The Poor and the Rich: Preferences over Inflation and Unemployment*

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Abstract

What are the tradeoffs that the public is willing to accept between inflation and unemployment? We find that people dislike extra points of unemployment more than extra points of inflation. This is true for both Europe and Latin America. For the latter, the aversion to unemployment relative to inflation is much greater. Moreover, in both regions, the poor's distaste for extra points of unemployment relative to inflation is significantly greater than that of the rich. This result contributes to the literature on the costs of inflation and questions the commonly held view that prescribes strong anti-inflationary postures as a way to implement policies consistent with the preferences of the poor.

Keywords: Monetary Policy, Central Banks, Inflation, Phillips Curve, Wellbeing, Income Distribution
JEL Codes: E24, E31, E52

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1 Introduction

When macroeconomists discuss the costs of inflation, they often claim that inflation is a tax, one that is especially high for the poor, who are unable to hedge against its consequences, unlike the more financially sophisticated rich. For instance, Mankiw (2006) claims that inflation "*is not a tax on all assets but only on non-interest-bearing assets, such as cash. The rich are able to keep most of their wealth in forms that can avoid the inflation tax*."

These arguments have been appropriated by Central Banks to justify (strong) anti-inflationary policies. For instance, during a speech in 2017, Federal Reserve Bank of Kansas City President, Esther George, said she was "*not as enthusiastic or encouraged as some when I see inflation moving higher,*" because "*inflation is a tax and those least able to afford it generally suffer the most.*" Following a similar line, Benoît Cœuré, a member of the Executive Board of the ECB, argued in a speech in 2012 that "*inflation is also particularly harmful to the poorest parts of the population,*" and added that "*poorer households tend to hold a larger fraction of their financial wealth in cash, implying that both expected and unexpected increases in inflation make them even poorer.*"

Such stances are also common among central banks in developing countries. The Banco de la República (Colombia's Central Bank) explains on its webpage that keeping inflation low and stable is important because "*increasing inflation means a redistribution of income against the poor.*" Similarly, the Banco Central de Chile (Chile's Central Bank) explains that "*inflation tends to hurt those who have a greater proportion of their wealth in money, that is, the poorest.*"

While this narrative prescribes strong anti-inflationary postures as a way to implement policies consistent with the preferences of the poor, there is not much evidence in the literature supporting the view that the poor would actually choose stronger anti-inflationary policies than the rich[1]. Moreover, anti-inflationary policies often come at the cost of less economic activity and higher unemployment rates, and these side effects of contractionary monetary policies are not necessarily evenly spread across the income distribution. In fact, as Coibion, Gorodnichenko, Kueng, and Silvia (2017) and Gómez-Acevedo and Hofstetter (2020) show, anti-inflationary shocks can have adverse effects on the income distribution.

Thus, we have on the one hand an established narrative that justifies anti-inflationary postures as necessary to protect the poor from the consequences of inflation, and, on the other, evidence showing that the side effects of these policies can have a particularly adverse impact on them. This suggests that preferences vis-à-vis inflation versus unemploy-

[1] Easterly and Fischer (2001) are one exception: using household polling data in thirty-eight countries, they show that the poor are more likely than the rich to mention inflation as a top national concern.

ment (a proxy of the side effects of monetary shocks) might also not be evenly distributed across income groups. To the extent of our knowledge, there is no empirical evidence in the literature studying these relative preferences across the income distribution. This is the area where our paper most contributes to our knowledge.

In our study, we use life satisfaction data à la Di Tella, MacCulloch, and Oswald (2001) and Wolfers (2003) to estimate aversions to inflation and unemployment. This literature has found that both inflation and unemployment negatively affect life satisfaction (Blanchflower, 2007; De Roux & Hofstetter, 2014; Di Tella & MacCulloch, 2009; Di Tella et al., 2001; Wolfers, 2003). We corroborate that in Europe, people dislike both unemployment and inflation, but that their aversion to the former is greater (as in Blanchflower, 2007). Moreover, we establish that this result is also present in Latin America, despite its history of high inflation. By contrast, hyperinflation during the 1920's has been blamed for the strong anti-inflationary sentiment and institutions in Germany.

Interestingly, we find that the aversion to unemployment relative to inflation is much stronger in Latin America than in Europe. We propose hypotheses that might explain this result. One explanation might be that being unemployed in Europe is less costly for individuals than in Latin America, given that the former has better institutions for dealing with the consequences of being unemployed. A complementary reason might be that a history of higher inflation in Latin America resulted in informal and formal arrangements for coping with its consequences, making its costs less relevant than commonly thought. We provide examples of these in the text.

We then analyze these preferences along the income distribution. In particular, we study whether the poor and the rich (defined within countries and by years) exhibit different preferences for inflation and unemployment. This is the main objective of the paper. We highlight three findings. First, in both regions, both the poor and the rich dislike inflation and unemployment; second, the aversion to unemployment relative to inflation is higher in Latin America; third, and most importantly, we find that both within Europe and Latin America, the poor exhibit a higher aversion to unemployment relative to inflation than the rich.

This novel result, that the poor dislike unemployment relative to inflation more than the rich, could be useful for central banks for understanding the tradeoffs citizens are willing to accept vis-à-vis unemployment and inflation, and how these preferences move along the income distribution. The idea that a compassionate central bank should fight inflation strongly notwithstanding the consequences on unemployment is at odds with the preferences along the income distribution we uncover in this paper.

