Inflated Concerns: Exposure to Past Inflationary Episodes and Preferences for Price Stability*

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February 2025

Abstract

Using individual-level survey data for both advanced economies and emerging markets spanning over 40 years for 42 countries, we show that cohorts who have had higher exposure to past inflationary episodes (levels, as well as to more persistent or to more volatile inflation), systematically express higher concerns over rising prices. The link between past high inflation exposure and expressed concerns over price stability is particularly strong when an individual's exposure occurs in the latter part of her working-age (as in lifecycle theory). The impact of past exposure to high inflation on contemporaneous preferences over price stability increases when surveyed in the midst of high ongoing inflation and with macroeconomic instability (as measured by GDP growth volatility), but diminishes with the quality of institutions.

Keywords: Price Stability, Inflation, Individual Preferences, Learning from Experience

JEL Classification: E31, E71, D12

*We thank Santiago Acosta-Ormaechea, Ari Aisen, Andres Fernández, Pierre-Olivier Gourinchas, Luis Jácome, Sebnem Kalemli-Ozcan, Juan Pablo Nicolini, Juan Passadore, Francisco Roldán, Juan Treviño, and Martín Uribe and participants at the 2024 Winter Meetings of the Society for Economic Dynamics in Buenos Aires and the 2025 AEA Meetings in San Francisco for useful comments and discussions. The views expressed in the paper are those of the authors and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.

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1 Introduction

Do the costs of being exposed to inflation in the past affect individuals' perceptions of inflation and make them worry more about inflation in the present?[1] In other words, does exposure to inflation generate information that individuals recur to when new episodes surprise them, which might shape individuals' views and attitudes about inflation?

In this paper we tackle these questions for a broad sample of advanced countries and emerging market economies using historical data going back to the early 1900s and exploiting systematic time-series of individual-level, cross-country surveys starting in the early 1980s. We look into different ways through which inflation experience may affect economic agents and how macroeconomic and institutional variables affect that learning from experience. More precisely, we combine a historical database of inflation for 42 countries with individual level surveys spanning over 40 years to study how exposure to past episodes of high inflation can affect individual views about the risks of inflation. In particular, for each cohort in a country (defined by the year in which an individual was born), we construct a measure of exposure to past inflationary episodes which we then relate to an individual's concerns about inflation. Our strategy exploits within-country, between age group/cohort variation in exposure to inflationary episodes, and our identification strategy hinges on pre-exposure cross-cohort parallel trend.[2]

Our findings show that individuals who have lived through past inflationary episodes express higher concerns over rising prices. A one standard deviation increase in exposure to high inflationary episodes (close to 6 additional years) increases the likelihood of expressing strong and moderate concerns over inflation by about 0.8 percentage points. The latter implies roughly a 3 percent increase in the likelihood of expressing strong concerns over inflation relative to an ex-ante uniform distribution. That is, given a uniform distribution that assigns equal probabilities to the different options in the survey—in this case, 25 percent to each of the survey's 4 options for every question—the likelihood of expressing concern about rising prices increases to 28 percent. Alternatively, taking our 154 country-year distribution of survey data, such effects are comparable to the share of individuals expressing strong concerns over inflation increasing from the median value to the 75^{th} percentile. Results are robust to the use of different definitions for a rate of inflation to be deemed as "high inflation", as

[1] For the real costs of inflation, Haberger and Edwards (1980) show that high inflation countries exhibit weaker performance, while Friedman (1969) point to the efficiency losses of inflation, and Fischer (1981) documents that the cost of the inflation tax are larger than regular taxes, in part owing to the distortion in resource allocation that they generate. For a comprehensive survey on high inflation see Heymann and Leijonhufvud (1995).

[2] As we elaborate below, the fundamental assumption is that two individuals of a similar age in different countries differ in their views about price stability (up to a constant) primarily due to differences in their exposure to high inflation.

well as to alternative measures of exposure to high inflation, including to the persistence of high inflation (that may trigger indexations schemes) and to a higher volatility of inflation (as countries typically learn to live with high inflation if the latter is stable, in which case volatility points to larger, discrete jumps conveying new inflationary information).

Our results also suggest that current inflation and macroeconomic instability (as given by real GDP growth volatility) amplify the impact of past exposure on concerns over inflation[3] By contrast, a higher quality bureaucratic apparatus, which is broadly associated with better institutions, dampens the impact of past inflation exposure on concerns over inflation, arguably a sign of higher trust in the central bank's ability to keep inflation at bay.

Individual characteristics are also found to affect the link between past exposure to high inflation and inflation concerns. Women are found not only to express higher concerns for inflation but are also more sensitive to having experienced a high inflation in the past. Similarly, individuals who are currently in the bottom of the income distribution are more responsive to lived experiences, pointing to the potential link between the past costs of high inflation and contemporaneous concerns.

We also find that the timing of exposure matters. High inflation episodes affecting individuals in the latter part of their working age have a significant impact on strong and moderate concerns over inflation. Exposure during an individual's early working age years and during retirement do not affect the likelihood of expressing strong concerns, but may affect moderate concerns, depending on the threshold to identify high inflation that we use. This is consistent with a lifecycle-type behavior whereby the typical individual is indebted in her younger years and own assets in her older years, such that inflation leaves more pronounced scars in the latter phase.[4] We further investigate the role of exposure to high inflation episodes in determining concerns about economic outcomes, more broadly, and find that it does not explain differences among individuals with regards to growth concerns. This points to the direct and unique link between inflation experience and inflation concerns, but not a broader impact on other macroeconomic variables.

Our results are robust to different samples, alternative definitions of high inflation exposure or of inflation concerns, and to concerns about violations of our identification assumptions. The relevance of exposure to past episodes of high inflation as a predictor of concerns over inflation remains when we include younger individuals in the estimation, when we exclude countries with the top five highest inflation rates in our sample, and when we control for additional individual level characteristics. To dispel worries about the potential

[3]This marginal effect is related to Weber and co-authors (2023) discussion of how individuals may pay more attention to inflation during high inflation events.

[4]In the working paper version of the paper (IMF WP 2024/040) we also find some evidence of "recency bias," (as in Malmendier and Nagel, 2016) as the impact of exposure to past high inflation is larger when we discount individuals' experiences occurring the more remote past.

violation of our cross-cohort parallel trends identification assumption, we conduct a placebo exercise where we build a measure of "exposure" to high inflation episodes 25 years prior to the cohort's year of birth. We find that this measure is not statistically significant, which reassures our strategy.

The literature on past inflation and inflation expectations is relatively small (as most of it is quite recent), but can be separated in two large groups. One avenue of exploration focuses on how past events/exposure impact current episodes (and their expectation). The other avenue uses surveys of self-perception of individuals' exposure, and how that correlates with current expectations—in our case, inflation expectations. Our paper falls more in the former rather than in the latter camp.

Specifically, our paper contributes to the literature that studies the importance of lived experiences in shaping perceptions about current/future economic outcomes, also called "experience-based learning" (Giuliano and Spilimbergo, 2023). More generally, this focuses on how personal experiences impact societal preferences through the learning involved in the experience. Important contributions in this strand of the literature include Malmendier and Nagel (2016) and Binder and Makridis (2020). The former exploit consumer surveys for the US and find that differences in inflation experiences across cohorts strongly predict differences in the expectations of these cohorts regarding future inflation levels.[5] The latter find, using high frequency data on gas prices in the US, that consumer sentiment becomes more pessimistic with rising gas prices. This effect is strongest for consumers who lived through the recessionary oil crises in the 1970s, consistent with models of learning from personal experience. That is, consumers who personally experienced the 1970s oil crises widely continue to associate higher energy prices with recessions. Malmendier and Nagel (2011) show that past experiences affect broader economic attitudes. They show that exposure to the great depression has an impact on stock market participation and views about future stock returns. In the same line, Malmendier (2021) looks at FOMC voting since 1951. She documents how votes have been influenced by FOMC members' personal inflation experience—and how the latter affect their inflation expectations and actual votes. She finds that a one standard deviation increase in having experienced inflation result in the probability of a more hawkish vote to increase by about one third (and less dovish by about one third). Weber and others (2023) explore the existence of a bias in inflation expectations agents limited memory of past events—which result in more awareness to present unexpected inflation shocks, in line with Malmendier and others recency bias.

Our paper is aligned with all the above-mentioned papers in highlighting the importance of past experience and, conceptually, that individuals tend to put a larger weight on

[5]Braggion and others (2023) find that exposure to past inflation results in higher inflation expectations for the case of Germany.

personal experience to form their expectations. All of these studies focus on single economies and only advances countries, however. Our work is broader as we include advanced as well as emerging economies and we do so over a long time span.

