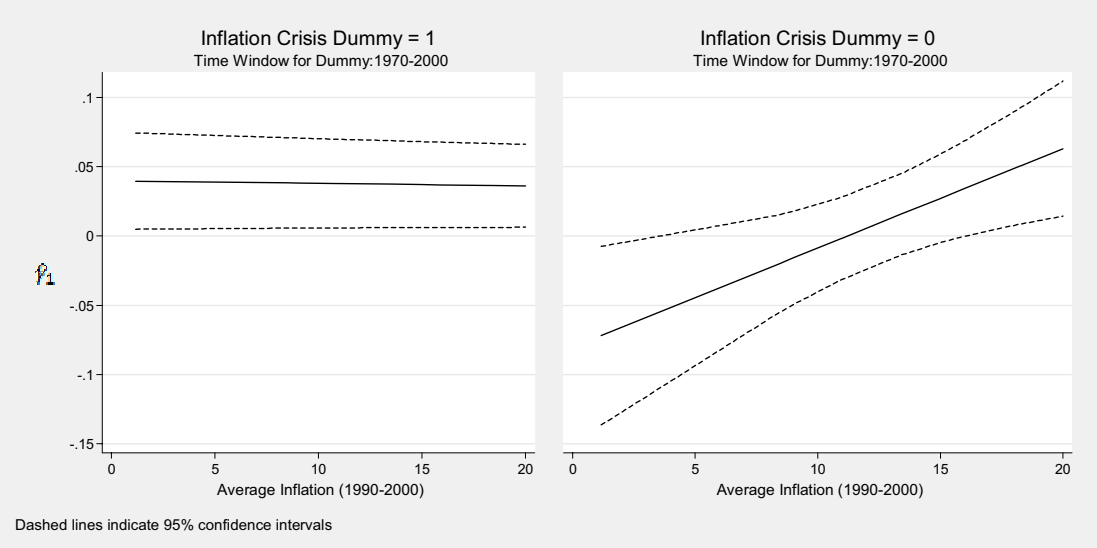
Note: Regressions for γ_1. All regressions include 17 observations. Crisis dummy takes a value of 1 if in the corresponding window inflation was above 40% for two consecutive years.

We get interesting results. Countries that have not experienced an inflation crisis over the last 30 years exhibit an inflation aversion that increases with past average inflation rates. Having experienced an inflation crisis episode implies a higher level of inflation aversion and makes average past inflation rates irrelevant. Take for instance the top left panel. Note that while inflation is significant, so is the interaction, which gives us the opposite sign and a virtually identical coefficient. That means that once the dummy takes the value of 1, average inflation does not affect inflation preferences. The point is emphasized in Figure 2, which depicts the preferences on the vertical axis and the inflation rate on the horizontal axis. Note that

countries without a past inflation crisis exhibit lower levels of inflation aversion than those that experienced one; for them though, a higher level of average inflation goes hand in hand with an increase in inflation aversion.

While further exploring the determinants of inflation aversion is beyond the scope of the paper, these results seem consistent with the conventional wisdom based on the German case. Future research should shed more light on this interesting issue and test the robustness of these initial findings with other samples.

Figure 2. The effects of past inflation on inflation aversion



c. The determinants of IT. Using the results discussed above, we next estimate the determinants of IT, as suggested by equation (2). For this, we build a dummy variable whereby a country has a value of 1 if it currently has an IT regime, and otherwise a value of zero. In our baseline estimations, we assess whether this variable can be explained by the inflation aversion as well as the other controls proposed in the literature. Whenever we include controls as determinants of IT, we use their 5 year average prior to IT adoption. For those countries not using IT, following the tradition started by Ball and Sheridan (2005), we calculate an average IT adoption date (using the dates of the countries that did adopt it). Our

list of controls (other than that for inflation aversion) includes GDP per capita, inflation, Central Bank independence, fiscal balance, debt/GDP and trade/GDP.

In the baseline estimates, we concentrate on those LA countries that have their own currency—that is, non-dollarized countries. The reason for this is that if a country is dollarized, there is (almost) no room for choosing an alternative monetary regime such as IT.[6] Later, in the robustness section, we further explore this point.

As discussed above, the inflation aversion is an estimated variable, one that can be measured with more precision for some countries than for others. We split the results in this section into two broad parts. We first report the results of the OLS and BMA estimations, wherein we ignore the issue regarding the potential imprecision in the inflation aversion estimates; we then report the results wherein this issue is addressed, using the EIV technique.

