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Echoes of Hyperinflation: The Link Between past Exposure and Formation of Expectations

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Abstract

This paper studies how lifetime inflation exposure shapes individuals' inflation expectations, perceptions, and financial behavior. Using a large individual-level dataset from Türkiye spanning 2014 to 2024, combined with detailed measures of past inflation experiences, we show that individuals who have lived through higher inflation consistently report higher expected and perceived inflation. They also respond more strongly to current inflation conditions. The effects are larger for less educated and lower income individuals. In additional analysis, we find that greater lifetime inflation exposure is associated with higher use of retail loans, especially fixed rate loans. These results highlight the persistent influence of past economic conditions on expectation formation and household decisions in an emerging economy with a history of volatile inflation.

JEL classification

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Keywords

inflation expectations, lifetime exposure, households

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* The views expressed in this paper are of our own and do not necessarily reflect those of the Central Bank of the Republic of Türkiye, Amazon, or other third parties.

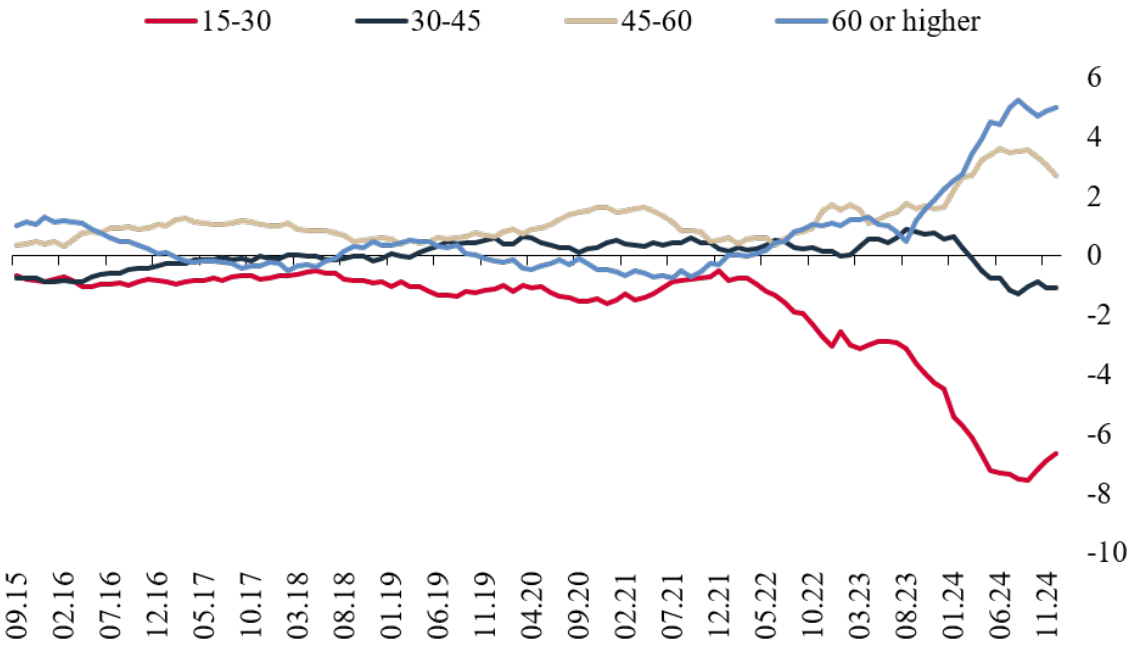
1 Introduction

The influence of past economic experiences on current expectations has been a central theme in the study of behavioral economics, particularly in relation to inflation expectations. In the context of high and persistent inflation, extreme historical price instability can leave lasting psychological scars on individuals and markets, shaping their beliefs about future inflation. Research on the persistence of economic shocks (Malmendier and Nagel, 2016) suggests that individuals who have lived through high-inflation episodes tend to anchor their future expectations on past experiences, leading to more entrenched inflationary views even after economic stabilization. This research is a continuation of the central idea present in (Lucas, 1972) on rational expectations, highlighting that agents' forecasts are influenced by their past experiences with economic conditions. Despite these foundational insights, there remains limited empirical research quantifying the direct impact of past exposure to high and chronic inflation exposure on current inflation expectations, especially in persistently high-inflation economies. This paper seeks to add to this evidence by estimating how individuals' inflation expectations are shaped by their exposure to high-inflation environments, contributing to the broader understanding of how past macroeconomic conditions influence current economic behavior and policy.

In examining these questions, Türkiye offers an especially compelling setting. First, as a rapidly developing emerging economy, Türkiye has undergone repeated and turbulent inflationary episodes over the past decades, marked by sharp swings in price levels and policy regimes. This environment provides substantial variation in the inflation exposures of individuals during their lifetime. As illustrated in Figure 1, inflation expectations diverge systematically across age groups, with younger and older individuals exhibiting distinct views about future inflation. This gap is consistent with the idea that lifetime inflation exposure plays a central role in shaping expectations. Second, the availability of multiple

data sources provides a unique data set offering very granular individual level data. Through the combined availability of high-frequency micro-level data from the Central Bank of the Republic of Türkiye (CBRT) and TURKSTAT, we construct a rich individual, year, and month panel covering the period from 2014 to 2024, containing nearly 400,000 observations. This uniquely detailed dataset allows us to match individuals' inflation expectations with their historical inflation exposure, allowing us to empirically assess how cumulative inflation experiences affect expectation formation in an emerging-market environment.