Expanding the analysis to a broader set of countries is important, as there is evidence that households in high inflation countries tend to be also more informed about inflation, pointing to potential differences across countries, especially among advanced economies and emerging markets (Cavallo, Cruces and Perez-Truglio, 2017). However, compared to our paper, Cavallo, Cruces and Perez-Truglio (2017) focus is on differences in the current inflation context rather than past experience. Essentially, they compare reactions of individuals in the US—a country with a low inflation environment—with Argentina, where inflation is currently (and historically) a problem.

Relatedly, although not fully in the same camp, some have explored how individual level characteristics affect views about economic prospects. Das and others (2020) document, by way of surveys, that people with higher income or higher education are more optimistic about future macroeconomic developments. D'Acunto, Malmendier, and Weber (2022) find heterogeneity of in inflation (individuals that purchase similar goods but pay different prices, or how the price changes of frequently purchased goods drive such heterogeneity) resulting in demographic characteristics such as gender and race being associated with differences in inflation expectations.[6] Our empirical analysis is informed by these studies and in fact confirms many of the relationships previously documented.

More broadly, Giuliano and Spilimbergo (2023) survey a large body of literature (economic, sociologic, political) about how aggregate shocks impact preference and beliefs formation. They document how macroeconomic shocks affect individuals' preferences (political preferences, risk attitudes, and trust in institutions) as well as individuals' beliefs, and how the timing of the shock matters in their formation.

Within the second broad camp, which relates beliefs based on self-perception and how that translates into inflation expectations, is Salle, Gorodnichenko, and Coibion (2023). They use a carefully crafted 2022 survey in the Netherlands (and some laboratory experiments) to assess the impact of self-perceived past inflation hardness on current inflation expectations. Specifically, they find that during the recent inflationary event, individuals that recall having experienced prior disinflationary episodes were projecting lower inflation going forward. Their experience points to the effectiveness of central banks (in a country such as the Netherlands) being able to contain the inflationary event—as compared with individuals that have not self-perceived to have lived through inflationary episodes.[7] Our

[6] D'Acunto, Malmendier and Weber (2021) and (2022) show that part of these differences across gender and race stem from direct exposure to price signals. For example, women are more likely to witness changes in grocery prices, which, in turn, affects their expectation formation (see also D'Acunto and others, 2020).

[7] See also Allinger and Rumbler (2023) for the case of former transition economies.

work is complementary to theirs in that, instead of focusing on people's perceptions, we focus on cohorts' actual experience of inflationary episodes, defined in a systematic manner. Moreover, our sample looks into 42 countries (including advanced economies and emerging markets) though surveys starting in 1980.

Methodologically, our paper follows closely Acemoglu and others (forthcoming). The authors study how past exposure to democracy affects contemporaneous support to democracy and find that only successful democracies (in the sense of yielding strong growth and equity) breed their own support. We adapt their measure of exposure to the context of inflation and use similar survey datasets as the ones used by them.

In connection with our work, but more focused on the characteristic of surveys, Weber and others (2021) describe the problems of inflation expectations surveys review existing evidence about the role of the various channels used to explain the underlying differences in perceived and expected inflation. The latter include exposure to heterogeneous price signals. Contrary to our work, however, they state that one "dimension that might bias inflation expectations is agents' limited memory of past prices," while we find that past inflation episodes, when related to high inflation, do matter in peoples perception of the importance of inflation.

It is also important to mention what we do not do. We do not directly control for price/wage indexation. Although this may be an important dimension of analysis, we lack the data to properly incorporate it in our analysis, especially given the historical dimension of our exercise. This limitation notwithstanding, the large set of fixed effects including in our analysis partly controls for such country-time varying characteristics. We also not take into account the role of migration. People from different countries—and thus experiences—may have more or less tolerance for inflation. Unfortunately, the surveys only include migration data in the last two waves, and we lack information about migrants' country of origin and their exposure to high inflation. We are also unable to explore in more detail whether the variation in the price of specific items (e.g., food and energy prices) weigh differently on the link between past experiences and current concerns about inflation. Although this would be interesting to dig into, we leave it for future research, in particular owing to data limitations.

The rest of the paper is organized as follows. Section 2 discusses the data used in the analysis. Section 3 presents the empirical strategy used to gauge the impact of exposure to high inflation on concerns over inflation. Section 4 presents the main results as well as extensions and robustness exercises. Section 5 concludes.

2 Data

In this section, we describe our main data sources and our definition of high inflation episodes.

2.1 Survey Data

Our analysis relies on the World Value Surveys. These are nationally representative surveys conducted since the early 1980s in selected high-income countries and since the late 1980s in the wider sample of countries. Interviews are conducted in the local languages and questions are designed to assess the respondent's attitudes towards a set of economic, institutional, and social issues.

We focus on two questions gauging each individual's relative preference for economic outcomes over other social and political outcomes. Our main interest will be in studying preferences over price stability, but we also include a question which allows us to study preferences over other economic outcomes, namely economic growth. In particular, for each country-year, the survey asks the following questions. The first and main question in our analysis asks individuals to express which of the following four options is more important: (a) maintaining order in the nation, (b) giving people more say in important government decision, (c) fighting rising prices, or (d) protecting freedom of speech. Subsequently, individuals are asked to name the second most important. The second question asks to express which of the following four options is the most important (second most important): (a) a high level of economic growth, (b) making sure this country has strong defense forces, (c) seeing that people have more say about how things are done at their jobs and communities, or (d) trying to make our cities and countryside more beautiful.

Using these two questions, we construct several gauges of individuals' preference for price stability (concerns about inflation) and economic growth. In the case of inflation, we construct the following variables. The first is an "inflation concerns index" that takes value 100 if the individual ranks "fighting rising prices" as its first option, takes the value 50 if it ranks it second, and zero otherwise. This variable will be used in most of the baseline specifications in the paper. Note that results are qualitatively similar to other scoring systems. For robustness, we also define three dummies. The first is an "inflation concerns dummy" that takes value one if the individual ranks "fighting rising prices" as its first or second option, the second is a "strong inflation concerns" dummy, which equals one if the individual ranks "fighting rising prices" as its first option, and a "moderate inflation concerns" dummy, which equals one if the individual ranks "fighting rising prices" as its second option. Similarly, we define a "moderate preference" dummy if the individual ranked the relevant outcome variable as second most important. In the case of growth concerns, we

use a similar index as the one described above for inflation.

In addition, we use demographic and socio-economic information about the individual. The variables considered include age, year of birth, a dummy variable taking a value of one if the individual is male, a dummy that equals one if the individual is single (as opposed to married, divorced or a widower), a set of education dummies (low education and medium level of education), a set of income dummies,[8] and a set of occupational status dummies.[9] Finally, we use information on the size of the individuals town of residence to construct a set of dummies capturing the town size.

2.2 Inflation Data

Our goal is to assign an inflation state (high inflation or low inflation) to each year of the period between the beginning of the individual's working age and the year of each survey.[10] Since our surveys begin in the 1980s, we need to construct an inflation dataset containing information from at least the 1930s (since some individuals in the initial survey years may have been born in the early 1900s, thus entering their working age at around the 1920s/30s).

For advanced economies, we rely on information from the Jordà-Schularick-Taylor Macrohistory database (Jordà, Schularick, and Taylor, 2017). This dataset contains inflation information starting from the mid-1800s. For Latin American countries we rely on the data from Jácome and Pienknagura (2022), who assemble a historical database of macroeconomic variables (including inflation) for a sample of 17 Latin American countries starting in the 1920s/1930s depending on the country. For other countries, we rely on the IMF's International Finance Statistics (IFS) historical records, which date back to the mid-1930s and on data from the World Development Indicators (WDI), which start in the 1960s. Note that in the historical records, different countries report different price indices. Nevertheless, because our focus will be on inflation, particularly high inflation episodes, not in the price level, these differences will be of second order significance. Our final inflation database contains an unbalanced panel of 42 advanced and emerging markets countries with data starting in most cases in the mid-1930s (and in some cases before that).[11] The list of countries in the

[8]The questionnaire reports the individual's income and reports a variable that places the individual in the country's income distribution. Using this information, we construct a low income dummy, which takes value one if the individual's income falls in the 30^{th} percentile of the country's income distribution, a middle income dummy, which takes value one if the individual's income falls between the 30^{th} and 70^{th} percentile of the country's income distribution, and a high income dummy, which takes value one if the individual's income is above the 70^{th} percentile of the income distribution.