As discussed in the appendix, where we describe the EIV procedure in detail, the estimates obtained using this method are sample dependent. For example, the EIV estimate of inflation aversion for Peru depends on whether or not we include Panama in the estimations. Notwithstanding how many countries we use in the final stage of the empirical model, the EIV inflation aversion estimates throughout the paper are built using the whole sample—that is, all 17 LAC countries. This yields cleaner results for two reasons. On the one hand, the inflation aversion estimates remain constant across specifications. On the other hand, those countries not included in equation (2) still provide relevant information on the relative precision of inflation aversion estimates. Having said that, the main results are robust if we restrict the EIV estimate for inflation aversion to the sample of countries used in the regressions exploring IT determinants.[7]

OLS - BMA results

In tables 6, 7 and 8, we report OLS and BMA results. Each table reports the results with the alternative inflation aversion estimates—Table 6 for γ_1, Table 7 for γ_2, and Table 8 for γ_3. In

[6] Currently, El Salvador, Panama and Ecuador are the dollarized countries.
[7] The results are available from the authors upon request.

each table, columns 1 through 7 report the OLS regressions of the IT dummy for inflation aversion, a constant and an additional control, included one at a time. Column 8 then reports the average coefficient according to the BMA, along with the estimated probability of inclusion.

Table 6: The Determinants of IT using γ_1: OLS and BMA.

	1	2	3	4	5	6	7	8
Inflation aversion	6.27**	6.27**	7.03**	7.46**	7.00**	5.64**	5.83**	6,30
	[2.59]	[2.71]	[2.40]	[2.78]	[2.74]	[2.56]	[2.55]	(0.942)
GDP per-capita		-0,0004						-0,009
		[0.056]						(0.193)
Inflation			0.0018*					0,001
			[0.0010]					(0.552)
CBI				-1,34				-0,21
				[1.21]				(0.24)
Fiscal balance					-0,053			-0,02
					[0.059]			(0.308)
Debt/Gdp						-0,0034		-0,002
						[0.0026]		(0.505)
Trade							-0,0056	-0,001
							[0.0044]	(0.286)
Constant	0,25	0,25	0,14	1,2	0,17	0.42**	0.57*	0,52
	[0.14]	[0.24]	[0.14]	[0.87]	[0.16]	[0.19]	[0.29]	(1)
# Observations	14	14	14	14	14	14	14	14
R2	0,328	0,328	0,487	0,395	0,373	0,421	0,417	

Notes. Columns 1-7: OLS results with standard errors in brackets. *** significant at the 1%, ** significant at the 5%, * significant at the 10%. Column 8 reports estimation results based on Bayesian model averaging with the estimated probability of inclusion of each variable in parenthesis.

Table 7: The Determinants of IT using γ_2: OLS and BMA.

	1	2	3	4	5	6	7	8
Inflation aversion	4.92**	4.92**	5.53**	5.84**	5.48**	4.42*	4.56**	4,91
	[2.07]	[2.17]	[1.92]	[2.22]	[2.19]	[2.04]	[2.03]	(0.938)
GDP per-capita		0,0008						-0,008
		[0.056]						(0.19)
Inflation			0.0019*					0,001
			[0.0010]					(0.552)
CBI				-1,31				-0,19
				[1.21]				(0.235)
Fiscal balance					-0,052			-0,02
					[0.060]			(0.302)
Debt/Gdp						-0,0034		-0,002
						[0.0026]		(0.507)
Trade							-0,0056	-0,001
							[0.0044]	(0.285)
Constant	0,25	0,24	0,14	1,18	0,17	0.43**	0.58*	0,52
	[0.14]	[0.25]	[0.14]	[0.87]	[0.17]	[0.19]	[0.29]	(1)
# Observations	14	14	14	14	14	14	14	14
R2	0,32	0,32	0,481	0,386	0,364	0,416	0,41	

Notes. Columns 1-7: OLS results with standard errors in brackets. *** significant at the 1%, ** significant at the 5%, * significant at the 10%. Column 8 reports estimation results based on Bayesian model averaging with the estimated probability of inclusion of each variable in parenthesis.

Table 8: The Determinants of IT using γ_3: OLS and BMA.