Figure 1: Inflation Expectations by Age Group Relative to Mean (%)



Note: This figure shows the evolution of the deviations from the mean inflation expectation by age group. (Source: TURKSTAT)

To investigate the role of individual inflation exposure on inflation expectations, we estimate an empirical model with a rich set of fixed effects, including age, birth cohort, and year-month fixed effects. In this setting, we isolate the contribution of lifetime inflation exposure from other sources of variation. We also control for key demographic and socioeconomic characteristics that may influence expectations, including gender, income, and years

of schooling. In the next step, we extend the analysis by interacting inflation exposure with one-month lagged annual inflation, in order to assess whether the influence of past inflation exposure becomes stronger during periods of elevated inflation. To explore heterogeneity in the formation of expectations by individual characteristics, we further estimate separate regressions by schooling level and by income group. Finally, we test whether elevated inflation expectations have real effects on financial decisions by estimating the effects of inflation exposure on retail loans.

Our analysis yields several findings and insights. First, using the average annual inflation rate experienced since birth as the primary measure of exposure, we document a robust positive relationship between lifetime inflation exposure and inflation expectations. A one percentage point increase in inflation exposure raises expected inflation by approximately 16.7 basis points. When we employ an alternative measure defined as the number of periods in which inflation exceeded 30 percent, the estimated coefficients become larger, indicating that more extreme episodes of inflation exert a stronger influence on expectation formation. Second, individuals with greater historical exposure to inflation adjust their expectations more sharply in response to current inflation conditions. Third, when we turn to inflation perceptions rather than expectations, we find that individuals with higher lifetime exposure also report higher perceived inflation over the previous twelve months. A one percentage point increase in lifetime inflation exposure is associated with an increase of slightly more than one half percentage point in perceived inflation. Fourth, the effect of lifetime exposure on inflation expectations is significantly larger among individuals with lower levels of education. We also find a positive and significant effect for individuals belonging to very low and low income groups, whereas the effect becomes statistically insignificant for medium and high income individuals. Finally, as a complementary analysis, we examine borrowing behavior and show that individuals with greater lifetime inflation exposure significantly increase their use of retail loans. Exposure is positively associated with all categories of fixed rate retail borrowing, implying that past inflation experiences influence not only expectations but also

financial decisions.

Our paper relates to two main strands of the literature. The first concerns the role of learning from experience in shaping expectations. A large body of work shows that individuals rely on their personal histories when forming beliefs about the future. Although not directly centered on inflation expectation formation, Malmendier and Nagel (2011) document that households' previous experiences in financial markets affect their later portfolio choices, and related studies show that wealth (Vissing-Jorgensen, 2003), age (Greenwood and Nagel, 2009), investors' past participation in initial public offerings (Kaustia and Knüpfer, 2008; Chiang et al., 2011), CEOs' characteristics and experiences (Malmendier and Tate, 2005; Malmendier and Nagel, 2011), and individual beliefs (Fuster et al., 2010) are all closely linked to economic decisions. Focusing on the United States, (Malmendier and Nagel, 2016) further show that individuals overweight the inflation they have experienced during their lifetimes. Our paper complements this literature by providing evidence from Türkiye, an emerging economy with a highly volatile inflation history, and by using individual-level data together with a different identification strategy.

Second, our paper relates to studies that examine the sources of inflation expectations. A large body of research shows that expectations are shaped by information frictions, personal price exposure, salient goods, and central bank communication. Carroll (2003) and later work by Coibion and Gorodnichenko (2015) demonstrate that households update their beliefs infrequently and imperfectly, so their expectations diverge from professional forecasts. Another line of research focuses on the role of experienced prices and shows how everyday interactions with volatile retail prices influence beliefs. D'Acunto et al. (2021) find that households that have frequent exposure to grocery price changes raises short-run inflation expectations.[1] In addition, salient prices, such as gasoline, strongly affect household beliefs (Kilian and Zhou, 2022; Bürgi et al., 2025) and can generate high reactions to

[1]See also Malmendier et al. (2021), Braggion et al. (2024), Salle et al. (2024), and Gennaioli et al. (2024).

movements in energy prices. Larsen et al. (2021) shows that news topics help predict shifts in expectations, and recent survey evidence highlights the role of intuitive narratives and misperception (Binetti et al., 2024). Central bank communication can also influence expectations. Nevertheless, experiments by Coibion et al. (2022) indicate that these effects are modest due to limited public attention and low economic knowledge. While these studies emphasize contemporaneous information, salient prices, and communication channels, they pay less attention to how accumulated macroeconomic experiences shape expectations over longer horizons. Our paper contributes to this literature by emphasizing a different and longer-term source of expectation formation, namely, individuals' past inflation exposure.

The remainder of the paper is organized as follows. Section 2 provides an overview of past inflation dynamics in Türkiye and describes the historical context that motivates our analysis. Section 3 presents the data sources and summarizes the main features of the individual-level dataset. Section 4 outlines the empirical methodology, and Section 5 reports the main findings along with robustness and heterogeneity analyses. Section 6 concludes.