[9]Students, houseworkers, and the "other" category are reported as out of the labor force. Full time and part time workers, as well as self-employed individuals are categorized as employed.

[10]As will be discussed, we set the beginning of the individuals working age at 15.

[11]In countries established after 1936 the inflation data begins in the year the country was founded. For

analysis is presented in Table 1.

Figure 1 documents the evolution of inflation in the countries in our sample. It shows the median inflation value in each year, together with the 25^{th} and 75^{th} percentile value of the within-year cross-country distribution. It shows relatively high inflation levels in the late 1940s (probably as an outcome of the second world war), a spike in the mid-70s, associated with the oil-price shock, a gradual decline in median inflation in between the early 1980s and the 2020s, and a post-COVID spike. Notice, however, that the 75^{th} percentile inflation value increased substantially in the late 1980s/early 1990s as many EMDEs experienced episodes of high inflation. The high level of variability in the 1980s in our sample is also visible when studying the coefficient of variation, which spikes around this period.

2.3 Exposure to High Inflation Episodes

The key variable in our analysis is the individual's exposure to high inflation episodes.[12] We operationalize exposure to high inflation episodes by capturing the number of years that individual i, of age a, in country c, experienced high inflation from the beginning of her working age to the year of the survey, s.[13] In particular, we construct high inflation exposure (HIE) as follows:

$$HIE_{c,s,a} = \sum_{t=s-a+k}^{s} \mathbb{1}(\pi_{c,t} > \overline{\pi}_c) \tag{1}$$

where k is the beginning of an individual's working age, a is the individual's age at the time of the survey(s), $\mathbb{1}$ is an indicator function, and $\overline{\pi}_c$ is country c's high inflation threshold. We set k=15, a common threshold used in labor surveys to construct the working age population. As is discussed in more details when discussing results, we extend and modify equation (1) in a number of ways, to address issues such as persistent episodes of high inflation, high inflation volatility, and to distinguish between inflation exposure that coincides with periods of (financial and banking) crisis and those that do not. In a robustness exercise we also use the (log) average level of inflation experienced by an individual from age 15 to the year of the survey.

Note that we are not able to specifically capture an individual's lived inflation experience. First, even if they were born there, respondents may have lived portions of their lives away from the survey country. Second, we use national inflation levels, when in fact there

example, this is the case of former British and French colonies in the Middle East, South Asia, and East Asia.

[12]For the interested reader, Appendix I sketches a bare bones conceptual framework of the estimated equation.

[13]Our index of high inflation exposure follows closely the "Exposure to Democracy" variable constructed in Acemoglu and others (forthcoming).

may be subnational differences in inflation. Nevertheless, our cohort-specific measure of HIE should be a good approximation to an individual's exposure.

An important piece in the construction of our HIE variable is the inflation threshold, with no clear definition of what constitutes "high inflation." Thus, in the analysis we arbitrarily use two types of thresholds. The first, sets a threshold that is constructed using country-specific inflation distributions. We choose a threshold of the 75^{th} percentile of the country-specific distribution. In all countries we set a minimum threshold of 10 percent, to avoid type-1 errors, as some countries have relatively low inflation rates throughout our sample. This will be our baseline measure of HIE in the econometric analysis. The second type of thresholds are constructed according to the inflation distribution of the entire sample of country-years (starting in 1936). We explore the robustness of results to two thresholds: 25 percent yearly inflation, which approximately corresponds to the 90^{th} percentile of the distribution, and 50 percent, which approximately corresponds to the 95^{th} percentile.To tackle the arbitrary nature of thresholds, we also conduct exercises using the average inflation experienced by a cohort in a given country as our gauge of inflation exposure.

Figure 2 shows the distribution of exposure across the seven waves of the surveys we use in our exercise. Median exposure increased in the 1990s, as more countries in EMDEs experienced high inflation, especially during the 1970s and 1980s—reflected in surveys during the 1990s. In recent waves the median individual has experienced lower exposure, but we see a high degree of heterogeneity.

3 Empirical Strategy

Our empirical strategy is to exploit age group-country-year-level variation in the history of inflation in order to estimate the link between exposure to high inflation and preferences for price stability. To do so, we estimate the following specification:

$$y_{i,c,s,a} = \beta * HIE_{c,s,a} + \theta' * X_{i,c,s,a} + \epsilon_{i,c,s,a} \tag{2}$$

where i, c, s and a are, respectively, individual, country, year of interview and age indices. In the baseline exercises, y is our inflation concerns index, while robustness exercises it will be one of the dummy variables capturing preferences for price stability or the growth concerns index. In addition, $X_{i,c,s,a}$ is a vector of individual controls that includes: country-year of interview, age, and year of birth fixed effects, gender dummies, occupational status dummies, income dummies, educational dummies, and marital status dummies. In some robustness exercises we also include dummies identifying the size of the respondent's city. To illustrate the robustness of results, some specification will control for alternative sets of

fixed effects. Our parameter of interest throughout the paper will be β.

The set of fixed effect included in the core of the analysis has two implications. First, country-year fixed effects allow us to control for all time varying country-specific variables that could affect preferences over inflation and other economic variables. These include current inflation, growth, fiscal variables, and inequality. From the point of view of interpreting our results, the set of fixed effects included in the regressions mean that we assess how past exposure to high inflation mold preferences over price stability by comparing in each year individuals of the same age/cohort across countries, and individuals of different age in a given country.

The fundamental assumption behind specification (1) is that two individuals of a similar age in different countries differ in their views about price stability (up to a constant) primarily due to differences in their exposure to high inflation. To test for the robustness of our assumption, we follow a similar approach as Acemoglu and others (forthcoming) and construct a placebo measure of exposure, which captures high inflation episodes in the 25 years prior to the individual's birth. In addition, we explore whether exposure to high inflation affects preferences over other economic outcomes.

In addition to estimating equation (2), we implement two extensions. First, we allow β to vary depending on when exposure to inflation occurs. In particular, we split exposure based on when high inflation occurs. To do so we split exposure into buckets based on age. A first one, splits it in three buckets: exposure in an individual's early years (ages 15 to 40), exposure in the late working years (40-65), and exposure after retirement (65+). In this case, we estimate the following equation:

$$y_{i,c,s,a} = \beta_y * HIE_{c,s,a}^{15-40} + \beta_m * HIE_{c,s,a}^{40-65} + \beta_o * HIE_{c,s,a}^{65+} + \theta' * X_{i,c,s,a} + \epsilon_{i,c,s,a} \qquad (3)$$

Where now the goal is to assess the sign and significance of the three coefficients, β_y, β_m, and β_o.

Alternatively, and to get a finer characterization of the importance of the timing of exposure, we also conduct an exercise where exposure is broken into 15 years brackets, up to 75 years of age. Ideally, we would use age as a continuous variable, but data limitations do not allow such a fine age grid.

In the second extension we study whether the elasticity of the individual's preference over price stability varies with individual-specific, gender and income, and country-specific variables, namely the current level of inflation, macroeconomic volatility (as measured by a time-varying coefficient of variation of GDP per capita growth), and the quality of a country's bureaucracy (a proxy for institutional quality), as captured in $z_{c,t}$. In practical terms, we

estimate the following variations of equation (2):

$$y_{i,c,s,a} = \beta * HIE_{c,s,a} + \gamma * HIE_{c,s,a} * z_{c,s} + \theta' * X_{i,c,s,a} + \epsilon_{i,c,s,a} \tag{4}$$

$$y_{i,c,s,a} = \beta * HIE_{c,s,a} + \gamma * HIE_{c,s,a} * z_{i,a,c,s} + \theta' * X_{i,c,s,a} + \epsilon_{i,c,s,a} \tag{5}$$

Where in one case we interact HIE with contemporaneous (in the year of the survey) country-level variables and in another case we interact it with contemporaneous individual-level characteristics. Our parameter of interest in this exercise is γ.

In all our estimations we allow the error terms to be correlated among individuals in the same country-year. Thus, our standard errors are clustered at this level of aggregation.

4 Results

In this section, we showcase our estimated effects based on equations (2)-(5). We begin by presenting the baseline estimates of the impact of exposure to high inflation on concerns over price stability. Then we explore some extensions to our baseline specification. First, we explore whether the information that affect individuals' attitudes hinges more on exposure to persistent high inflation spells or on discrete changes providing more information than high but stable inflation (by exploring the role of the volatility of inflation). Then we allow for heterogeneity in the impact of exposure based on the time/age of exposure. We also investigate non-linearities, by looking at the marginal impact of individual-level variables (the gender and income status of survey respondent) and country-level variables (current inflationary exposure, increased macroeconomic instability, and the strength of the country's institutions). Finally, we present results for a series of robustness exercises.