Why would the poor and the rich have different preferences toward inflation and un-

employment? One possible explanation is that the effects of monetary policy have distributive consequences. Until recently, it was unclear in which direction monetary policy affected income distribution. For instance, Bernanke (2015) claimed that "[*m*]*onetary policy is a blunt tool which certainly affects the distribution of income and wealth, although whether the net effect is to increase or reduce inequality is not clear.*" Nevertheless, a recent study by Coibion et al. (2017) using U.S. data concludes that "[*c*]*ontractionary monetary policy systematically increases inequality in labor earnings, total income, consumption and total expenditures. Furthermore, monetary policy shocks account for a non-trivial component of the historical cyclical variation in income and consumption inequality.*" Furceri, Loungani, and Zdzienicka (2018) arrive to similar conclusions in a cross-country setup. Finding that the poor dislike unemployment relative to inflation more than the rich—as we do in this paper—is consistent with monetary shocks having side effects that disproportionally hit the poor, as Coibion et al. (2017) find. It is also consistent with Jayadev (2006) who, using a consistent cross-country social survey, finds that the poor are less likely than the rich to prioritize combating inflation over unemployment.

A second possible explanation might be that the poor are hit harder by unemployment than the rich. A third reason of why the poor dislike unemployment relative to inflation more than the rich, might reflect that some costs of inflation could be more relevant for the rich, in particular, the costs related to the allocation of resources to long-run projects.

The remainder of the paper is organized as follows. Section 2 describes the empirical strategy and the data used; Section 3 reports and interprets the results; and Section 4 presents some robustness checks and further results. Section 5 concludes.

2 Empirical model and data

Our empirical strategy has three stages:

- Estimate country-year measures of life satisfaction (LS);
- Estimate the effects of inflation and unemployment on the LS measures and the respective tradeoffs between inflation and unemployment;
- Estimate these effects and tradeoffs across income groups (rich and poor segments of the population, as defined below).

2.1 Country-year life satisfaction measures

The first stage focuses on obtaining country-year life satisfaction measures using surveys (described in detail below), inclusive of the following question: *"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?"* The strategy for obtaining our country-year LS measures closely follows those proposed by Wolfers (2003) and Di Tella et al. (2001). We first code the answers 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 average 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.
- **LS3**: Following Di Tella et al. (2001), we estimate a first stage micro OLS life-satisfaction regression for each country in the sample. The regression explains an individual's self-reported wellbeing in terms of his or her micro characteristics—income proxies, marital status, age, employment, education, and so forth. We then calculate the mean residual for each country and year. LS3 is the country-year average residual.

2.2 Unemployment and inflation aversion

For the baseline case, we estimate the following pooled regression (similar to that in Di Tella et al., 2001 and Wolfers, 2003):

$$LS_{i,t} = c_i + \tau_t + \alpha U_{i,t} + \beta \pi_{i,t} + e_{i,t} \tag{1}$$

where $LS_{i,t}$ is one of the three life satisfaction measures for country i in year t, c_i is a country fixed effect, τ_t is a year fixed effect, $U_{i,t}$ is the unemployment rate, $\pi_{i,t}$ is the inflation rate, and $e_{i,t}$ is the error term. Our parameters of interest, α and β, represent the effects of changes in unemployment and inflation on life satisfaction, respectively.

2.3 Countries

We employ data from Latin America and Europe using the country samples of life satisfaction surveys produced by Latinobarómetro and Eurobarometer. The countries surveyed by Latinobarómetro, 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 countries surveyed by Eurobarometer—and which are used in our study (15 in total)—are Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Denmark, the United Kingdom, Ireland, Greece, Spain, Portugal, Finland, Sweden and Austria.

2.4 Years

The self-reported wellbeing questions and the income proxies that we use are available in the Latinobarómetro and Eurobarometer annual surveys for the years 1997, 2000-2011, and 2013 for the Latin American countries, and 1975-2002 (excluding 1996) for the European countries[2]. This gives us 238 and 294 country-year observations for each sample, respectively. Altogether, 248,578 persons were interviewed in Latin American countries and 392,734 in Europe.

2.5 Inflation

For Latin America, the data comes from the International Financial Statistics (IFS) and corresponds to the average annual change in the Consumer Price Index (CPI). Starting in 2007, the official inflation rate in Argentina underreported the actual increase in the price level. Correspondingly, for 2008 onward, we use the data from the Billion Prices Project to correct for the Argentine series (see A. Cavallo (2013) and `http://www.inflacionverdadera.com`). For Europe, we use the Consumer Price Index (CPI) from the OECD. The descriptive statistics for inflation are reported in Table 1[3].

Table 1: Summary statistics for unemployment and inflation

	Mean	S.D.	Min	Max
Latin America				
Unemployment	0.071	0.033	0.013	0.183
Inflation	0.083	0.093	-0.011	0.961
Europe				
Unemployment	0.076	0.038	0.002	0.194
Inflation	0.057	0.052	-0.007	0.245

One important point to note is that in our sample for Latin America the mean inflation

[2]There are more years with life satisfaction questions in the Eurobarometer survey. However, the question that we use to assess individuals' incomes was dropped after 2002.

[3]It would be interesting to extend this work in the future by using CPI data estimated for the different income groups at the country-year level. As of now this kind of data is only available for a few countries and years used in our sample.

is only 8.3%. The region had several countries with episodes of three-digit or higher inflation rates but the countries and years that we work with (determined by the availability of the life satisfaction surveys) do not overlap with these cases. We do have a few observations with inflation in the two-digit range (in Europe too). We will check the role they play later in the paper.

2.6 Unemployment

For Latin America, we take the figures from the ILO's Key Indicators of the Labor Market database. Unemployment data for European countries comes from the OECD Economic Outlook. The descriptive statistics for unemployment are also reported in Table 1.

2.7 Income

We estimate Equation 1 for different segments of the income distribution at the country-year level. To do this, we need proxies of the income of the individuals interviewed in Latinobarómetro and Eurobarometer. In Eurobarometer, each individual surveyed is presented with an income scale and asked to categorize his or her household as corresponding to one of these levels based on the perceived total wages, salaries, child allowances, pensions and any other income. The reported incomes are converted to US dollars by the Interuniversity Consortium for Political and Social Research (ICPSR). Unfortunately, beginning in 2002, this question was dropped from the survey.