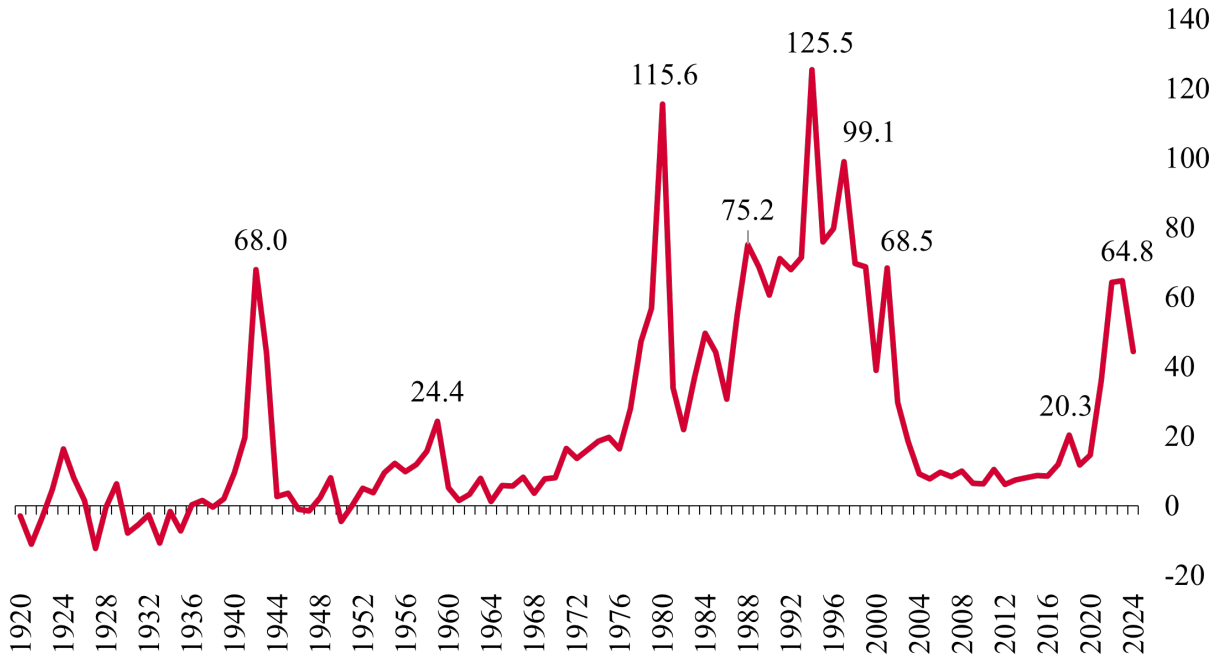
2 Background and context

Türkiye has had a history of volatile inflation, with recurrent episodes of hyperinflation, and has yet to go through an extended period of price stability since the liberalization of the economy beginning in the middle of the 20th century. The beginnings of Türkiye's inflation problems can be traced back to the 1970s, when external shocks, such as oil price increases, combined with domestic political instability, excessive government spending, and a growing fiscal deficit. During the 1980s, inflation remained high, driven by the liberalization of prices, depreciation of the Turkish lira, and large fiscal deficits.

In the 1990s, Türkiye faced chronic inflation, often exceeding 70% annually, due to a combination of high government debt, budget deficits financed through borrowing from the central

bank. This culminated in the 1994 financial crisis, where inflation surged above 100%. The crisis further entrenched inflationary expectations in both consumer behavior and monetary policy. This period was exacerbated by the aftermath of the 1999 earthquake and the 2001 financial crisis. In 2001, Türkiye introduced an aggressive reform package with the support of the International Monetary Fund (IMF), which included fiscal discipline, the establishment of an independent central bank, and exchange rate stabilization. These reforms led to a reduction in inflation to single digits by 2004, marking the beginning of a period of relative macroeconomic stability.

Figure 2: Annual Inflation in Türkiye (%)



Note: The TurkStat consumer price index (CPI) has evolved through multiple base years to reflect changing consumption patterns. Initially calculated with a 1927 base year, it was updated through various years, most recently in 2003. The CPI measures price changes in a basket of goods and services, using household budget surveys as its primary data source. (Source: TURKSTAT)

Despite achieving lower inflation in the mid-2000s, Türkiye's economy began to face volatility again during the last decade. The 2018 currency crisis, which saw the Turkish lira depreciate sharply, reignited inflationary pressures. By 2022, the inflation rate soared above 80%,

reflecting both domestic challenges and global factors such as rising commodity and energy prices in the aftermath of the pandemic and currency depreciation. This resurgence of inflation has reignited concerns about the persistence of inflation expectations, which were deeply embedded in the experiences of earlier generations who lived through the high inflationary periods of the 1980s and 1990s.

As shown in Figure 2, Türkiye's inflation trajectory has fluctuated dramatically, with significant peaks during the 1990s, 2001, and again in the late 2010s. These inflationary cycles have left a lasting impact on inflation expectations, shaping the economic behavior of individuals who have lived through these periods. The 2000s saw efforts to stabilize inflation through the adoption of inflation targeting by the Central Bank of Türkiye (CBRT), although inflation remained above target, averaging around 8% annually from 2006 to 2016. The failure to bring inflation down to target levels over the long term, coupled with the continuation of currency devaluations and external shocks, has reinforced the adaptive nature of inflation expectations in Türkiye.