4.1 Baseline Results

Table 2 shows the baseline results from equation (2), using both the inflation concerns index, as well as the different dummies of inflation concerns described in Section 2. First, note that concerns over inflation are robustly correlated with key demographic characteristics. Individuals in lower income brackets express higher concerns over inflation (across gauges of concerns) relative to individual in higher income brackets. A similar relationship emerges when looking at education levels—individuals with lower education levels are more likely to express concerns over inflation. This finding gives credence to the fact that the inflationary tax is regressive; it disproportionately affects individuals who are less capable to hedge against inflation, typically low-income individuals (see Erosa and Ventura, 2002). All these

relationships are also consistent with previous studies (see D'Acunto, Malmendier and Weber, 2022, for a survey). Single individuals are less likely to express concerns over inflation, as do men (which is consistent with D'Acunto, Malmendier, and Weber, 2021). The individual's occupation status also affects concerns over inflation, except in the case f the mild concerns dummy.

Turning to our variable of interest, Table 2 shows that individuals who have lived through past inflationary episodes express higher concerns over rising prices. The impact of exposure to past high inflation is positive and statistically significant and is robust to different inflation concerns gauges. Focusing on the inflation concerns dummies, past exposure affects both strong inflation concerns (column 3) and moderate inflation concerns (4), and the point estimates are comparable.

Moreover, our estimates indicate that the impact of past high inflation exposure is also significant from an economic standpoint. To illustrate the economic significance of our results it is useful to focus on the inflation concerns dummies. A one standard deviation increase in exposure to high inflationary episodes, about 6 additional years of exposure, increases the likelihood of expressing strong and moderate concerns over inflation by about 0.8 percentage points—which is roughly a 3 percent increase in the likelihood of expressing strong concerns over inflation relative to an ex-ante uniform distribution assigning equal probabilities to all options in the survey. That is akin to increasing from a 25 percent probability (in the uniform distribution) to 28 percent of likelihood of being concern about inflation. An alternative way to gauge the economic importance of our estimate is to map it to shares of the population expressing strong concerns over inflation—a 0.8 percentage point increase in the likelihood of expressing high concerns is comparable to an increase in the share of individuals expressing strong concerns over inflation from the median value found in our 154 country-year surveys to the 75^{th} percentile. Given the robustness of the results across gauges of inflation concerns and to economize on space, the rest of the analysis will focus on the inflation concerns index.

Results in Table 2 focused on our preferred specification, which controls for a battery of fixed effects and uses the HIE based on the 75th percentile of each country's inflation distribution. Table 3 shows that the main results in Table 2 are robust to alternative fixed effects configurations and to different definitions of inflation exposure. Columns 1-4 show that the relationship between the inflation concerns index and the HIE gauge is positive and statistically significant for different fixed effects configurations. Columns 5-8 explore the robustness of our results to the use of alternative gauges of HIE. Column 5 uses the share of an individual's life to which he or she has been exposed to high inflation (using the 75th percentile threshold) as the gauge of HIE. This aims at tackling the potential concern that a given number of years of exposure to high inflation may have different impact on a young individual (for which this may account for a very large fraction of his or her adult life)

compared to an older individual. Results in column 5 show that results are robust to this alternative gauge. Columns 6 and 7 explore how the use of absolute threshold may affect results. In particular, they show results when the HIE gauge is computed using instances when inflation is above 25 percent (column 6) and above 50 percent (column 7) and in both cases results are robust. As described in Section 2, these two thresholds are chosen based on the cross-country distribution of inflation in our sample. Finally, column 8 uses the (log) average inflation rate experienced by a cohort from the time an individual in that cohort is 15 to the year of the survey. As with other gauges, results show that the more exposed an individual is to higher levels of inflation in the past, the more he or she is focused on price stability. Note that an advantage of the gauge used in column 8 is that it does not rely on high inflation thresholds. A drawback, however, is that in countries that experienced episodes of hyperinflation, the average for cohorts that experienced that event will be very similar, as it will be dominated by those high inflation years. This will, in turn, affect the precision of the estimates. Thus, the rest of the paper uses the threshold based on the 75th percentile threshold.

So far, we have not distinguished between cohorts whose exposure occurred due to a long spell of high inflation and those whose exposure was due to scattered years of high inflation. Table 4 zooms into this difference by constructing a measure of exposure to long spells of high inflation, which accounts for the role of inflation exposure to persistent inflationary episode as the diver of inflation concerns. More precisely, for each country-cohort, we compute the longest spell of high inflation that the cohort has experienced up to year t. Our findings suggest that the length of high inflation spells has a positive and statistically significant impact on the inflation concerns index. Moreover, the estimated coefficient is slightly larger compared to the one using our overall high inflation exposure measure (Table 2). This strengthen the results, as persistent inflationary episodes are likely to create a larger toll (in terms of the cost associated with experiencing high inflation), and thus a stronger reaction and awareness. They may also be associated to wage or cost indexation schemes that try to mitigate such events. In either case, the main message of the paper holds.

Another relevant issue goes beyond the level of inflation, and relates to whether there is more information in changes in inflation (especially large ones) rather than just high levels. Presumably, a country can adapt to high but predictable levels of inflation without necessarily large real costs—and thus affect inflation concerns more strongly. We test for this by replacing our metric of exposure to inflation by one of exposure to highly volatility inflation. That is, now the dummy that measures inflation exposure is constructed by identifying the years in which the rolling standard deviation of 5-year inflation is larger than the 75th percentile of the country-specific distribution.[14] Results are presented in Table 4, column 2,

[14]The working paper version of this paper shows that results are robust to using two alternative thresholds

and show that exposure to volatile inflation (HIVE) increases an individual's preference for price stability. Note, however, that the economic and statistical significance of the coefficient for the HIVE gauge falls substantially when we control for HIE (column 3), suggesting that experiencing a high inflation *level* appears to affect more inflation concerns.

To further investigate the relevance of high and volatile inflation, as opposed to high but stable inflation, Table 4, column 4, presents results of an exercise where the high inflation episodes are divided between those that coincided with a large year-on-year change in inflation and those that did not—akin to unanticipated step changes. . The definition of large change that we use to operationalize this is exercise, is such that the change in inflation from year to year must exceed one standard deviation of inflation in the five years prior to the event.

We find that that exposure to past high and accelerating inflation results in a more pronounced impact on strong concerns over inflation compared to exposure to other episodes of high inflation. This is illustrated by the fact that the coefficient of the count stemming from episodes where inflation accelerated is roughly 40 percent higher compared to the coefficient for other high inflation episodes. This may suggest that high inflation that stems from accelerations in inflation are more costly and could leave bigger scars.[15]

Table 4, column 6, shows a final exploration on how the nature of the high inflation event to which the individual's cohort was exposed may affect the preferences for price stability. In particular it assesses the extent to which high inflation episodes that are accompanied by banking and currency crises may have a different impact on an individual's concerns over inflation compared to events that were not associated with crises. Results suggest that an additional year of exposure to inflation has a more pronounced impact on the inflation concerns index when the event occurred during a crisis year compared to a "normal" year, albeit the coefficient for former is not statistical significant. This may reflect the fact that crises years are rare occurrences.

4.2 Exploring Heterogeneity Based on the Timing of Exposure

We turn next to studying whether the timing of exposure to high inflation matters when assessing the impact of past experience on concerns over inflation. There are several reasons why timing may matter. For example, young workers, who are in general net debtors, may suffer less from an inflationary episode compared to a worker who has built savings over the span of his working age. Even absent savings considerations, individuals at a more

for inflation volatility: the 90^{th} and 95^{th} percentile of the total distribution).

[15] In the working paper version of the paper (https://www.imf.org/en/Publications/WP/Issues/2024/03/02/Inflated-Concerns-Exposure-to-Past-Inflationary-Episodes-and-Preferences-for-Price-Stability-545465) we also document the existence of a recency bias, as in Malmendier and Nagel (2016).

advanced stage of their working life are more likely to have a larger number of dependents, thus exacerbating the impact of cost-of-living increases. Thus, the mapping from exposure to high inflation to concerns over inflation may be colored by the economic costs that the high inflation episode exerted on the individual.

To assess potential heterogeneity based on the timing of high inflation exposure, we conduct two exercises. The first breaks exposure into three periods: exposure between the age of 15 and 40, the early working age, exposure between 40 and 65, late working age exposure, and exposure after 65. For each age range, we compute the number of years each cohort experienced high inflation, thus constructing an index similar to (1) for each of the three age ranges. To gain further insights of the time profile of exposure, we conduct a second exercise that breaks exposure into 15 year intervals, up to 75 years of age. Having constructed these measures, we estimate equation (3).