	1	2	3	4	5	6	7	8
Inflation aversion	4.47**	4.47*	5.01**	5.51**	4.87**	4.03*	4.10*	4,16
	[1.96]	[2.06]	[1.84]	[2.13]	[2.07]	[1.92]	[1.95]	(0.885)
GDP per-capita		-0,0006						-0,012
		[0.057]						(0.215)
Inflation			0,0018					0,001
			[0.0010]					(0.495)
CBI				-1,44				-0,22
				[1.24]				(0.231)
Fiscal balance					-0,045			-0,01
					[0.061]			(0.238)
Debt/Gdp						-0,0035		-0,002
						[0.0026]		(0.522)
Trade							-0,0055	-0,002
							[0.0045]	(0.313)
Constant	0.27*	0,27	0,16	1,29	0,21	0.45**	0.59*	0,61
	[0.14]	[0.25]	[0.14]	[0.89]	[0.16]	[0.19]	[0.29]	(1)
# Observations	14	14	14	14	14	14	14	14
R2	0,301	0,301	0,456	0,378	0,335	0,404	0,387	

Notes. Columns 1-7: OLS results with standard errors in brackets. *** significant at the 1%, ** significant at the 5%, * significant at the 10%. Column 8 reports estimation results based on Bayesian model averaging with the estimated probability of inclusion of each variable in parenthesis.

The OLS results–columns 1 through 7 in all three tables—show that no matter what we control for, inflation aversion always has a significant and positive coefficient across the estimations. The economic importance of the coefficient is large. For instance, the smallest point estimate in Table 8 (column 6) implies that moving from a country with a low inflation aversion such as Argentina to a country with a high inflation aversion such as Chile increases the probability of the country adopting IT by 62%.[8] The BMA results also suggest that inflation aversion is an effective variable for predicting IT adoption.

As for the alternative determinants proposed in the literature, the OLS small-scale-models show disappointing results. Indeed, only inflation has statistical relevance. The sign is positive—that is, those countries that had a higher past inflation rate are more prone to adopt IT. This result is in line with other papers in the literature (for example, Ball and Sheridan, 2005).

The BMA results again suggest a role for inflation. This time though, debt also appears as a (borderline) effective variable. The sign—consistent with Goncalves and Salles—is negative, suggesting that countries with a lower initial debt ratio are more prone to adopt IT. The

[8] Similar figures for this estimate are obtained using a probit.

economic relevance is rather small when compared with the role of inflation aversion. For instance, moving from a high debt ratio country (Honduras, 82%) to a low debt ratio country (Chile, 17%) "only" increase the likelihood of adopting IT by 13%.

EIV and BMA results

The results reported so far have ignored the fact that inflation aversion—a regressor in equation (2)—is an estimated variable, that is, a variable potentially measured with error. As explained above and further detailed in the appendix, here we take this fact into account by adopting an error-in-variable (EIV) strategy, whereby the observation in equation (2) is weighted according to the precision with which it was originally estimated in equation (1). Based on this correction, we re-estimate the regressions reported in the previous subsection, and report the results in tables 9, 10 and 11.

Table 9: Determinants of IT using γ_1: EIV and BMA.

	1	2	3	4	5	6	7	8
Inflation aversion	2,62	2,87	3.12*	2,79	2,65	2,55	4.06**	3,57
	[1.70]	[1.87]	[1.64]	[1.80]	[1.77]	[1.60]	[1.50]	(0.93)
GDP per-capita		0,026						-0,029
		[0.066]						(0.393)
Inflation			0,0018					0,0002
			[0.0012]					(0.263)
CBI				-0,55				-0,21
				[1.33]				(0.25)
Fiscal balance					-0,015			0,01
					[0.065]			(0.27)
Debt/Gdp						-0,0043		-0,002
						[0.0027]		(0.601)
Trade							-0.011**	-0,011
							[0.0044]	(0.909)
Constant	0.34**	0,25	0,25	0,74	0.33*	0.55**	0.93***	1,29
	[0.14]	[0.28]	[0.15]	[0.98]	[0.16]	[0.19]	[0.25]	(1)
# Observations	14	14	14	14	14	14	14	14
R2	0,166	0,177	0,313	0,179	0,17	0,322	0,483	

Notes. Columns 1-7: EIV results with standard errors in brackets. *** significant at the 1%, ** significant at the 5%, * significant at the 10%. Column 8 reports estimation results based on Bayesian model averaging with the estimated probability of inclusion of each variable in parenthesis.

Table 10: Determinants of IT using γ_2: EIV and BMA.