By the 2020s, Türkiye's inflation dynamics shifted again, with rising inflation expectations. Between 2021 and 2023, Türkiye followed expansionary monetary policies while inflation was rising due to supply shocks after the Russia-Ukraine war. As a result, inflation reached 64.8% by 2023, accompanied by significant macroeconomic imbalances, including a large external deficit and weak central bank reserves. In response, a new disinflationary strategy was introduced in mid-2023, focusing on tightening monetary policy to stabilize the economy.

This historical context of inflation volatility and inflation expectations underscores the significant role that past experiences play in shaping the current inflationary outlook. For many cohorts, particularly those who lived through the high inflation periods of the 1980s and 1990s, inflation expectations remain sensitive to historical memory, and these expectations are likely to continue influencing economic behavior in the post-2023 period of disinflation.

3 Data

Our dataset combines information on household inflation expectations, inflation realizations, and retail loan usage. We merge three primary data sources for the analysis. First, we use the Consumer Tendency Survey (CTS), jointly conducted by the Turkish Statistical Institute (TURKSTAT) and the Central Bank of the Republic of Türkiye (CBRT), to obtain data on inflation expectations and household characteristics. Second, we retrieve inflation realization data from TURKSTAT and historical newspapers. Third, we use individual-level retail loan data from the Credit Registry of Türkiye.

The CTS is designed to capture households' expectations regarding future inflation, financial conditions, expenditure and saving decisions, as well as perceptions of past inflation. Individuals aged 16 and above are eligible to participate in the survey. We focus on responses to two key inflation-related questions. The first asks, "How much do you think the consumer price index will change in the next 12 months?", eliciting respondents' 12-month-ahead inflation expectations in percentage terms. The second asks, "How much do you think the consumer price index has changed over the past 12 months?", capturing households' perceptions of realized inflation. The CTS covers the period from October 2014 to December 2024 and provides individual-level observations at the year-month level. While the survey is conducted at the individual level, respondents generally differ across months, and there is no unique identifier that allows individuals to be tracked over time. In addition to inflation expectations, the survey includes information on respondents' education and income. The raw dataset contains approximately 503 thousand observations; after excluding observations with missing information, the final CTS sample consists of about 390 thousand observations.

The second dataset provides information on inflation realizations. We obtain official inflation data for the post-1981 period from TURKSTAT, and construct inflation series for the pre-1981 period by manually collecting data from historical newspapers. In total, this dataset

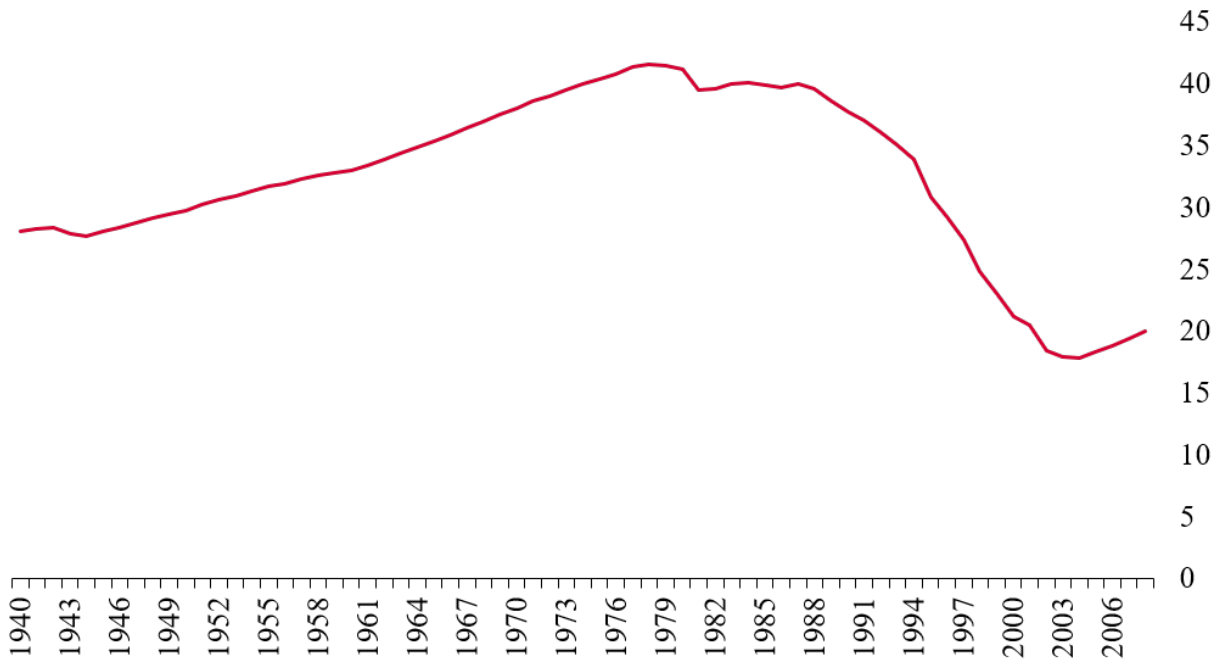
covers the 1920–2024 period and reports end-of-year annual inflation rates. For the part of the analysis examining the relationship between lifetime inflation exposure and inflation expectations, we compute individual-specific inflation exposure measures. Using respondents' year of birth, we calculate lifetime inflation exposure as the average annual inflation rate experienced from birth up to the month of the survey response.