Results in Table 5, column 1, show that the timing of exposure matters. Results point to a hump-shaped patter, where the impact of exposure to inflation concerns peaks towards the end of an individual's working-age period. These findings are consistent with the arguments made earlier—high inflation episodes leave a stronger mark in an individual's life when they impose bigger economic pain. A finer exploration of the timing of exposure further confirms the importance of exposure during the latter part of an individual's working-age period. As show in Table 5, column 2, the coefficient for HIE is lower when exposure occurs during an individual's initial years and increases monotonically until around 45 years of age. After this point, the coefficient for HIE remains relatively stable, falling when exposure occurs after 75 years of age.

4.3 Exploring Non-Linearities

So far, we have assumed that the impact of history on concerns over price stability is constant across individuals and unaffected by current economic conditions or other country characteristics. In this section we explore a set of variables that plausibly affect the relationship between an individual's exposure to past inflation and current attitudes—namely individual characteristics (gender and income level) and country-level characteristics (current inflation levels, macroeconomic volatility, and the quality of a country's bureaucracy). Gender may affect the link between past exposure to high inflation contemporaneous concerns over inflation due to their higher awareness to price increases. This may mean that women are more prone to recall past experiences and express higher concerns to the extent that women tend to experience a higher share of households shopping time. Low-income households (assuming that income distributions are roughly persistent) are more likely to have paid a higher cost during past episodes of high inflation, as they are more likely to suffer

large declines in real wages. Turning to country-level variables, high levels of inflation may increase individual's awareness about the costs of inflation, especially in the case of individuals who experienced such episodes in the past. A similarly logic applies to growth volatility (which we proxy by the 5-year rolling coefficient of variation of GDP per capita growth), as a proxy for macroeconomic instability. By contrast, a more able bureaucracy and stronger institutions are likely better prepared to deal with inflationary pressures, thus appeasing concerns about inflation and its costs from individual's who experienced such hardships in the past.

To test for the possibility of such amplification/dampening effects, we extend the specification in (2) by adding an interaction term between exposure to past high inflation and each of the individual and country-level variables discussed above (equations 4 and 5). Note that in the case of individual-level variables, we also control for such amplifying variables individually. In the case of country-level variables, our specification already controls for the direct impact of each variable on inflation concerns through the inclusion of fixed effects.

Table 5, columns 3 and 4, show that gender and an individual's contemporaneous income affect the extent to which past exposure translates into larger concerns over inflation. The estimated coefficients suggest that the effect of past high inflation exposure on contemporaneous inflation concerns is more than 30 percent lower for men than for women. Similarly, HIE is significantly larger in the case of individuals whose family income is below the country's median income compared to individuals with above-median income. Taken together, these results stress the importance of attention to price changes (in the case of women, as shown by D'Acunto, Malmendier, and Weber, 2021) and past costs of high inflation (in the case of lower income individuals) in shaping the relationship between lived experiences and inflation concerns.

Next, Table 6, column 1, studies the interaction between past inflation exposure and current inflation. Results show that, while the coefficient for the interaction term is positive, which means that higher inflation levels today make concerns over inflation even more salient among individuals with higher past high inflation exposure, the effects are not statistically significant. One possible explanation for why current inflation levels do not amplify the impact of past inflation exposure on inflation concerns is that during periods of high inflation a larger share of the population expresses strong concerns over inflation, regardless of their past experience. In fact, a simple regression gauging the relationship between the likelihood of expressing strong concerns over inflation and current inflation levels shows that the two are strongly correlated (Table 6, column 2).

We further study the impact of variables that amplify/dampen the effect of past inflation exposure by estimating the marginal effects of bureaucratic quality (as a proxy for good institutions) and the volatility of the growth rate of real GDP per capita (using the latter as

a proxy for macroeconomic instability). We present these results in Table 6, columns 3 and 4, respectively. We observe that stronger institutions reduce the impact of past exposure to inflation on individuals' current concerns over inflation. We see that the interaction of the HIE and bureaucratic quality is negative and statistically significant. Thus, though we still observe how more exposure to past inflation increases perceptions of rising prices as a problem, the impact is lower in economies with stronger institutions. This result may be linked to the finding in Salles and others (2023), who document that for the Netherlands, individuals that self-perceive themselves as having been exposed to high inflation expect lower inflation when facing an inflationary episode on the basis of having experienced successful disinflation in the past. In turn, more unstable economies seem to have stronger perceptions of inflation, as the impact of their previous exposure to inflation increases along with the volatility of real GDP per capita growth (Table 6, column 4).

4.4 Extensions and Robustness of Baseline Results

One concern about our results, is that they may be driven by a few countries that experienced hyperinflation episodes, mostly in emerging markets. To study whether this the case, Table 7, column 1, presents results for our baseline specification (equation 2) excluding the five countries who have experienced the highest yearly inflation rate in our sample.[16] Note that, the point estimate and statistical significance of the coefficient for our HIE variable is not affected by the exclusion of the five countries, if anything the points estimate is slightly higher. Thus, our results do appear to be robust to the exclusion of these countries.

Table 7, columns 2 and 3, further explores the robustness of our results by studying the impact of the HIE once we use a narrower sample of respondents and when we include other demographic characteristics. In particular, we first extend our sample to include only individuals over 25 years of age[17] (column2), and then use our original sample but include dummy variables controlling for the size of the town the respondent lives in (column 3).[18] Results show that the exclusion of individuals ages 15-25 does not affect the point estimates of our HIE variable and its statistical significance. This provides reassurance that our results are not driven by young individuals, who by construction have an HIE close to zero. Turning to our exercise that controls for town-size, results show that the impact of the HIE on concerns over inflation is virtually unchanged by the inclusion of these dummies.

Our final robustness exercise is aimed at tackling potential violations of our parallel

[16]The five countries are Argentina (peak inflation over 3080 percent in 1989), Bolivia (peak inflation over 8170 in 1985), Germany (peak inflation over 1e11 in 1923), Nicaragua (peak inflation over 7750 percent in 1991), and Peru (peak inflation over 7480 percent in 1990).

[17]Note that, the exposure measure is still computed starting at 15 years old.

[18]We create a middle-size town dummy which takes value one if the respondent's town is between 50,000 and 100,000 inhabitants, and a large-size town dummy if the town is over 100,00 inhabitants.

trends assumption. Key to interpreting our results is the assumption that, absent differences in exposure to past inflation, different cohorts would be on parallel trends. To test for potential violation of this assumption, we follow Acemoglu and others (forthcoming) and construct a placebo exposure variable for each cohort. In particular, we modify equation (1) to compute pre-birth "exposure". In particular, for each cohort, we count the number of years in which the country experienced high inflation in the 25 years prior to the cohort's birth. If this pre-birth "exposure" variable explains concerns over inflation, this would entail a potential violation of our assumption.

Reassuringly, Table 7, column 4, shows that pre-birth placebo exposure does not seem to be associated with inflation concerns. The coefficient is not statistically significant, and the point estimate is substantially smaller (in absolute value) than the one found in our baseline exercise. This is supportive evidence of the validity of the assumptions behind our empirical exercise.

We conclude by assessing how exposure to past inflation relates to concerns about other economic outcomes. One possibility is that an individual's lived experience, specifically regarding past inflation, affects his/her views about economic outcomes generally. Exploiting the full range of questions in the WVS, we explore whether exposure to past inflation affects growth concerns. Following a similar approach as with inflation, we estimate equation (1) for a growth concerns index as our left-hand side variable.

Table 7, column 5, shows that exposure to past inflation is not robustly linked to growth concerns. The coefficient for the HIE is negative and statistically insignificant and substantially lower in magnitude compared to the coefficient for inflation concerns. This suggests that exposure to inflation does not necessarily affect an individual's overall focus about the state of the economy. In other words, inflation exposure affects only inflation expectations but not a broader set of macroeconomic variables.

5 Conclusions

History matters. Individuals who have lived through past inflationary episodes express higher concerns over rising prices. This includes not only high inflation but also persistent and highly volatile inflation episodes. The effects not only statistically but also economically significant, as they are comparable to an increase in the share of individuals expressing strong concerns over inflation from the median value found in our 154 country-year surveys to the 75^{th} percentile. And where those individuals are in their life cycle matters, as those in their prime saving age are more concerned than younger people—presumably as the latter already (on average) have saving, while the former probably debt.