The Latinobarómetro surveys do not have questions on the income of individuals or households. They do, however, have a question regarding household's assets. More specifically, they ask whether "*you or any member of your household own any of the following goods?*". It then lists, among other items, a refrigerator, a home, a computer, a washing machine and a car. These five goods are present in all the surveys (that is, for all countries and years) in which we are interested. For the purpose of creating an index summarizing this information, we count how many of these goods each individual has and take into account how common it is for individuals in each country and year to have these goods. If we let G be the index for an individual at the country-year level, then:

$$G = 10 \left(\frac{\sum_{j=1}^{5} W_j A_j}{\sum_{j=1}^{5} W_j} \right) \tag{2}$$

where A_j is a dummy variable which takes the value of 1 when the individual owns asset j and zero if otherwise; W_j is the inverse of the proportion of individuals that own asset j for

each country and for each year. If one individual owns all five assets, her index adds up to 10; if she has none, it is zero. Possessing a good that most people have for a given country-year adds less to her index than having one that is less common. With this index, we rank individuals at the country-year level and build subsamples of poor and rich individuals. In the robustness section, we propose alternative ways of ranking individuals along the income distribution and show that the results are very similar.

3 Results

3.1 LS measures

We first estimate the three country-year life satisfaction measures described in the previous section and report their descriptive statistics in Table 2. As in other papers in the related literature, the measures are positively correlated. As expected, the correlation is particularly high between the first two measures, the country-year average and the fixed effect of the ordered probit regression. While highly correlated, the mean of these two measures is different and thus we should expect that that the size of the coefficients in the main regressions reported later in the paper should also be different although the signs and the significance should be similar.

Table 2: Summary statistics of life satisfaction

	Summary statistics				Correlations		
	Mean	S.D.	Min	Max	LS1	LS2	LS3
Latin America							
LS1	2.88	0.33	1.72	3.46	1		
LS2	0.95	0.43	-0.57	1.76	0.999	1	
LS3	-0.01	0.25	-0.82	0.50	0.778	0.770	1
Europe							
LS1	3.07	0.28	2.45	3.68	1		
LS2	0.39	0.46	-0.56	1.55	0.997	1	
LS3	0.00	0.08	-0.26	0.22	0.291	0.277	1

Finally, as we detailed in the previous section, to estimate LS3 we run first stage micro OLS life-satisfaction regressions for each country in the sample. In Table A.1 in the Appendix, we report the results of these pooled first-stage regressions à la Di Tella et al. (2001). The results in Table A.1 are also in line with the estimates in the previous literature: for instance, being divorced or unemployed negatively affects the self-reported satisfaction levels.

3.2 Inflation and unemployment aversion

We estimate Equation 1 for Latin America and for Europe separately. In each case, we begin with an estimation for the whole sample—that is, without yet considering divisions based on the income distribution. The dependent variables are the LS measures. We expect negative signs for the coefficients for unemployment (α) and inflation (β). The results are reported in Table 3.

Table 3: Life satisfaction, inflation and unemployment

	Latin America			Europe		
	LS1	LS2	LS3	LS1	LS2	LS3
Unemployment (α)	-1.424^{**}	-1.910^{**}	-1.551^{***}	-1.030^{***}	-1.710^{***}	-0.595^{***}
	(0.557)	(0.739)	(0.558)	(0.247)	(0.387)	(0.223)
Inflation (β)	-0.307^{***}	-0.425^{***}	-0.324^{***}	-0.652^{***}	-0.936^{***}	-0.445^{**}
	(0.088)	(0.114)	(0.092)	(0.202)	(0.315)	(0.178)
Tradeoff: α/β	4.6	4.5	4.8	1.6	1.8	1.3
Observations	238	238	238	294	294	294
R^2	0.877	0.873	0.786	0.931	0.935	0.267

Notes: Ordinary Least Squares regression. Robust standard errors in parentheses. All regressions include country and year dummies. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

The estimated coefficients α and β have the expected negative signs and are statistically significant: in both Latin America and Europe, extra points of unemployment or inflation undermine wellbeing. This corroborates the previous evidence for Europe starting with Di Tella et al. (2001). In Latin America, despite having very different inflation and unemployment histories relative to Europe, we also find that they are negatively related to life satisfaction.

As for the size of the coefficients, for instance, a 10-percentage point increase in unemployment in Latin America (Europe) would shift the distribution of life satisfaction among the population leftward by 0.43 (0.37) standard deviations, with the average person now being as satisfied as a person in the 33rd (33rd) percentile under the original scenario.

A 10-percentage point increase in inflation would shift the LS1 distribution leftward by 0.09 (0.23) standard deviations. This shift in the life satisfaction distribution would leave the average individual as satisfied as someone at the 46th (41st) percentile of the distribution prior to the change.

α/β—the ratio of the coefficients for unemployment and inflation—interpreted by Di Tella et al. (2001) as the marginal rate of substitution between inflation and unemployment—is greater than 1: an extra point of unemployment has a greater effect on wellbeing than an

extra point of inflation. This fact had been established previously for developed countries (e.g. Blanchflower, 2007).

We find that this also holds for developing countries. The latter might be surprising to some, given that many of these countries were plagued by inflation problems in the past, and some continue to struggle with them. In fact, as Bruno and Easterly (1998) show, these inflation crises significantly scar the economic activity. Recall though that our sample of country-years in Latin America does not include triple-digit (or higher) inflation rates like the one Venezuela is presently experiencing, or those experienced by Brazil, Peru, Argentina, Chile and Bolivia (among others) in the past. We do however have a few country-years with inflation rates above 20%, and we will explore their role in the next section. As of now, the estimates confirm that extra percentage points of unemployment have a larger effect on life satisfaction than extra percentage points of inflation, both in Europe and in Latin America.