	1	2	3	4	5	6	7	8
Inflation aversion	1,85	2,1	2.27*	1,98	1,88	1,82	2.96**	2,68
	[1.21]	[1.36]	[1.17]	[1.29]	[1.27]	[1.14]	[1.07]	(0.94)
GDP per-capita		0,032						-0,021
		[0.067]						(0.327)
Inflation			0,0019					0,0002
			[0.0012]					(0.28)
CBI				-0,58				-0,26
				[1.34]				(0.272)
Fiscal balance					-0,017			0,01
					[0.066]			(0.25)
Debt/Gdp						-0,0044		-0,002
						[0.0027]		(0.587)
Trade							-0.012**	-0,011
							[0.0044]	(0.918)
Constant	0.36**	0,24	0.26*	0,78	0.34*	0.57***	0.97***	1,30
	[0.14]	[0.29]	[0.14]	[0.98]	[0.16]	[0.18]	[0.25]	(1)
# Observations	14	14	14	14	14	14	14	14
R2	0,162	0,179	0,319	0,176	0,167	0,322	0,493	

Notes. Columns 1-7: EIV results with standard errors in brackets. *** significant at the 1%, ** significant at the 5%, * significant at the 10%. Column 8 reports estimation results based on Bayesian model averaging with the estimated probability of inclusion of each variable in parenthesis.

Table 11: Determinants of IT using γ_3: EIV and BMA.

	1	2	3	4	5	6	7	8
Inflation aversion	2,15	2,44	2.85*	2,37	2,19	2,12	3.54**	3,14
	[1.53]	[1.72]	[1.49]	[1.65]	[1.60]	[1.44]	[1.38]	(0.91)
GDP per-capita		0,029						-0,020
		[0.068]						(0.324)
Inflation			0,002					0,0004
			[0.0012]					(0.317)
CBI				-0,64				-0,27
				[1.37]				(0.276)
Fiscal balance					-0,016			0,01
					[0.066]			(0.242)
Debt/Gdp						-0,0044		-0,002
						[0.0028]		(0.571)
Trade							-0.012**	-0,01
							[0.0045]	(0.877)
Constant	0.36**	0,25	0,24	0,82	0.34*	0.56**	0.95***	1,26
	[0.14]	[0.29]	[0.15]	[1.00]	[0.17]	[0.19]	[0.26]	(1)
# Observations	14	14	14	14	14	14	14	14
R2	0,141	0,156	0,316	0,158	0,146	0,303	0,463	

Notes. Columns 1-7: EIV results with standard errors in brackets. *** significant at the 1%, ** significant at the 5%, * significant at the 10%. Column 8 reports estimation results based on Bayesian model averaging with the estimated probability of inclusion of each variable in parenthesis.

Inflation aversion retains a positive sign across specifications; countries averse to inflation to a greater extent are more likely to adopt IT. For the small-scale models, the statistical significance of inflation aversion is now more erratic than in the OLS case. With EIV in the small-scale models, the statistical relevance appears to depend on the controls included in the regression. Nevertheless, the BMA results (combined with EIV) show that inflation aversion is an effective variable. The probability of inclusion once all possible combinations are tried is above 90% for each of the three measures of inflation aversion. As for economic

relevance, the figures are still sizeable. For instance, the BMA average coefficient in Table 11 (3,1) implies that moving from a low inflation aversion country (Argentina) to a high inflation aversion country (Chile) increases the probability of adopting IT by 48%.

As for the rest of the variables, we obtain the same signs as in the OLS cases. Nevertheless, whereas this time inflation loses its statistical relevance, trade becomes statistically and economically important; more open countries are less likely to adopt IT. Nevertheless, in the robustness section, we show that this result may be spurious. Indeed, what it is capturing is the fact that most countries in LA that have adopted IT are large countries, and therefore tend to have a lower trade to GDP ratio. If one controls for the size of the country, trade becomes statistically irrelevant. Debt still has a negative sign and the BMA estimations suggest that it is again an effective variable.

Summing up, inflation aversion is a relevant variable both in the OLS/BMA case as well as in the EIV/BMA estimations. As for the rest of the variables, in both cases, debt is a (borderline) effective variable. It is worth pointing out though that in the small-scale models, debt is not statistically significant once we control for inflation aversion. Inflation only seems relevant in the OLS estimations, and trade is only important in the EIV case. In the next section, we further explore the robustness of these findings.

4. Robustness and discussion

a. High inflation in equation (1): When estimating country-specific inflation aversion coefficients following equation (1), we run LS measures against the inflation rate prevailing in the country for each year in which we have LS. For the 17 Latin American countries with LS information for those years, the average inflation rate is 8.5%, with a standard deviation of 5.8. During the period in question, two of the countries in the sample have average inflation rates above 20.1%—that is, beyond the two standard deviations. These are Ecuador and Venezuela, which have average inflation rates of 21.78 and 22.5, respectively. In the baseline cases, Ecuador is left out of the third stage, given that it is a dollarized economy (we will return to that shortly); Venezuela was though part of the estimations.

Here we test whether our results are robust if we exclude Venezuela when estimating equation (2). The results are reported in the first three columns of tables 12 and 13. The results are virtually identical to those discussed in the previous sections. Inflation aversion remains robustly relevant, while trade, debt and inflation are still important, but only for some specifications.