Finally, we use data from the Credit Registry of Türkiye to study the relationship between inflation expectations and retail loan usage. The Credit Registry provides monthly individual-level data on various components of retail credit, including mortgage loans, vehicle loans, general-purpose loans, credit card balances, and overdraft account balances. This dataset covers the period from July 2023 to December 2024. We complement these data with information on individuals' age and gender obtained from the Social Security Institution's employment records. The loan and demographic datasets are merged using individual identity numbers. However, because the CTS does not provide unique identifiers that allow matching survey respondents to the credit registry, we cannot merge inflation expectations and loan data at the individual level. To address this limitation, we aggregate both datasets to the year-month-age-gender level, summing loan balances and averaging inflation expectations within each group. As a result, the final dataset used in the analysis is constructed at the year-month-age-gender level.

Figure 3 illustrates individuals' lifetime inflation exposure by year of birth as of 2024. Inflation exposure rises markedly for cohorts born between 1940 and 1978, reflecting the sharp increase in inflation rates following the late 1970s. During the 2000s, the successful disinflation process led to a gradual decline in lifetime inflation exposure for individuals born up to 2003. However, the rapid increase in inflation starting in 2021 resulted in higher average lifetime inflation exposure for cohorts born after 2003. The divergence in lifetime inflation exposure between individuals born before and after 1978 is also reflected in inflation expectations. As shown in Figure 4, individuals born before 1978 report systematically higher

inflation expectations, with this gap widening during periods of elevated inflation. A similar pattern emerges for perceived inflation: Panel B indicates that individuals born before 1978 also report higher perceptions of past inflation. The distribution of inflation expectations further suggests that individuals who experienced lower inflation over their lifetimes tend to expect lower inflation over the next 12 months. Consistent with this pattern, Figure 5 shows that younger individuals, who have had less exposure to high inflation, report lower inflation expectations and exhibit a relatively smaller dispersion in expectations.

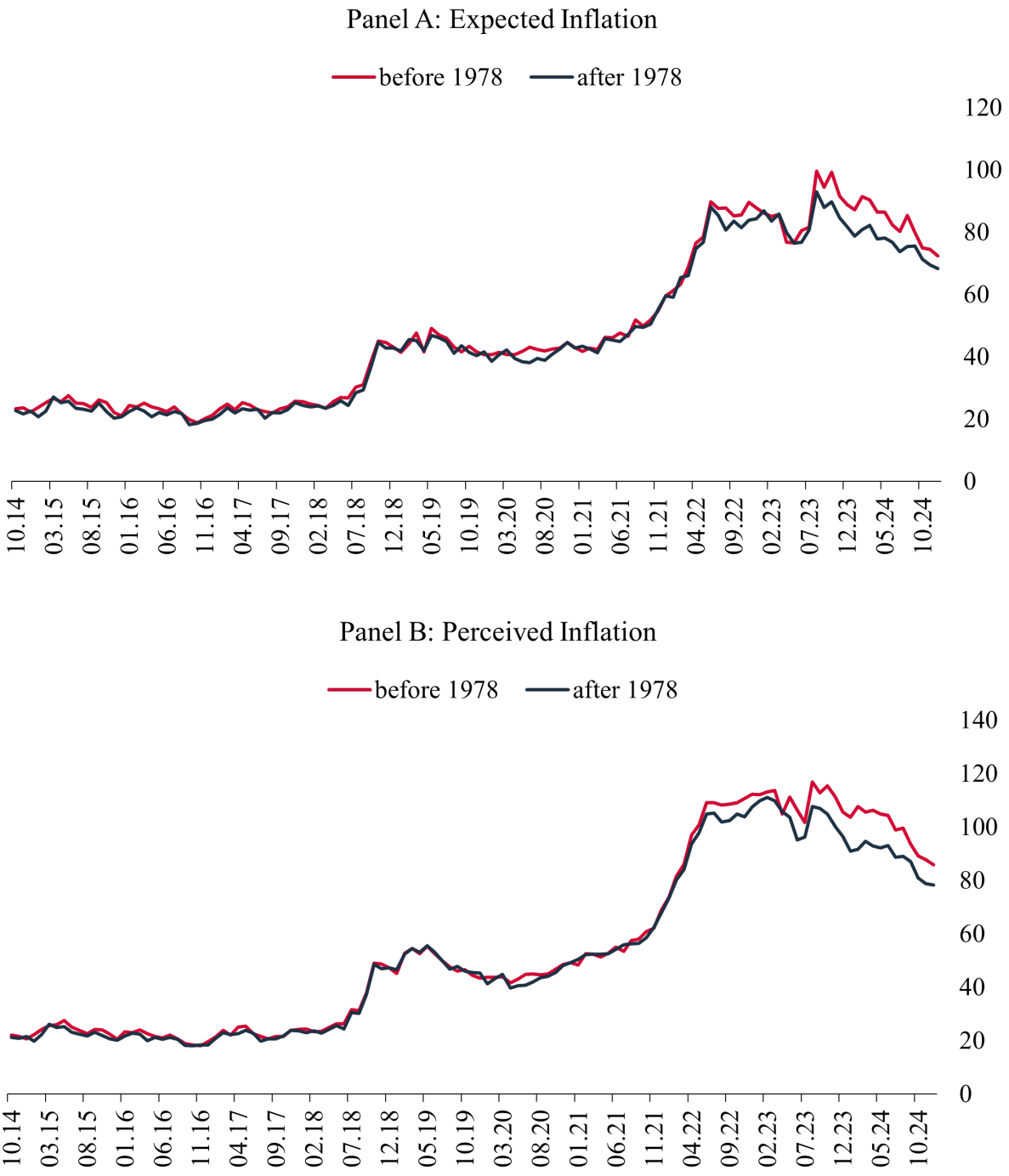
Figure 3: Inflation Exposure by Year of Birth (%)