On average α/β is 1.6 in Europe, which is very much in line with Blanchflower (2007)'s findings for OECD countries. Accordingly, the popular misery indices that give equal weight to unemployment and inflation underestimate the role of the former. More strikingly, the average size of these ratios is 4.6 in Latin America: one extra percentage point of unemployment has an effect on life satisfaction more than four times greater than one of inflation.

Why is this tradeoff much bigger in Latin America than in Europe? We believe that two elements could be at play that explain this result. On the one hand, the negative consequences of unemployment on wellbeing are mitigated in Europe by more generous unemployment insurance programs. These are much weaker in Latin American countries. Data from the ILOSTAT shows that for European countries, the average share of the unemployed population that receives regular periodic social security unemployment benefits is 61%. The same statistic for Latin American countries is below 5%[4].

On the other hand, a history of long lasting or recurrent inflationary episodes might also have helped Latin-Americans build institutions—formal and informal—to cope with the consequences of inflation shocks, and thus reduce the actual costs of inflation. There are many examples of this across the region. Colombia is a good one. It had moderate inflation rates (i.e., annual inflation between 15 and 30%) for over a quarter of a century—between the mid-70s and the late 90s. As of now, after two decades with single digit inflation rates, it still has several mechanisms in place that illustrate how persistent the insti-

[4]The data is available for 13 countries in Europe and the 15 countries in Latin America that are part of the sample used in our paper. For most countries, the information is for 2012. If this was not available, we used the information for 2010 or 2011.

tutions for coping with the consequences of inflation can be: it has a constitutional ruling requiring that annual minimum wage adjustments be at least as large as the current inflation; banks still offer inflation-adjusted interest rates to costumers for long-term loans (such as mortgage loans); many fines are expressed in terms of minimum wages; and the recently renewed tax code still defines income brackets in inflation-adjusted units. Peru is another example of the persistence of informal institutions for dealing with potential inflationary shocks. After suffering hyperinflation in the late-80s, and then stabilizing its monetary policy during the 90s, Peru also went on to complete two straight decades with single-digit inflation rates. Despite this, a third of the domestic banking credit issued is still denominated in dollars, while many prices—especially those of durable goods—are still often expressed in dollars.

The poorer mechanisms for caring for the unemployed in Latin America relative to Europe, combined with Latin America's formal and informal mechanisms for dealing with the consequences of inflation shocks, could partly explain its higher marginal rate of substitution between inflation and unemployment.

3.3 Unemployment, inflation and the income distribution

We estimate Equation 1 for the lower and upper quintiles of the income distribution as defined in Equation 2 above. The respective results are reported in Table 4 for Latin America and Table 6 for Europe.

Table 4: Life satisfaction, inflation and unemployment. Rich and poor in Latin America.

	Richest quintile			Poorest quintile		
VARIABLES	LS1	LS2	LS3	LS1	LS2	LS3
Unemployment (α)	-1.159^{*}	-1.548^{*}	-1.137^{*}	-1.331^{**}	-1.741^{**}	-1.198^{**}
	(0.629)	(0.903)	(0.621)	(0.613)	(0.792)	(0.607)
Inflation (β)	-0.448^{***}	-0.606^{***}	-0.412^{***}	-0.179	-0.262	-0.204^{*}
	(0.102)	(0.140)	(0.101)	(0.120)	(0.161)	(0.114)
Tradeoff: α/β	2.6	2.6	2.8	7.4	6.6	5.9
Observations	238	238	238	238	238	238
R^2	0.829	0.824	0.739	0.855	0.851	0.754

Notes: Ordinary Least Squares regression. Robust standard errors in parentheses. All regressions include country and year dummies. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

In Latin America, the coefficients for unemployment and inflation have negative signs for both the upper and lower quintiles, indicating that, as we found for the whole sample, more inflation or more unemployment shift the distribution of self-reported wellbeing to the left, for both the poor and the rich.

There are, however, differences with the results that use the whole sample. While the coefficients for inflation for the poorest quintile lose statistical significance in two of the three cases, they remain strongly significant for the richest quintile. Accordingly, and contrary to the conventional wisdom, in Latin America, it is the rich rather than the poor who demonstrate strong anti-inflationary preferences. As for the coefficients for unemployment, the opposite holds: unemployment is significant for the poor at the 5% level, but for the rich it is only significant at the 10% level.

These results should, of course, reflect on the marginal rate of substitution between inflation and unemployment along the income distribution. For the richest quintile in Latin America reported in Table 4, it remains the case that unemployment matters more than inflation: the average tradeoff for the rich is 2.6. Nevertheless, recall that this statistic was 4.6 for the whole sample. Thus, while the rich in Latin America value extra percentage points of unemployment more than of inflation, the tradeoff for them of the one for the other is smaller than for society as a whole. For the poorest 20% of the income distribution, the aversion to unemployment relative to inflation is 6.7.

To further grasp the implications of these results, we calculate the tradeoff for the poor relative to that for the rich, $\frac{(\alpha/\beta)_{poor}}{(\alpha/\beta)_{rich}}$, for each LS measure. This statistic, reported in Table 5, gives a sense on how much more the poor dislike unemployment relative to inflation than the rich. Depending on which LS we focus on, the figures vary between 2.1 and 2.9, with an average of 2.5: in Latin America, the poor's marginal rate of substitution between inflation and unemployment is, on average, two-and-a-half times greater than that for the rich.