Our results also show that current inflation (akin to an inflation shock) and GDP

growth volatility (associated with higher macroeconomic instability) amplify the impact of past exposure on concerns over inflation. By contrast, a higher quality bureaucratic apparatus, which is broadly associated with better institutions, dampens the impact of past inflation exposure on concerns over inflation, arguably a sign of higher trust in the central bank's ability to keep inflation at bay.

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A Figures and Tables

Figure 1: Cross-Country Distribution of Inflation over Time—1945-2021

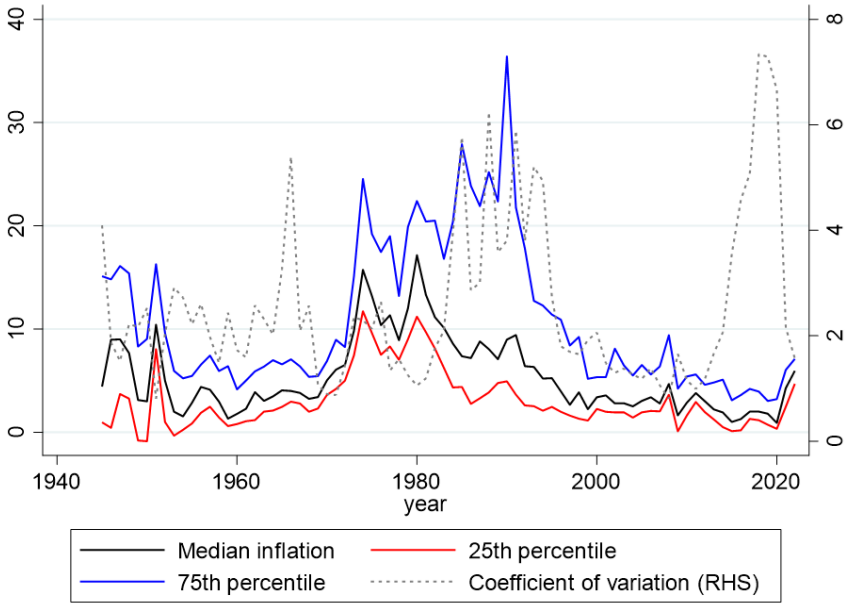
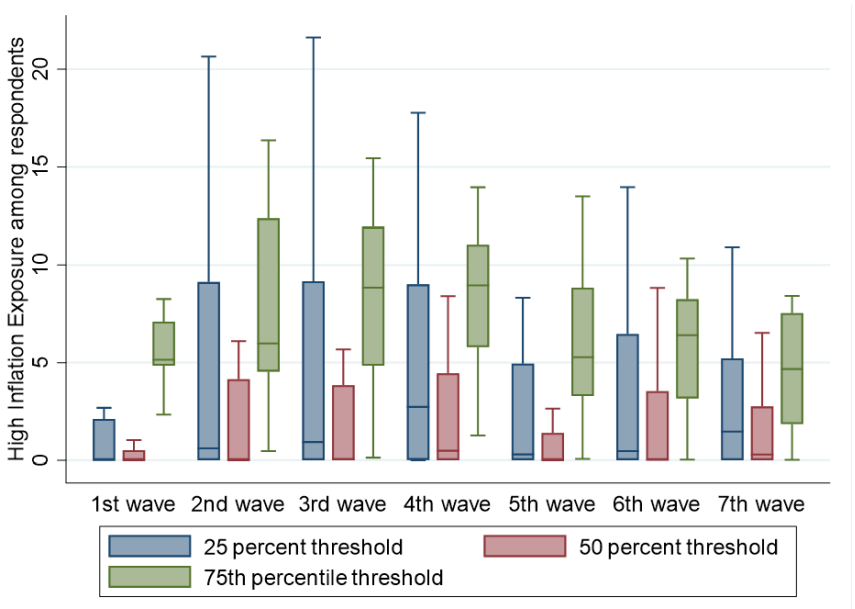


Figure 2: Distribution of High Inflation Exposure Among Respondents—By Survey Wave



Note: Survey waves were conducted in the following years: Wave 1, 1981-84, Wave 2, 1989-93, Wave 3, 1994-98, Wave 4, 1999-2004, Wave 5, 2005-09, Wave 6, 2010-2014, Wave 7, 2017-2022.

Table 1: Sample of Countries in the Analysis

Advanced Economies	Emerging Markets
Australia, Canada, Finland, France, Germany, Israel, Italy, Japan, Republic of Korea, The Netherlands, Norway, New Zealand, Spain, Sweden, Switzerland, United Kingdom, United States	Argentina, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, Egypt, El Salvador, Guatemala, India, Indonesia, Iraq, Islamic Republic of Iran, Lebanon, Mexico, Malaysia, Nicaragua, Peru, Philippines, South Africa, Thailand, Turkiye Uruguay, Rep. Bol. of Venezuela

Table 2: High Inflation Exposure and Inflation Concerns: Alternative Concerns Definitions

Dependent variable	Inflation concerns index	Inflation concerns dummy	Strong inflation concerns dummy	Mild inflation concerns dummy
	(1)	(2)	(3)	(4)
HIE	0.2058***	0.0029***	0.0012**	0.0016***
	(0.0525)	(0.0006)	(0.0005)	(0.0004)
Low income dummy	5.7087***	0.0661***	0.0481***	0.0179***
	(0.4377)	(0.0059)	(0.0041)	(0.0053)
Middle income dummy	2.7043***	0.0352***	0.0189***	0.0163***
	(0.3275)	(0.0042)	(0.0031)	(0.0034)
Low education dummy	9.9191***	0.1173***	0.0811***	0.0362***
	(0.6779)	(0.0090)	(0.0058)	(0.0067)
Intermediate education dummy	5.1844***	0.0647***	0.0390***	0.0257***
	(0.4007)	(0.0050)	(0.0038)	(0.0037)
Single dummy	-2.0466***	-0.0249***	-0.0161***	-0.0088***
	(0.3042)	(0.0036)	(0.0031)	(0.0027)
Male dummy	-2.6818***	-0.0283***	-0.0253***	-0.0030
	(0.2514)	(0.0032)	(0.0024)	(0.0025)
Retired dummy	-0.4660	-0.0043	-0.0050	0.0007
	(0.4801)	(0.0058)	(0.0049)	(0.0047)
Out of labor force dummy	1.4323***	0.0146***	0.0140***	0.0006
	(0.3126)	(0.0033)	(0.0036)	(0.0030)
Unemployed dummy	1.3807***	0.0137**	0.0140***	-0.0003
	(0.4486)	(0.0055)	(0.0044)	(0.0042)
Constant	28.0302***	0.3925***	0.1681***	0.2244***
	(0.5421)	(0.0066)	(0.0052)	(0.0051)
Observations	239,924	239,924	239,924	239,924
R-squared	0.1269	0.1189	0.0871	0.0353

Note: All regressions include individuals 15 and up. Standard errors clustered at the country-year level in parenthesis. All specifications include year, country-year and cohort fixed effects. HIE is constructed using the 75^{th} percentile threshold, which is calculated based on the country-specific inflation distribution.
*** p<0.01, ** p<0.05, * p<0.1