Note: This figure shows the average annual inflation exposure of individuals by year of birth as of 2024, assuming they are still alive. (Source: TURKSTAT)

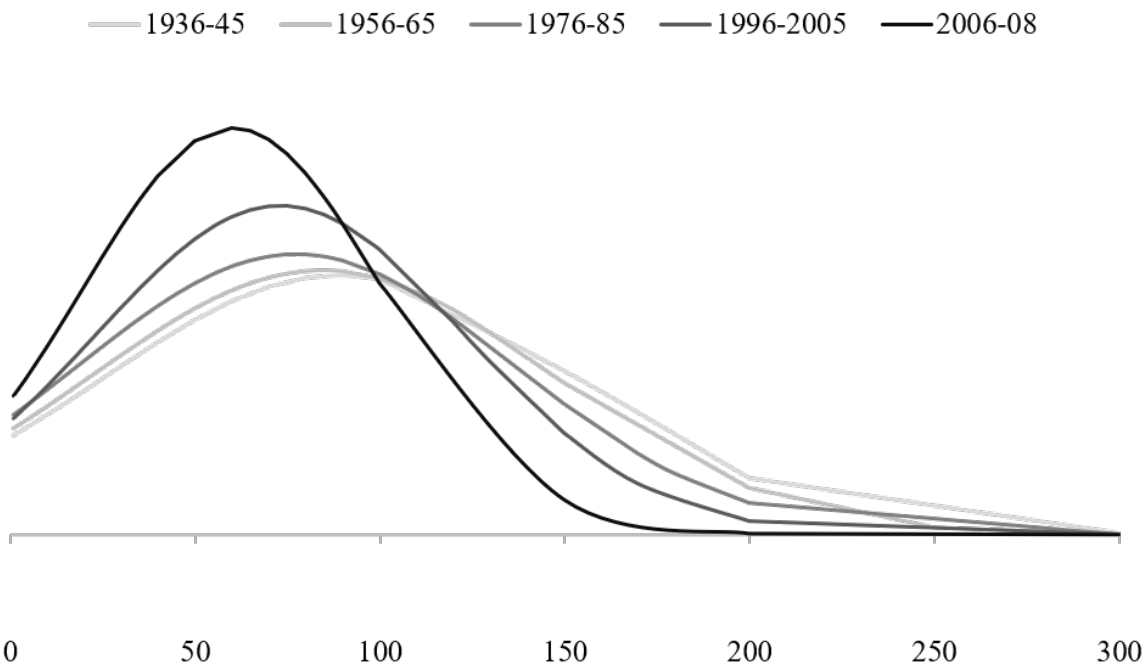
Table 1 presents the summary statistics. Over the analysis period, households report an average expected inflation rate of 50.7 percent for the next 12 months and an average perceived inflation rate of 58.7 percent for the past 12 months. Both measures display substantial variation, ranging from 1 to 300 percent for inflation expectations and from 1 to 400 percent for perceived inflation. On average, individuals in the sample experienced a lifetime inflation

Figure 4: Inflation Expectations of Individuals Born Before and After 1978 (%)



Note: Panel A shows the mean level of inflation expectations, while Panel B shows the mean level of inflation perceptions for individuals born before and after 1978. (Source: TURKSTAT)

Figure 5: Distribution of Inflation Expectations by Birth Cohort (August 2024, %)



Note: This figure shows the distribution of inflation expectations by birth cohort as of end-August 2024. (Source: TURKSTAT)

exposure of 34.6 percent. While individuals were exposed to inflation rates of 30 percent or higher for an average of 19.3 years, the sample also includes respondents who were never exposed to such high inflation as well as those who experienced it for up to 29 years. The sample consists of 47 percent female respondents, with an average age of 44.6 years and an average of 8.6 years of schooling.