Table 5: Unemployment-inflation tradeoff for the poor relative to the rich in Latin America: $\frac{(\alpha/\beta)_{poor}}{(\alpha/\beta)_{rich}}$

LS1	LS2	LS3	Average
2.9	2.6	2.1	2.5

Summing up the results for Latin America along the income distribution: first, both the unemployment rate and the inflation rate have a negative impact on self-reported satisfaction levels. Second, unemployment has a greater impact than inflation on life satisfaction. Third, while both the rich and the poor value unemployment more than inflation, the poor's substitution rate is higher: their tradeoff parameter is, on average, 2.5 times greater than that for the rich.

In Table 6, we report the regressions for Europe. As with Latin America, α and β have the expected negative signs. They are all statistically relevant for the rich and the poor, except for unemployment for LS3 for the richest quintile. As for the marginal rate

of substitution between inflation and unemployment, it is 1.7 for the poor—i.e., as we found in Latin America, the poor care more about unemployment than inflation. For the rich in Europe, the average marginal rate of substitution is very close to one, implying that one extra percentage point of inflation matters almost as much as an extra one of unemployment. As in Latin America the poor dislike unemployment relative to inflation more than the rich. In Table 7, we report the ratio between the relative aversions for the poor and the rich. We find that the tradeoff between unemployment and inflation is, on average, 1.9 times greater for the poorest quintile compared to the richest.

Table 6: Life satisfaction, inflation and unemployment. Rich and poor in Europe.

	Richest quintile			Poorest quintile		
VARIABLES	LS1	LS2	LS3	LS1	LS2	LS3
Unemployment (α)	-0.538^{**}	-1.048^{**}	-0.264	-1.274^{***}	-1.835^{***}	-0.665^{**}
	(0.246)	(0.447)	(0.232)	(0.329)	(0.463)	(0.280)
Inflation (β)	-0.579^{***}	-0.880^{***}	-0.448^{**}	-0.728^{**}	-0.969^{**}	-0.489^{**}
	(0.182)	(0.325)	(0.175)	(0.281)	(0.389)	(0.230)
Tradeoff: α/β	0.9	1.2	0.6	1.8	1.9	1.4
Observations	294	294	294	294	294	294
R^2	0.922	0.925	0.292	0.907	0.915	0.228

Notes: Ordinary Least Squares regression. Robust standard errors in parentheses. All regressions include country and year dummies. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

Why would the poor in both Latin America and Europe care more about unemployment relative to inflation than the rich? One reason might be that they are hit harder by unemployment than the rich. OECD data for 2015 (inclusive of three countries in Latin America) shows that the average unemployment rate for people with a tertiary education (a proxy for "the rich") was 4.8%. The same statistic for people with less than a secondary education ("the poor") was 12.5%.

Table 7: Unemployment–inflation tradeoff for the poor relative to the rich in Europe: $\frac{(\alpha/\beta)_{poor}}{(\alpha/\beta)_{rich}}$

LS1	LS2	LS3	Average
1.9	1.6	2.3	1.9

Another reason why the poor could dislike unemployment relative to inflation more than the rich might reflect the costs of inflation. Textbook macroeconomics holds that one cost of inflation is its impact on savings' decisions: with higher (or more variable) inflation, the allocation of resources to long-run projects becomes more difficult. Since the

poor tend to have less resources for savings (E. Cavallo et al., 2016), this cost might be more relevant for the rich than for the poor.

Finally, as Coibion et al. (2017) show, the adverse side effects of anti-inflationary monetary shocks tend to fall disproportionally on the poor. Taken together, these three elements might explain why the poor dislike unemployment more than inflation relative to the rich. Future research is needed, both theoretical and empirical, to shed light on the validity of the hypotheses here outlined.

4 Robustness and further results

4.1 High inflation

One possible concern is the impact the country-year observations with high inflation rates—especially in the Latin American sample—might have on our results. While the average inflation rates across the country-years we use are in single digits both in Latin America (8.3%) and Europe (5.7%), there are a few observations of high inflation (see the descriptive statistics in Table 1). In particular, for Latin America, we have 19 country-years with inflation rates above 20%, the highest of which is for Ecuador, where inflation was at 96% in 2000 (prior to its dollarization); and twelve where the rate of inflation was between 20% and 30%. For Europe, we have 8 observations of inflation rates between 20% and 30%. While Wolfers (2003) has shown that the relationship between LS and inflation seems to be linear in OECD countries, it is worth checking whether these observations play a role in our sample and whether they are relevant when studying preferences along the income distribution.

We drop from our estimation all country-years with inflation rates above 20%. We choose the 20% peak to match the one proposed by Ball (1994) to study the output-inflation tradeoff. In results that are not reported here, we try other peaks (25%, 30% and 40%) and the conclusions discussed below remain similar. We thus discard 19 observations for Latin America and 8 for Europe and re-estimate the three models (for all individuals, upper, and lower quintiles). We report the estimates in Table 8.

For Europe, the results are very similar to the ones in the previous section. All coefficients are negative, and unemployment weighs heavier than inflation in preferences (by a factor of 1.4 for the entire sample of individuals). When splitting the sample across income quintiles, we again find that the weight placed on unemployment relative to inflation is greater for the poor than for the rich (on average, 1.5 versus 0.7, respectively).

For Latin America, in contrast with the findings in the previous section, in Table 8 infla-

tion is not statistically significant: once we remove the high inflation observations in our sample, the statistical relevance of inflation vanishes. Unemployment remains relevant, more so for the rich than for the poor. In all cases, we obtain negative coefficients.

Table 8: Life satisfaction, inflation and unemployment excluding country-years with $\pi > 20\%$.