Table 3: High Inflation Exposure and Concerns over Price Stability

Dependent variable:	Inflation concerns index							
HIE definition:	75th percentile (1)	75th percentile (2)	75th percentile (3)	75th percentile (4)	75th percentile, share (5)	25 percent (6)	50 percent (7)	log of av. past inflation (8)
High Inflation Exposure (HIE)	0.1877***	0.1008**	0.3184**	0.2058***	5.2826**	0.1420***	0.1429**	0.4086*
	(0.0131)	(0.0474)	(0.1611)	(0.0525)	(2.3477)	(0.0440)	(0.0614)	(0.2140)
Low income dummy	8.7600***	5.8038***	8.0345***	5.7087***	5.7126***	5.7149***	5.7165***	5.7055***
	(0.2350)	(0.4431)	(1.2114)	(0.4377)	(0.4381)	(0.4366)	(0.4371)	(0.4396)
Middle income dummy	7.0012***	2.7093***	5.8879***	2.7043***	2.6898***	2.6896***	2.6835***	2.6719***
	(0.2053)	(0.3303)	(1.0452)	(0.3275)	(0.3282)	(0.3278)	(0.3281)	(0.3307)
Low education dummy	9.3421***	9.8495***	8.2976***	9.9191***	9.9824***	9.9571***	9.9914***	10.0263***
	(0.2252)	(0.6780)	(1.3120)	(0.6779)	(0.6811)	(0.6828)	(0.6836)	(0.6847)
Intermediate education dummy	4.8929***	5.1502***	4.0466***	5.1844***	5.1726***	5.1948***	5.1896***	5.1773***
	(0.1896)	(0.4007)	(1.0262)	(0.4007)	(0.4002)	(0.3991)	(0.3988)	(0.4034)
Single dummy	-2.0115***	-2.0005***	-1.0927	-2.0466***	-2.0198***	-2.0408***	-2.0180***	-2.0319***
	(0.2029)	(0.3059)	(0.8548)	(0.3042)	(0.3050)	(0.3048)	(0.3065)	(0.3070)
Male dummy	-2.2502***	-2.6985***	-2.2220***	-2.6818***	-2.6851***	-2.6853***	-2.6855***	-2.6896***
	(0.1747)	(0.2522)	(0.4253)	(0.2514)	(0.2516)	(0.2510)	(0.2508)	(0.2520)
Retired dummy	-4.1169***	-0.4673	-0.7214	-0.4660	-0.5870	-0.5915	-0.6217	-0.5844
	(0.2737)	(0.4933)	(0.9061)	(0.4801)	(0.4912)	(0.4858)	(0.4897)	(0.4951)
Out of labor force dummy	3.1117***	1.4556***	3.8282***	1.4323***	1.4275***	1.4174***	1.4232***	1.4692***
	(0.2128)	(0.3117)	(1.0750)	(0.3126)	(0.3129)	(0.3128)	(0.3128)	(0.3109)
Unemployed dummy	3.1891***	1.3768***	3.3608***	1.3807***	1.3389***	1.3210***	1.3126***	1.3237***
	(0.3140)	(0.4495)	(1.1540)	(0.4486)	(0.4494)	(0.4519)	(0.4494)	(0.4489)
Constant	24.9838***	28.7228***	24.6652***	28.0302***	28.6223***	28.9205***	29.1216***	28.4865***
	(0.2360)	(0.5236)	(1.8328)	(0.5421)	(0.5314)	(0.3909)	(0.3767)	(0.5916)
Country-Year FE	NO	YES	NO	YES	YES	YES	YES	YES
Cohort-Year FE	NO	NO	YES	YES	YES	YES	YES	YES
Age FE	NO	YES	YES	YES	YES	YES	YES	YES
Observations	239,926	239,924	239,924	239,924	239,924	239,924	239,924	239,108
R-squared	0.0265	0.1260	0.0324	0.1269	0.1268	0.1268	0.1268	0.1267

Note: Standard errors clustered at the country-year level in parenthesis. Regressions include individuals age 15 and up. The 75^{th} percentile threshold is calculated based on the country-specific inflation distribution.
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Exposure to High Inflation and Inflation Concerns: Inflation Persistence, Acceleration, Volatility and Financial Crises

Dependent variable	Inflation concerns index					
	(1)	(2)	(3)	(4)	(5)	(6)
Consecutive years of HIE	0.2193***					
	(0.0533)					
High Inflation Volatility Exposure (HIVE)		0.1438***	0.0351			
		(0.0547)	(0.0667)			
HIE			0.1871***			
			(0.0666)			
HIE, large year-on-year change				0.3895***		
				(0.1463)		
HIE, small year-on-year change					0.2822***	
					(0.0714)	
HIE during crisis years						0.3843
						(0.3920)
HIE during normal years						0.1887***
						(0.0661)
Low income dummy	5.7090***	5.7122***	5.7079***	5.7132***	5.7094***	5.7105***
	(0.4368)	(0.4380)	(0.4377)	(0.4376)	(0.4378)	(0.4376)
Middle income dummy	2.6919***	2.6834***	2.7022***	2.6959***	2.7034***	2.7041***
	(0.3279)	(0.3281)	(0.3276)	(0.3277)	(0.3279)	(0.3276)
Low education dummy	9.9616***	9.9763***	9.9184***	9.9601***	9.9230***	9.9208***
	(0.6805)	(0.6823)	(0.6780)	(0.6777)	(0.6792)	(0.6782)
Intermediate education dummy	5.2067***	5.1604***	5.1806***	5.1818***	5.1813***	5.1896***
	(0.4017)	(0.3981)	(0.4000)	(0.4009)	(0.4004)	(0.3996)
Single dummy	-1.9999***	-2.0196***	-2.0443***	-2.0542***	-2.0312***	-2.0442***
	(0.3092)	(0.3053)	(0.3040)	(0.3022)	(0.3057)	(0.3051)
Male dummy	-2.6787***	-2.6868***	-2.6816***	-2.6880***	-2.6808***	-2.6813***
	(0.2510)	(0.2512)	(0.2513)	(0.2510)	(0.2515)	(0.2512)
Retired dummy	-0.6098	-0.4701	-0.4443	-0.4710	-0.5147	-0.4878
	(0.4857)	(0.4812)	(0.4747)	(0.4782)	(0.4857)	(0.4788)
Out of labor force dummy	1.4310***	1.4309***	1.4326***	1.4294***	1.4330***	1.4323***
	(0.3129)	(0.3132)	(0.3127)	(0.3127)	(0.3125)	(0.3126)
Unemployed dummy	1.3697***	1.3160***	1.3748***	1.3471***	1.3823***	1.3864***
	(0.4459)	(0.4494)	(0.4493)	(0.4512)	(0.4472)	(0.4464)
Constant	28.3747***	28.6573***	27.9712***	28.4967***	28.1804***	28.0276***
	(0.4689)	(0.4605)	(0.5373)	(0.5422)	(0.5084)	(0.5431)
Observations	239,924	239,924	239,924	239,924	239,924	239,924
R-squared	0.1269	0.1268	0.1269	0.1268	0.1269	0.1269

Note: Standard errors clustered at the country-year level in parenthesis. Regressions include individuals age 15 and up. All specifications include year, country-year and cohort fixed effects. HIE is constructed using the 75^{th} percentile threshold, which is calculated based on the country-specific inflation distribution.
*** p<0.01, ** p<0.05, * p<0.1

Table 5: High Inflation Exposure and Concerns over Price Stability, Timing of Exposure and the Role of Individual Characteristics

Dependent variable	Inflation concerns index			
	(1)	(2)	(3)	(4)
HIE, 15-40 years old	0.1238***			
	(0.0474)			
HIE, 40-65 years old	0.4190***			
	(0.0839)			
HIE, 65+ years old	0.3573			
	(0.3802)			
HIE, 15-30 years old		0.1265***		
		(0.0464)		
HIE, 30-45 years old		0.1949***		
		(0.0647)		
HIE, 45-60 years old		0.4853***		
		(0.0887)		
HIE, 60-75 years old		0.4877***		
		(0.1552)		
HIE, 75+ years old		0.4146		
		(1.0012)		
HIE			0.2547***	0.0891
			(0.0527)	(0.0571)
HIE x male dummy			-0.0974***	
			(0.0303)	
HIE x below median income dummy				0.1754***
				(0.0300)
Income, gender, education and LF controls	YES	YES	YES	YES
Observations	239,924	239,924	239,924	239,924
R-squared	0.1271	0.1272	0.1270	0.1272

Note: Standard errors clustered at the country-year level in parenthesis. Regressions include individuals age 15 and up. All specifications include year, country-year and cohort fixed effects. HIE is constructed using the 75^{th} percentile threshold, which is calculated based on the country-specific inflation distribution.
*** p<0.01, ** p<0.05, * p<0.1

Table 6: High Inflation Exposure and Concerns over Price Stability, Heterogeneity by Current Inflation, Bureaucratic Quality and GDP Volatility

Dependent variable	Inflation concerns index			
	(1)	(2)	(3)	(4)
HIE	0.2019***		0.6085***	0.1975***
	(0.0531)		(0.1443)	(0.0527)
HIE*inflation	0.0497			
	(0.0868)			
inflation		0.1652***		
		(0.0590)		
HIE*Bureaucratic Quality			-0.1828***	
			(0.0620)	
HIE*CV of GDP per capita growth				0.0009***
				(0.0003)
Low income dummy	5.7084***		5.9484***	5.7163***
	(0.4376)		(0.4592)	(0.4399)
Middle income dummy	2.7047***		2.7923***	2.7019***
	(0.3275)		(0.3505)	(0.3311)
Low education dummy	9.9204***		10.0098***	9.9089***
	(0.6778)		(0.6964)	(0.6780)
Intermediate education dummy	5.1844***		5.3637***	5.1818***
	(0.4006)		(0.4079)	(0.4001)
Single dummy	-2.0461***		-2.1472***	-2.0435***
	(0.3043)		(0.3257)	(0.3048)
Male dummy	-2.6823***		-2.7599***	-2.6621***
	(0.2513)		(0.2621)	(0.2516)
Retired dummy	-0.4672		-0.3924	-0.4462
	(0.4796)		(0.4878)	(0.4824)
Out of labor force dummy	1.4313***		1.5950***	1.4196***
	(0.3124)		(0.3202)	(0.3147)
Unemployed dummy	1.3799***		1.6502***	1.3952***
	(0.4486)		(0.4813)	(0.4508)
Constant	27.9966***	33.5949***	29.0423***	27.9448***
	(0.5462)	(0.7971)	(0.5716)	(0.5429)
Country-Year FE	YES	NO	YES	YES
Cohort-Year FE	YES	YES	YES	YES
Age FE	YES	YES	YES	YES
Country FE	NO	YES	NO	NO
Country FE	NO	YES	NO	NO
Observations	239,924	239,969	220,291	238,685
R-squared	0.1269	0.0920	0.1200	0.1274