Table 12: Determinants of IT: BMA with OLS.

	Venezuela omitted			Ecuador and El Salvador as non inflation targeters			Salvador as non inflation targeter		
	γ1	γ2	γ3	γ1	γ2	γ3	γ1	γ2	γ3
Inflation aversion	6,11	4,72	4,03	6,72	5,01	4,36	6,33	4,78	4,08
	(0.94)	(0.925)	(0.879)	(0.97)	(0.94)	(0.919)	(0.939)	(0.923)	(0.875)
GDP per-capita	-0,005	-0,006	-0,008	-0,001	-0,001	-0,001	-0,003	-0,002	-0,003
	(0.166)	(0.172)	(0.193)	(0.127)	(0.123)	(0.131)	(0.133)	(0.13)	(0.146)
Inflation	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001
	(0.555)	(0.548)	(0.494)	(0.636)	(0.623)	(0.575)	(0.582)	(0.57)	(0.514)
CBI	-0,21	-0,19	-0,23	-0,10	-0,08	-0,10	-0,18	-0,16	-0,20
	(0.239)	(0.231)	(0.238)	(0.189)	(0.18)	(0.172)	(0.211)	(0.201)	(0.219)
Fiscal balance	-0,015	-0,014	-0,009	-0,02	-0,02	-0,011	-0,01	-0,01	-0,01
	(0.275)	(0.267)	(0.217)	(0.298)	(0.272)	(0.219)	(0.264)	(0.246)	(0.208)
Debt/Gdp	-0,0017	-0,0017	-0,0019	-0,001	-0,001	-0,001	-0,001	-0,001	-0,001
	(0.497)	(0.498)	(0.517)	(0.414)	(0.415)	(0.441)	(0.41)	(0.408)	(0.419)
Trade	-0,0016	-0,0016	-0,0018	-0,0009	-0,0009	-0,0010	-0,0012	-0,0012	-0,0013
	(0.313)	(0.313)	(0.328)	(0.225)	(0.23)	(0.235)	(0.257)	(0.259)	(0.266)
Constant	0,56	0,55	0,65	0,30	0,31	0,37	0,42	0,41	0,49
	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
# Observations	13	13	13	16	16	16	15	15	15

Results based on Bayesian model averaging with the estimated probability of inclusion of each variable in parentheses.

Table 13: Determinants of IT: BMA with EIV.

	Venezuela omitted			Ecuador and El Salvador as non inflation targeters			Salvador as non inflation targeter		
	γ1	γ2	γ3	γ1	γ2	γ3	γ1	γ2	γ3
Inflation aversion	3,45	2,65	3,27	0,29	0,16	0,24	3,80	2,81	3,34
	(0.922)	(0.942)	(0.935)	(0.444)	(0.4)	(0.42)	(0.945)	(0.949)	(0.927)
GDP per-capita	-0,022	-0,015	-0,013	-0,018	-0,017	-0,017	-0,016	-0,011	-0,010
	(0.345)	(0.294)	(0.286)	(0.245)	(0.234)	(0.236)	(0.286)	(0.247)	(0.238)
Inflation	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
	(0.27)	(0.287)	(0.325)	(0.274)	(0.281)	(0.289)	(0.272)	(0.289)	(0.342)
CBI	-0,23	-0,29	-0,35	0,07	0,08	0,07	-0,23	-0,27	-0,30
	(0.265)	(0.299)	(0.322)	(0.131)	(0.138)	(0.131)	(0.254)	(0.274)	(0.281)
Fiscal balance	0,016	0,014	0,014	0,00	0,00	0,003	0,01	0,01	0,01
	(0.3)	(0.291)	(0.289)	(0.115)	(0.11)	(0.111)	(0.268)	(0.25)	(0.244)
Debt/Gdp	-0,0022	-0,0021	-0,002	-0,002	-0,002	-0,002	-0,002	-0,002	-0,002
	(0.585)	(0.578)	(0.562)	(0.541)	(0.538)	(0.538)	(0.5)	(0.494)	(0.485)
Trade	-0,011	-0,011	-0,011	-0,004	-0,004	-0,004	-0,011	-0,011	-0,010
	(0.908)	(0.927)	(0.91)	(0.472)	(0.463)	(0.463)	(0.913)	(0.919)	(0.876)
Constant	1,31	1,35	1,35	0,71	0,69	0,69	1,19	1,22	1,18
	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
# Observations	13	13	13	16	16	16	15	15	15

Results based on Bayesian model averaging with the estimated probability of inclusion of each variable in parentheses.

b. *Dollarized countries*: Over the last decade, two countries in Latin America have dollarized, Ecuador and El Salvador. The two processes were very different; while Ecuador turned to dollarization in a desperate effort to stabilize its economy during a period of economic and political turmoil, El Salvador decided to give up monetary autonomy during a tranquil period, based on the argument that economic ties with the US (through trade and remittances) were strong enough to make such a move desirable.[9]

In our baseline estimation of equation (2) in the previous section, we left both countries out of the sample. Here we incorporate them into the estimation. We code dollarized countries as non-IT—that is, the regressions should now be interpreted as the determinants of whether a country adopts IT over *all* other monetary regimes. The BMA estimates are reported in the central columns of tables 12 and 13.