	Latin America			Europe		
VARIABLES	LS1	LS2	LS3	LS1	LS2	LS3
All						
Unemployment (α)	-1.521^{**}	-2.150^{**}	-1.672^{**}	-1.060^{***}	-1.752^{***}	-0.632^{***}
	(0.727)	(0.961)	(0.734)	(0.255)	(0.397)	(0.226)
Inflation (β)	-0.150	-0.248	-0.160	-0.767^{***}	-1.133^{***}	-0.527^{***}
	(0.327)	(0.431)	(0.330)	(0.237)	(0.366)	(0.203)
Tradeoff: α/β	10.1	8.7	10.5	1.4	1.5	1.2
Observations	219	219	219	286	286	286
R^2	0.869	0.867	0.768	0.930	0.936	0.298
Richest quintile						
Unemployment (α)	-1.565^{**}	-2.324^{**}	-1.547^{**}	-0.485^{*}	-0.959^{**}	-0.239
	(0.674)	(0.973)	(0.677)	(0.249)	(0.453)	(0.228)
Inflation (β)	-0.177	-0.341	-0.142	-0.680^{***}	-1.071^{***}	-0.534^{***}
	(0.116)	(0.160)	(0.118)	(0.184)	(0.333)	(0.172)
Tradeoff: α/β	8.8	6.8	10.9	0.7	0.9	0.4
Observations	219	219	219	286	286	286
R^2	0.821	0.820	0.718	0.922	0.926	0.318
Poorest quintile						
Unemployment (α)	-1.431^{*}	-1.931^{*}	-1.349^{*}	-1.348^{***}	-1.933^{***}	-0.743^{**}
	(0.829)	(1.072)	(0.832)	(0.402)	(0.551)	(0.323)
Inflation (β)	-0.105	-0.166	-0.165	-0.860^{***}	-1.172^{***}	-0.561^{**}
	(0.220)	(0.284)	(0.214)	(0.276)	(0.378)	(0.240)
Tradeoff: α/β	13.6	11.6	8.2	1.6	1.6	1.3
Observations	219	219	219	286	286	286
R^2	0.851	0.848	0.744	0.908	0.916	0.258

Notes: Ordinary Least Squares (OLS) regression. Robust standard errors in parentheses. The regressions include country and year dummies. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

Given that inflation is not statistically relevant, we should be cautious about interpreting the relative tradeoff between inflation and unemployment (α/β), as we cannot reject the hypothesis that the denominator is zero. In any case, we obtain that the tradeoff between unemployment and inflation is higher on average (close to 10), that is, one extra point of unemployment affects wellbeing as much as 10 additional points of inflation. On average the poor still put more weight than the rich on unemployment relative to inflation except with LS3.

4.2 Other measures of income distribution for Latin America

In our baseline estimation, we used the question in the Latinobarómetro surveys about assets owned by households to build the index G, running from 0 to 10, in order to split the sample into rich and poor quintiles at the country-year level. There is another question in the Latinobarómetro surveys that can be used as a proxy for income. In particular, the surveys record the interviewer's perception about the relative income position of the individuals surveyed. The interviewer chooses from the following five categories: "very bad"; "bad"; "average"; "good"; and "very good". Of course, these answers are subjective, and we cannot be sure that different interviewers grade the individuals with a homogenous criteria.

We code this perception from zero to ten and label the resulting index as I. We then estimate models separating rich and poor quintiles using H, a weighted average of the two measures, G and I, for different weights λ (between 0 and 1):

$$H = \lambda G + (1 - \lambda) I \tag{3}$$

Thus, if λ is one, we are back at the baseline case; if it equals zero, the interviewer's perception determines completely the variable. Note that the latter case does not necessarily allow for a precise separation of the sample into the highest and lowest quintile: for instance, suppose in a given year and country, 10% of the sample is classified by the interviewers as "very bad" and 20% as "bad". In this example, we form the poor group with the individuals classified as "bad" and "very bad", that is the "quintile" would include 30% of the individuals in that country and year.

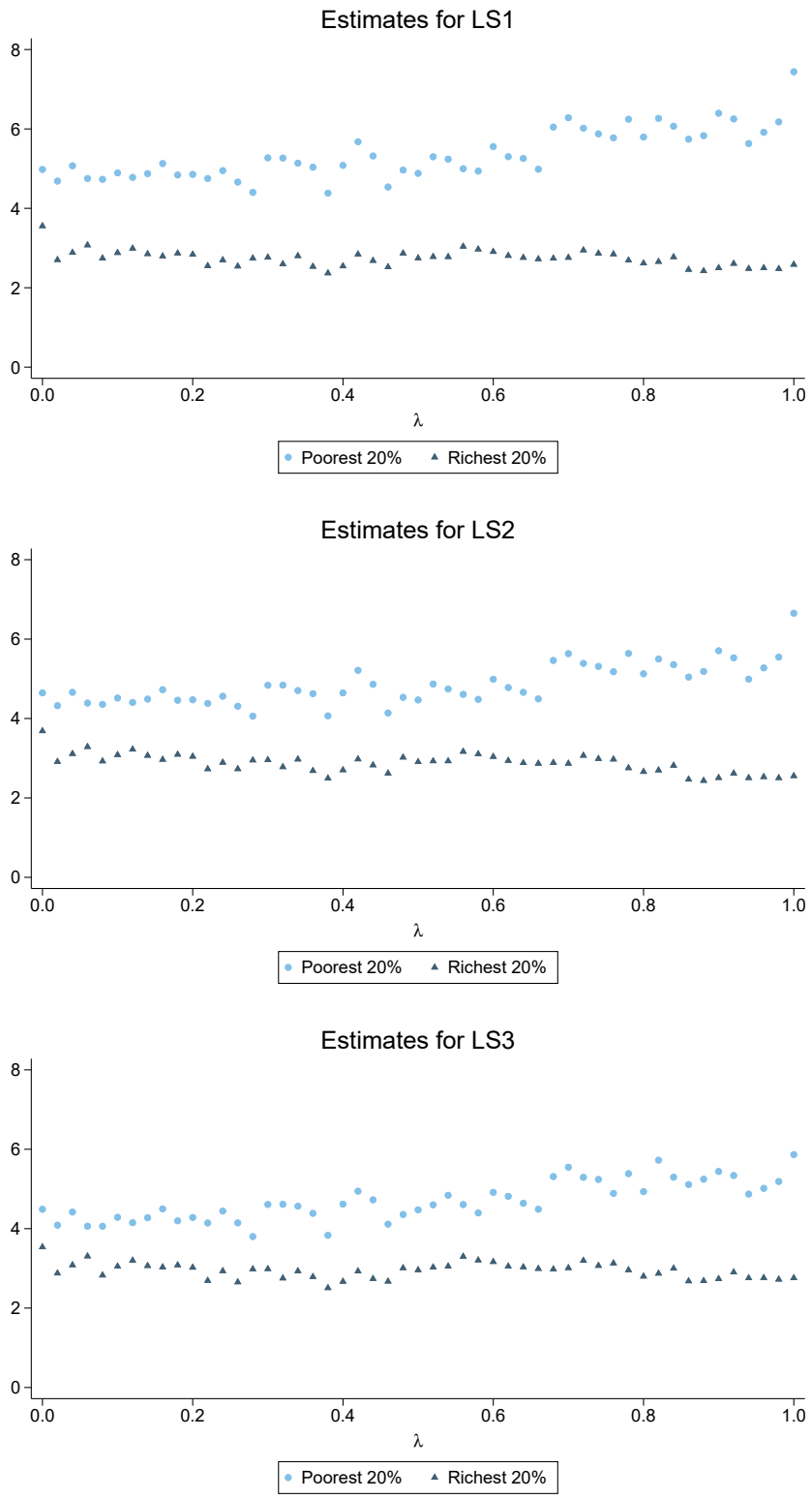
Table 9: Life satisfaction, inflation and unemployment with $\lambda = 0$: Latin America