Note: Standard errors clustered at the country-year level in parenthesis. Regressions include individuals age 15 and up. HIE is constructed using the 75^{th} percentile threshold, which is calculated based on the country-specific inflation distribution.
*** p<0.01, ** p<0.05, * p<0.1

Table 7: High Inflation Exposure and Concerns over Price Stability: Alternative Samples and Robustness Exercises

Dependent variable:	Inflation concerns index				Growth concerns index
	(1)	(2)	(3)	(4)	(5)
HIE	0.2419***	0.1971***	0.2093***		-0.0914
	(0.0597)	(0.0592)	(0.0525)		(0.0561)
HIE placebo				-0.0788	
				(0.0506)	
Low income dummy	5.5112***	6.1368***	5.6480***	5.7969***	-2.4784***
	(0.4622)	(0.4718)	(0.4382)	(0.4431)	(0.6032)
Middle income dummy	2.7391***	2.7963***	2.6857***	2.7086***	0.5685
	(0.3433)	(0.3498)	(0.3282)	(0.3299)	(0.4348)
Low education dummy	9.2470***	9.9821***	9.7727***	9.8975***	-6.8038***
	(0.6721)	(0.7141)	(0.6761)	(0.6817)	(0.9237)
Intermediate education dummy	4.9769***	5.3111***	5.1062***	5.1380***	-1.2271**
	(0.4280)	(0.4430)	(0.3952)	(0.3988)	(0.5149)
Single dummy	-2.0043***	-1.9094***	-2.0013***	-1.9891***	-1.3920***
	(0.3322)	(0.3236)	(0.3016)	(0.3059)	(0.3171)
Male dummy	-2.5650***	-2.8677***	-2.6885***	-2.6982***	2.8501***
	(0.2749)	(0.2925)	(0.2507)	(0.2525)	(0.2932)
Retired dummy	-0.6648	-0.2262	-0.4695	-0.4596	0.2032
	(0.4946)	(0.4882)	(0.4811)	(0.4999)	(0.4913)
Out of labor force dummy	1.5644***	1.8372***	1.4358***	1.4591***	-1.1853***
	(0.3300)	(0.3850)	(0.3126)	(0.3118)	(0.3045)
Unemployed dummy	1.3341***	1.4109***	1.3948***	1.3447***	-1.5638***
	(0.4713)	(0.4951)	(0.4491)	(0.4490)	(0.3841)
Large town dummy			-1.4379**		
			(0.5879)		
Mid-size town dummy			-0.6638		
			(0.6631)		
Constant	28.4004***	27.9830***	28.5236***	29.7082***	59.8829***
	(0.6026)	(0.6500)	(0.5718)	(0.4024)	(0.5966)
Observations	215,104	198,674	239,924	239,924	239,924
R-squared	0.1284	0.1298	0.1270	0.1259	0.2618

Note: Column (1) excludes Argentina, Bolivia, Germany, Nicaragua and Peru, which recorded the highest inflation rates in our sample. Column (2) includes individuals 25 and up, all other columns include individuals 15 and up. Standard errors clustered at the country-year level in parenthesis. All specifications include year, country-year and cohort fixed effects. HIE is constructed using the 75^{th} percentile threshold, which is calculated based on the country-specific inflation distribution.
*** p<0.01, ** p<0.05, * p<0.1

B A Simple Conceptual Framework

This appendix presents a simple conceptual framework to think about how an individual's experience with past high inflation may shape contemporaneous views about inflation. This could be the case of countries in which, against the backdrop of a persistent—and oftentimes increasing—inflation environment that translates into a continuous reduction in the purchasing power of domestic currency, individuals rely on assets that shield them against inflation, and could result in portfolio dollarization. Similar events are observed when small open economies face unsustainable real appreciation. This is characteristic, for example, of persistent and macroeconomic unsustainable polices, particularly for fiscal deficits that markets expect to eventually be monetized. In such circumstances, to maintain the purchasing power of their savings, individuals save in US dollar-denominated assets or tradable goods that tend to maintain their dollar value over time. Moreover, the more frequent (or longer)

such events are, the more individuals get used to them and how to react to such episodes. Agents learn from experience, so when similar situations repeat, they tend to revert to the accumulated knowledge to have their personal reaction functions. However, shielding against inflation is costly, as it entails adjustment costs paid by individuals to insure their income and their wealth against sudden changes in relative prices. The costs of high inflation are expected to be even larger when individuals are unable to resort to safe assets, as may be the case of low-income individuals, who typically experience the largest contractions in real wages during episodes of high inflation.

To rationalize this in a simple manner, we provide below an example of a conceptual framework of how individuals in many emerging market and developing economies learn from their experience with inflation, resulting in an active inflationary memory. Such framework helps motivate the empirical exercises in this paper.

Suppose a traditional, old-school monetary equilibrium given by real money supply equal to demand for real balances, given by $m = \frac{M_t}{P_t} = L(i_t, y_t)$; where the supply of nominal money grows at a constant rate $\mu = k$ (k could equal zero, in which case the real supply of money for given prices would be a vertical line in the real money-interest rate space) and a demand for real money balances that is an increasing function of real GDP and a decreasing function of the nominal interest rate (that is, $L_i < 0$; $L_y > 0$)) and assume that $i_t = \xi(\pi_t^C)$, resulting in a downward sloping demand for real money balances with regards to inflation concerns—see more below details. To obtain a demand for real money balances from first principles one can have individuals maximizing a utility function $u(.)$ that depends on real consumption and the services provided by holding real money balances $\int_{t=0}^{\infty} u(c_t, m_t)\, dx$, or pose a cash-in-advance constraint in the individual maximization problem. In both examples one will obtain, from the first order optimizing conditions, the demand for real balances. (A fix endowment and a demand curve could be easily added.) For a full New Keynesian model including a more traditional Taylor rule, Phillips curve, and an IS curve, see Jácome and others (forthcoming).

Let π_t^C be inflation concerns of individual i in country c at time t; $HIE_{i,c,t}$ stand for High Inflation Exposure of individual i, in country c at time t; and given by:

$$HIE_{i,c,t} = \sum_{\tau=t-a}^{t} hie_t \tag{6}$$

where a is a person's age, $HIE_{i,t,c} = \{\pi_{level}, \pi_{spell}, \pi_{vol.}\}$; and $S_{c,t} = \{\pi_{c,t}, g_{c,t}, CBQ_{c,t}\}$ denote the state in country c at time t, as given by actual observed inflation, real GDP growth, or central bank quality.

We pose that $\pi_{c,t,i}^C = \Gamma(HIE_{c,t}; S_{c,t})$, with $\Gamma_{HIE} > 0$; $\Gamma_S > 0$, $\Gamma_{HIE,HIE} > 0$, $\Gamma_{S,S} > 0$.

A linear example of the latter could be $\pi_{c,t,i}^C = \alpha + \beta_1 HIE_{c,t} + \beta_2 \mathbb{1}(S_{c,t} = \overline{S_c})$, that can be thought as coming from real wages being a negative function of observed inflation, $w_{c,t} = F(\pi_{c,t})$, $F' <$, and $HIE_{i,c,t} = \sum_{\tau=t-a}^{t} \Omega(w_{c,\tau})$, which implies that $\frac{\partial HIE_{i,c,t}}{\partial \pi_{c,t}} > 0$.

In other words, observed inflation increases the exposure of individuals to inflation, which accumulates over time and is retrieved by agents when facing new bouts of inflationary events. The more (or longer) and individual is exposed to high inflation, which reduces the purchasing power of her real wage, in turn increase her concerns about inflation, reducing the demand for money (as individuals rush to dollar assets or buying tradable goods), as

has been typically observed in inflationary environments.