In Table 12, the results are virtually unchanged relative to those in the previous section. In Table 13, the estimated probability of inclusion of trade and inflation aversion drops marginally below 50%. A deeper look at the numbers reveals the reasons for this result. Recall that the difference between tables 12 and 13 is that the latter corrects for the potential errors in the estimates of inflation aversion. Including Ecuador in the estimation means including a country that had inflation rates close to 100% for the years we use to estimate inflation aversion. Thus, in Ecuador, the coefficients linking LS and inflation are out of line (in absolute terms) relative to the rest of the countries in our sample. EIV actually reinforces the problem, as in absolute terms, the estimated EIV inflation aversion for this country is 18 times greater than the mean of the estimates for the rest of the countries; the inclusion of Ecuador thus affects the probability of the inclusion of inflation aversion in the BMA estimates (see the appendix for more details). In order to address this point, the last three columns in tables 12 and 13 report the same results as those in columns 4 through 6, only dropping Ecuador. Now, even in the EIV case, we obtain the same kind of result as those for the main regressions in the previous section.

[9] Panama has been using the dollar ever since its independence from Colombia. Thus, it is excluded from the sample for all the specifications.

c. High inflation in equation (2). We already dealt with the potential inflation outliers when estimating equation (1), which involved the years 1997 and 2000-2007. Now, when estimating equation (2)—that is, the determinants of IT—inflation becomes an explanatory variable. In particular, all controls (including that for inflation) are averages of the five years prior to adopting IT for IT nations, or to the average IT adoption date for non-IT countries.

In the case of Brazil, the five-year window preceding IT adoption includes 1994, when inflation reached 2075%. As a result, the five-year average inflation rate for Brazil is almost four standard deviations above the mean of the variable across countries. Here, we reevaluate the role played by inflation by considering three years instead of five when computing the average inflation preceding IT. This way, we omit the inflation crisis in Brazil from the regression. The results are reported in Table 14.

Table 14: Determinants of IT: 3 year average inflation

	Small scale models					
	OLS			EIV		
	LS1	LS2	LS3	LS1	LS2	LS3
Inflation Aversion	6.23**	4.89**	4.47**	3,03	2,19	2,67
	[2.67]	[2.13]	[2.01]	[1.74]	[1.25]	[1.59]
Inflation (3 year average)	-0,009	-0,009	-0,009	-0,016	-0,017	-0,018
	[0.014]	[0.014]	[0.014]	[0.016]	[0.016]	[0.016]
Constant	0,34	0,34	0,37	0.51**	0.53**	0.54**
	[0.22]	[0.22]	[0.22]	[0.22]	[0.22]	[0.22]
# Observations	14	14	14	14	14	14
R2	0,349	0,342	0,327	0,236	0,238	0,224
	BMA					
	LS1	LS2	LS3	LS1	LS2	LS3
Inflation aversion	5,50	4,23	3,82	3,88	3,00	3,86
	(0.877)	(0.865)	(0.844)	(0.953)	(0.965)	(0.958)
GDP per-capita	-0,015	-0,015	-0,016	-0,027	-0,018	-0,015
	(0.247)	(0.241)	(0.25)	(0.393)	(0.322)	(0.304)
Inflation (3 year average)	-0,001	-0,001	-0,002	-0,006	-0,008	-0,011
	(0.162)	(0.157)	(0.173)	(0.409)	(0.488)	(0.568)
CBI	-0,43	-0,40	-0,49	-0,33	-0,47	-0,69
	(0.33)	(0.314)	(0.356)	(0.331)	(0.399)	(0.486)
Fiscal balance	-0,01	-0,01	-0,01	0,02	0,01	0,02
	(0.22)	(0.214)	(0.184)	(0.314)	(0.302)	(0.322)
Debt/Gdp	-0,002	-0,002	-0,002	-0,002	-0,002	-0,002
	(0.517)	(0.519)	(0.527)	(0.597)	(0.582)	(0.571)
Trade/Gdp	-0,003	-0,003	-0,003	-0,012	-0,012	-0,012
	(0.448)	(0.442)	(0.417)	(0.947)	(0.96)	(0.961)
Constant	0,89	0,87	0,96	1,48	1,59	1,77
	(1)	(1)	(1)	(1)	(1)	(1)
# Observations	14	14	14	14	14	14

Notes. Standard errors in brackets. *** significant at the 1%, ** significant at the 5%, * significant at the 10%. For BMA, the estimated probability of inclusion of each variable is in parenthesis.