	Richest quintile			Poorest quintile		
VARIABLES	LS1	LS2	LS3	LS1	LS2	LS3
Unemployment (α)	-1.075^{*}	-1.500^{*}	-1.034^{*}	-1.487^{**}	-1.977^{**}	-1.455^{**}
	(0.560)	(0.787)	(0.560)	(0.599)	(0.785)	(0.603)
Inflation (β)	-0.302^{***}	-0.407^{***}	-0.292^{***}	-0.299^{***}	-0.426^{***}	-0.324^{***}
	(0.100)	(0.129)	(0.102)	(0.100)	(0.130)	(0.099)
Tradeoff: α/β	3.6	3.7	3.5	5.0	4.6	4.5
Observations	238	238	238	238	238	238
R^2	0.845	0.841	0.760	0.848	0.845	0.729

Notes: Ordinary Least Squares regression. Robust standard errors in parentheses. The regressions include country and year dummies. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

We first report the results for the case when $\lambda = 0$ in Table 9. We also report the

Figure 1: α/β and λ for the richest and poorest quintiles - Latin America



tradeoff between inflation and unemployment (α/β) for each LS measure and quintile along different values of λ, in Figure 1.

The three subplots and the Table convey the same message: the poor's aversion to unemployment relative to inflation is higher than that of the rich no matter the value of λ—that is, regardless of whether we distribute the population into rich and poor categories using the assets approach adopted in the previous section; based on interviewers' perceptions; or a combination of the two.

4.3 Quartiles

Finally, we also estimate the main regressions but, instead of using quintiles to split the population into rich and poor, we use quartiles. The results are reported in Table 10. We identify the same general patterns in these estimates. The coefficients are always negative, and in each region, respective poor quartiles are more concerned about unemployment than inflation relative to the rich.

Table 10: Life Satisfaction, Inflation and Unemployment: Quartiles

	Richest Quartile - Latin America			Poorest Quartile - Latin America		
VARIABLES	LS1	LS2	LS3	LS1	LS2	LS3
Unemployment (α)	-1.351^{**}	-1.878^{**}	-1.276^{**}	-1.569^{**}	-2.057^{**}	-1.495^{**}
	(0.621)	(0.878)	(0.616)	(0.622)	(0.808)	(0.611)
Inflation (β)	-0.354^{***}	-0.481^{***}	-0.332^{***}	-0.238^{*}	-0.350^{**}	-0.263^{**}
	(0.0994)	(0.137)	(0.0975)	(0.122)	(0.167)	(0.120)
Tradeoff: α/β	3.8	3.9	3.8	6.6	5.9	5.7
Observations	238	238	238	238	238	238
R^2	0.833	0.828	0.743	0.858	0.855	0.756
	Richest Quartile - Europe			Poorest Quartile - Europe		
	LS1	LS2	LS3	LS1	LS2	LS3
Unemployment (α)	-0.506^{**}	-0.995^{**}	-0.255	-1.390^{***}	-2.022^{***}	-0.748^{***}
	(0.241)	(0.435)	(0.232)	(0.318)	(0.444)	(0.268)
Inflation (β)	-0.552^{***}	-0.838^{**}	-0.428^{**}	-0.549^{**}	-0.740^{**}	-0.433^{**}
	(0.182)	(0.325)	(0.175)	(0.254)	(0.355)	(0.212)
Tradeoff: α/β	0.9	1.2	0.6	2.5	2.7	1.7
Observations	294	294	294	294	294	294
R^2	0.921	0.924	0.269	0.914	0.921	0.236

Notes: Ordinary Least Squares regression. Robust standard errors in parentheses. The regressions include country and year dummies from 1975 to 2002. *** p< 0.01, ** p< 0.05, * p< 0.1.