At the year-month-age-gender level, the average volume of retail loans amounts to 19.4 billion TL over the analysis period. Households primarily use retail loans for cash management and consumption purposes, resulting in a high share of credit cards, general-purpose loans, and overdraft accounts in total retail credit. Mortgage loans also constitute a significant share, reflecting borrowing for housing purchases, whereas vehicle loans account for a relatively small proportion of the retail loan portfolio.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Standard Deviation	Min	Max
Inflation expectation (%)	320,810	50.68	45.49	1.00	300.00
Perceived inflation (%)	389,993	58.74	52.22	1.00	400.00
Inflation exposure (%)	389,993	34.59	6.76	9.78	45.19
Exposure>30	389,993	19.28	6.94	0.00	29.00
Age	389,993	44.36	15.89	16.00	99.00
Female	389,993	0.47	0.50	0.00	1.00
Years of schooling	389,993	8.63	4.56	0.00	22.00
Retail loans (bill.)	2,455	19.41	23.78	0.00	103.60
Credit cards (bill.)	2,455	5.71	7.16	0.00	32.46
General purpose loans (bill.)	2,455	6.30	7.31	0.00	27.40
Overdraft accounts (bill.)	2,455	4.49	5.93	0.00	30.84
Vehicle loans (bill.)	2,455	0.56	0.70	0.00	2.42
Mortgage loans (bill.)	2,455	2.35	3.05	0.00	11.31

Note: This table shows the descriptive statistics for the variables used in the analyses. Detailed definitions of the variables are provided in Appendix Table A1.

4 Methodology

To evaluate the relationship between inflation exposure and inflation expectations, we employ an estimating equation specified as follows:

$$Y_{i,a,c,t} = \beta\ inflation\ exposure_{i,t} + \lambda controls_{i,t} + \gamma_a + \delta_c + \theta_t + \epsilon_{i,a,c,t}, \tag{1}$$

where i, a, c, and t index individual, age, birth cohort and time (monthly), respectively. The dependent variable, $Y_{i,a,c,t}$, is the individual's inflation expectations for the next 12 months. *Inflation exposure* is defined as the average annual inflation rate experienced by an individual from their year of birth up to time t. The coefficient β is the main variable of interest. We control for individual-level characteristics that are commonly associated with inflation expectations. *Controls* include gender and income dummies as well as years of schooling. In addition, we include several sets of fixed effects. γ_a denotes age fixed effects that control for time-invariant age-specific characteristics. δ_c is birth-cohort fixed effects that capture variation across 10 different birth cohorts. Finally, year-month fixed effects, θ_t, control for common macroeconomic conditions affecting inflation expectations, such as contemporaneous inflation, labor market conditions, and growth prospects. Standard errors are clustered at the age level.

In the second part of the analysis, we use an OLS model to investigate the relationship between inflation expectations and retail loan utilization. Specifically, we estimate the relationship using the following specification:

$$\ln(1 + Y_{a,g,t}) = \ \beta\ inflation\ exposure_{a,t}\ + \lambda\ controls_{a,g,t} + \theta_t + \epsilon_{a,g,t}, \tag{2}$$

where a, g, and t index age, gender and time (monthly), respectively. The dependent variable, $Y_{a,g,t}$, represents components of retail loans, including mortgage loans, vehicle loans, general-

purpose loans, credit card balances, and overdraft account balances. *Inflation exposure* is measured as the average annual inflation rate experienced from the year of birth up to time t, aggregated at the age-year-month level. Controls in this specification include a gender dummy, age and years of schooling. Year-month fixed effects, θ_t, are included to capture common time-varying factors affecting loan utilization. Standard errors are clustered at the age level.

5 Results

In Table 2, we present the results for Equation 1, which estimates the relationship between lifetime inflation exposure and inflation expectations. The first column controls for basic individual characteristics and year–month fixed effects, thus comparing inflation expectations across cohorts at a given point in time. However, this specification does not rule out the possibility that cohort effects are confounded with age effects, since age may influence expectations in non-linear ways. To address this, the second column includes age fixed effects, allowing the effect of age to vary more flexibly. The third column adds further flexibility by introducing 10 birth-cohort fixed effects, so that identification relies on variation across cohorts that are close in terms of year of birth. Columns 4–6 follow the same structure but instead use an alternative measure of inflation exposure, defined as the number of periods during each cohort's lifetime in which inflation exceeded 30%.

The results are broadly consistent across columns. Table 2 indicates a robust and statistically significant relationship between lifetime inflation exposure and households' inflation expectations. Using the average annual inflation rate experienced since birth as the main measure, we find that greater exposure is consistently associated with higher expected inflation. In the most flexible specification (column 3), a one percentage point increase in inflation exposure raises inflation expectations by 16.7 basis points. The difference between the highest and lowest inflation exposure cohorts is approximately 22.6 percentage points,

which corresponds to a 3.77 percentage point increase in inflation expectations (22.6 $\times$ 0.167). When compared with the average inflation expectation of 50.6 percent, this figure suggests that differences in households' inflation exposure have a meaningful impact on their inflation expectations. When we instead use an alternative measure defined as the number of periods during which inflation exceeded 30 percent, the estimated coefficients are larger. This suggests that extreme inflation episodes may exert particularly strong and persistent effects on expectations.