The results in terms of inflation aversion are virtually unchanged. As for the role of inflation itself, once we correct for the outlier in Brazil, the coefficient for inflation is negative.

Nevertheless, the statistical relevance is weak. The small-scale models reveal no statistical relevance. The BMA results reveal that inflation is effective, but for only one out of six specifications.

d. Trade and IT: a spurious relationship? As explained above, several specifications suggest a relevant role for trade (as a percentage of GDP) in explaining the likelihood of a country adopting IT. The obtained sign means that less open countries are more likely to adopt IT. Here, we explore whether the result is spurious in the following sense. Five of the six countries currently using IT in LA are large countries (Brazil, Mexico, Colombia, Chile and Peru). Being large countries, they tend to have large domestic markets; correspondingly, trade makes up a smaller percentage of GDP. If this is the reason why trade appears as significant, then there are no interesting economic channels to explore by which we might understand the result; rather, it would be a spurious or mechanical outcome.

To explore the issue, we run small-scale models with EIV (where trade appeared as a significant variable), adding country size (in thousands of sq meters) as a regressor. In Table 15, and for each LS measure, we show under column (1) the regressions reported earlier with inflation aversion and trade as regressors; under column (2) we add size to the specification; in column (3), we omit trade.

Table 15: Determinants of IT: The role of country size

	LS1			LS2			LS3		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Inflation aversion	4.06**	4.09**	3.35*	2.96**	3.03**	2.50**	3.54**	3.77**	3.20**
	[1.50]	[1.51]	[1.55]	[1.07]	[1.07]	[1.10]	[1.38]	[1.36]	[1.40]
Trade	-0.011**	-0,009		-0.012**	-0,009		-0.012**	-0,008	
	[0.0044]	[0.0053]		[0.0044]	[0.0052]		[0.0045]	[0.0052]	
Size		0,057	0.11*		0,06500	0.12*		0,077	0.13**
		[0.063]	[0.056]		[0.062]	[0.056]		[0.063]	[0.057]
Constant	0.93***	0.70*	0,16	0.97***	0.72*	0,17	0.95***	0.65*	0,14
	[0.25]	[0.36]	[0.15]	[0.25]	[0.35]	[0.15]	[0.26]	[0.35]	[0.15]
# Observations	14	14	14	14	14	14	14	14	14
R-squared	0,483	0,523	0,394	0,493	0,543	0,412	0,463	0,534	0,416

Notes. EIV results with standard errors in brackets. *** significant at the 1%, ** significant at the 5%, * significant at the 10%.

Three results emerge. First, inflation aversion remains significant for all cases. Second, if trade and size are included simultaneously, neither is statistically relevant. Finally, size—

when included without trade—is significant. The corresponding sign suggests that larger countries are more likely to adopt IT. In other words, we find evidence consistent with the mechanical interpretation regarding the significance of trade in determining the likelihood of a country adopting IT. We should point out that the fact that the evidence is consistent with the mechanical interpretation does not prove that trade is irrelevant. It could be the case that under column (2), neither trade nor size are significant due to a collinearity problem. Nevertheless, in our view, the fact that trade is not significant for the OLS estimations, together with the evidence in Table 15 casts serious doubts on the relevance of trade as a determinant of IT.

5. Conclusions and discussion

Inflation targeting has become a popular monetary regime over the last quarter of a century. Nevertheless, the empirical evaluations of IT show contradictory results. Part of the reason for this is that IT is in itself an endogenous decision, and thus should be properly instrumented. In this paper, we show that the preferences over inflation are a crucial determinant of IT. Countries that exhibit greater inflation aversion are more likely to adopt IT. The result holds even when controlling for variables that the literature has proposed as determinants of IT adoption, such as inflation, fiscal performance, Central Bank independence and openness. As a matter of fact, inflation aversion is the only variable in our regressions that remains significant across specifications and empirical strategies.

This result has a straightforward application. The growing literature evaluating the impact of IT on macroeconomic performance could use measures of inflation aversion to instrument for IT. Beyond this straightforward application, the vast literature evaluating how different institutions affect economic outcomes—themselves often facing endogeneity problems—could evaluate, on a case by case basis, whether the institutions can be instrumented with a measure of the preferences that people might have for them.