5 Conclusions

Central banks around the world, both in industrialized and developing countries, use monetary policy to fight inflation. Many of them also have other goals and are concerned about the side effects fighting inflation might have on, for instance, economic activity or unemployment. Balancing social preferences for low inflation with those for low unemployment has been at the heart of discussions in the literature and in policymaking. Starting with Di Tella et al. (2001), economists have relied on life satisfaction surveys to address questions regarding the impact each of these variables has on wellbeing. We contribute to this literature by studying how much people dislike unemployment and inflation, both in Europe and in Latin America, and particularly by analyzing whether there are differences in preferences between the two along the income distribution.

We corroborate that in Europe, extra points of inflation or unemployment diminish wellbeing, (e.g., Di Tella et al. (2001) and Wolfers (2003), among others). We establish that this finding is also present in Latin America. More importantly, we find that the aversion to unemployment is higher than that for inflation. While this is true in both regions, the size of the tradeoff is much larger in Latin America. This is an important result for central banks in the region, and might surprise observers, given that Latin America has had a history of recurrently flirting with high inflation rates. What comes out of our baseline results is that an extra point of unemployment has the same effect as more than 4 extra points of inflation on wellbeing.

Why is this tradeoff much greater in Latin America than in Europe? We hint at two explanations. On the one hand, Europe has generous unemployment insurance programs that mitigate the consequences of unemployment on wellbeing. Unemployment insurance is almost non-existent in Latin America. On the other hand, recurrent inflation episodes in the past led Latin-Americans to build institutions—formal and informal—that mitigate many of the costs of inflation shocks. These institutions have remained in place even in countries that achieved low and stable inflation rates two decades ago. Thus, Latin-Americans are better prepared for inflation shocks, while Europeans have better institutions for dealing with the consequences of unemployment. As for how these preferences change along the income distribution, we find—both for Europe and Latin America—that the poor dislike unemployment relative to inflation more than the rich. This finding is at odds with the commonly held view by central banks that hawkish monetary policies line up with the poor's preferences.

In the paper, we outlined three hypotheses that could explain why the poor care more about unemployment relative to inflation than the rich. One may be related to the costs of

inflation. Textbook macroeconomics holds that one of the costs of inflation is its impact on decisions requiring long-term planning, such as savings. Since the poor tend to have fewer resources for saving, this cost might be more relevant to the rich than the poor. A second hypothesis is that the poor may care more about unemployment simply because they are hit harder by unemployment than the rich. OECD data shows that in 2015 the average unemployment rate for people with a tertiary education ("the rich") was 4.8%, while for individuals with less than a secondary education ("the poor"), it was 12.5%. Finally, it could simply be that the side effects of anti-inflationary monetary shocks have adverse distributive consequences (e.g., Coibion et al., 2017; Gómez-Acevedo & Hofstetter, 2020). Whatever the merit of each of these explanations, the results send an important message to central bankers: preferences for unemployment vis-a-vis inflation are not evenly distributed along the income distribution.

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Appendices

A Additional results

Table A.1: Pooled Micro Regressions. Dependent Variable: Reported Life Satisfaction

Latin America			Europe		
	Coefficient	Std. Error		Coefficient	Std. Error
Age	-0.015***	(0.001)	Age	-0.017***	(0.000)
Age squared	0.000***	(0.000)	Age squared	0.000***	(0.000)
Male	0.008**	(0.004)	Male	-0.036***	(0.003)
Head of household	-0.011**	(0.005)	Head of household	-0.000	(0.004)
Marital status			*Marital status*		
Married	0.033***	(0.004)	Married	0.069***	(0.003)
Divorced	-0.050***	(0.007)	Divorced	-0.123***	(0.005)
Education			*Education*		
Incomplete elementary school	0.029***	(0.008)	15 years	-0.061***	(0.009)
Elementary school	0.048***	(0.010)	15–19 years	-0.018*	(0.009)
Incomplete high school	0.062***	(0.007)	>20 years	0.021**	(0.009)
High school	0.105***	(0.008)			
Incomplete undergraduate	0.130***	(0.009)			
Undergraduate studies	0.190***	(0.010)			
Incomplete graduate studies	0.119***	(0.013)			
Graduate studies	0.133***	(0.011)			
Employment status			*Employment status*		
Self-employed	-0.054***	(0.008)	Self-employed	-0.043***	(0.010)
Public employee	0.011	(0.009)			
Private employee	-0.023***	(0.008)	Employee	-0.063***	(0.009)
Unemployed	-0.202***	(0.010)	Unemployed	-0.410***	(0.011)
Retired	-0.026**	(0.011)	Retired	-0.042***	(0.010)
House-husband/wife	-0.053***	(0.008)	House-husband/wife	-0.041***	(0.010)
Income quartiles			*Income quartiles*		
Second	0.073***	(0.005)	Second	0.119***	(0.003)
Third	0.113***	(0.005)	Third	0.179***	(0.004)
Fourth (highest)	0.207***	(0.005)	Fourth (highest)	0.254***	(0.003)
Constant	2.779***	(0.017)	Constant	3.041***	(0.010)

Notes (*Latin America*): Ordinary Least Squares (OLS) regression. Robust standard errors in parentheses. The income quartiles are built according to the index summarized in Equation 1. N = 248,578; $R^2 = 0.135$. The regression includes country year dummies from 2000 to 2013. The base categories are: single (Marital Status), no education (Level of education), student (Employment status), First (Income quartiles), Venezuela (Country), 1997 (Year). *Notes* (*Europe*): Ordinary Least Squares (OLS) regression. Robust standard errors in parentheses. N = 392,734; $R^2 = 0.181$. The regression includes country year dummies from 1977 to 2002. The base categories are: single (Marital Status), Currently Studying (Level of education), Student (Employment status), First (Income quartiles), France (Country), 1976 (Year). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.