One assumption we have used throughout the paper is that preferences have remained stable over time and are exogenous (to the IT regime). Future research should shed more light on

the extent to which those assumptions are reasonable. The stability of inflation aversion seems reasonable in our case, given that we are using a relatively short span of time. As for the exogeneity of preferences, one could make the intuitive argument that IT can affect inflation preferences. Indeed, IT Central Banks have sophisticated communication plans for their strategies and goals. It is conceivable that these strategies might have taught the population that inflation is to be feared and avoided. Future research–with longer series of LS surveys—should shed some light on this issue.

Appendix

Table A1. Number of valid observations per year, Latinobarometro.

Country	Year								
	1997	2000	2001	2002	2003	2004	2005	2006	2007
Argentina	989	1103	1068	1049	1142	1133	1090	1150	1136
Bolivia	714	988	971	1184	1178	1153	1128	1112	1145
Brazil	971	976	989	991	1180	1174	1186	1184	1190
Colombia	1110	1164	1181	1168	1173	1153	1166	1170	1172
Costa_Rica	816	812	974	997	977	1000	981	892	903
Chile	1102	1137	1125	1157	1159	1153	1123	1150	1146
Ecuador	1125	1171	1102	1137	1183	1181	1152	1195	1192
El Salvador	714	937	974	973	998	999	999	989	900
Guatemala	353	815	970	914	986	1000	976	870	833
Honduras	869	951	979	951	988	1000	992	865	672
Mexico	1014	1128	1183	1171	1150	1164	1135	1144	1154
Nicaragua	849	832	987	818	990	988	981	909	957
Panama	772	953	965	965	955	992	981	963	908
Paraguay	510	565	575	576	577	586	1155	1114	1111
Peru	880	957	955	1150	1166	1163	1165	1152	1165
Uruguay	1106	1159	1182	1159	1140	1134	1166	1163	1137
Venezuela	1068	1155	1178	1149	1175	1162	1156	1160	1134

EIV estimates:

We follow closely the work of Gawande (1997) and Gawande and Bandyopadhyay (2000), based on the methods proposed by Fuller (1987).

Let γ_i denote the estimated inflation aversion coefficient for country i which emerges from equation 1. We model γ_i according to

$$\gamma_i = \beta_i + u_i \tag{A1}$$

where β_i is the true unobserved inflation aversion and u_i is the measurement error with E(u_i) = 0 and known variance $\sigma_{u,i}^2$. Because β_i is assumed to be constant, $Var(\gamma_i) = Var(u_i) = \sigma_{u,i}^2$, so that $\sigma_{u,i}$ equals the standard error obtained in the country-specific estimation of γ_i. The EIV correction proposed by Fuller (1987) consists in replacing γ_i in the second stage (equation 2) by the prediction $\hat{\gamma}_i$ of β_i constructed in the following fashion. Let $\bar{\sigma}_\gamma^2$ denote the sample variance of the γ_i's, $\bar{\sigma}_u^2$ the sample mean of the measurement errors $\sigma_{u,i}^2$, and $\bar{\gamma}$ the mean of the estimated inflation aversion coefficients. Finally, let $\hat{\sigma}_\beta^2 = \bar{\sigma}_\gamma^2 - \bar{\sigma}_u^2$. High values

of $\hat{\sigma}_{\beta}^{2}$ indicate that the sample variance is large in relation to the average measurement error of the β_i's. The predictor of β_i for country i is given by:

$$\hat{\gamma}_i = \bar{\gamma}\left(1 - \frac{\hat{\sigma}_{\beta}^{2}}{\sigma_{u,i}^{2}}\right) + \frac{\hat{\sigma}_{\beta}^{2}}{\sigma_{u,i}^{2}}\gamma_i \qquad \text{(A2)}$$

If $\sigma_{u,i}^{2}$ equals $\hat{\sigma}_{\beta}^{2}$, β_i is presumed to be measured without error. Relative to the individual measurement error, the larger the difference between the sample variance of the γ_i's and the mean measurement error, the larger the relevance of the individual estimation γ_i in the construction of the predictor $\hat{\gamma}_i$ of β_i. For a given $\hat{\sigma}_{\beta}^{2}$, large values of $\sigma_{u,i}^{2}$ reduce the relevance of the individual estimate γ_i while giving more importance to the sample mean $\bar{\gamma}$. In other words, imprecise estimates of β_i are corrected by reducing the relevance of the individual estimate while giving importance to the mean of the sample estimates.

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