Table 2: Inflation Exposure and Inflation Expectations

	(1)	(2)	(3)	(4)	(5)	(6)
Inflation exposure	0.149***	0.211***	0.167***			
	(0.017)	(0.030)	(0.049)			
Exposure>30				0.287***	0.412***	0.369***
				(0.021)	(0.068)	(0.092)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year-month FE	Yes	Yes	Yes	Yes	Yes	Yes
Age FE	No	Yes	Yes	No	Yes	Yes
Birth Cohort FE	No	No	Yes	No	No	Yes
Observations	320,810	320,810	320,810	320,810	320,810	320,810
R-squared	0.294	0.295	0.295	0.295	0.295	0.295

Note: This table shows the association between inflation exposure and inflation expectations. The dependent variable, *inflation expectation* represents households' inflation expectations for the next 12 months. *Inflation exposure* indicates the average annual inflation rate experienced by each individual since birth. *exposure>30* denotes the number of periods where each individual faced an inflation rate exceeding 30%. In specifications (1) and (4), we control for *age*, *gender*, *income* and *years of schooling*. In other specifications, we omit *age* and instead add *age* dummies. Detailed definitions of the explanatory variables are provided in Appendix Table A1. The sample encompasses monthly data from October 2014 to December 2024. Standard errors are clustered at the age level and presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

We next examine whether higher exposure is associated with higher inflation perceptions in Table 3, using the same set of specifications as before. A one–percentage point increase in lifetime inflation exposure raises perceived inflation over the past 12 months by slightly more

than half a percentage point. This effect is larger than the corresponding effect on inflation expectations, though it should be noted that perceived inflation has a higher mean than expectations. Moving from the lowest to the highest inflation exposure cohort implies an increase of about 12.3 percentage points (22.6×0.542) in perceived inflation. Given that the average perceived inflation is 58.7 percent, this magnitude highlights the sizable role of lifetime inflation experiences in shaping households' assessments of recent price developments. When the number of years during which an individual experienced inflation rates above 30% is used as the main explanatory variable, the effect on perceived inflation is even stronger, reaching about 1.1 percentage points. Overall, similar to inflation expectations, individuals with greater exposure to past inflation tend to report higher perceived inflation in the past 12 months. Thus, high-inflation experiences distort not only expectations of future inflation but also perceptions of past inflation.

Inflation in Türkiye rose sharply, particularly after the 2020 pandemic. As shown in Figure 1, cohort inflation expectations diverged during this period of high inflation. In Table 4, we formally assess whether the effect of inflation exposure depends on the prevailing level of inflation at the time of the survey. To do this, we include an interaction term between inflation exposure and the annual inflation rate in the previous month. The results suggest that the differences observed in our baseline regressions are driven largely by periods of high inflation. In this specification, the direct effect of inflation exposure becomes insignificant, but the interaction term with lagged annual inflation is positive and significant. This indicates that individuals with greater past inflation exposure adjust their inflation expectations more strongly in response to current inflation conditions. The coefficient estimates imply that the effect of a one–percentage point increase in inflation exposure is about 0.076 percentage points ($0.036 + 10 \times 0.004$) when inflation is 10 percent, but rises to 0.376 percentage points ($0.036 + 85 \times 0.004$) when inflation reaches 85 percent, as observed in October 2022.

Table 5 replicates the specifications in Table 4 but uses perceived inflation over the past

Table 3: Inflation Exposure and Perceived Inflation

	(1)	(2)	(3)	(4)	(5)	(6)
Inflation exposure	0.365***	0.627***	0.542***			
	(0.040)	(0.056)	(0.069)			
Exposure>30				0.679***	1.139***	1.094***
				(0.038)	(0.141)	(0.159)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year-month FE	Yes	Yes	Yes	Yes	Yes	Yes
Age FE	No	Yes	Yes	No	Yes	Yes
Birth Cohort FE	No	No	Yes	No	No	Yes
Observations	389,993	389,993	389,993	389,993	389,993	389,993
R-squared	0.395	0.396	0.397	0.396	0.396	0.397

Note: This table shows the association between inflation exposure and perceived inflation. The dependent variable, *perceived inflation*, represents households' inflation perceptions for the previous 12 months. *Inflation exposure* indicates the average annual inflation rate experienced by each individual since birth. *exposure>30* denotes the number of periods where each individual faced an inflation rate exceeding 30%. In specifications (1) and (4), we control for *age*, *gender*, *income* and *years of schooling*. In other specifications, we omit *age* and instead add *age* dummies. Detailed definitions of the explanatory variables are provided in Appendix Table A1. The sample encompasses monthly data from October 2014 to December 2024. Standard errors are clustered at the age level and presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Current Inflation, Inflation Exposure and Inflation Expectations

	(1)	(2)	(3)
Inflation exposure	0.001	0.059	0.036
	(0.029)	(0.045)	(0.049)
Inflation exposure $\times$ π_{t-1}	0.005***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)
Other controls	Yes	Yes	Yes
Year-month FE	Yes	Yes	Yes
Age FE	No	Yes	Yes
Birth Cohort FE	No	No	Yes
Observations	320,810	320,810	320,810
R-squared	0.295	0.295	0.295

Note: The dependent variable, *inflation expectation*, represents households' inflation expectations for the next 12 months. In column (1), we control for *age*, *gender*, *income* and *years of schooling*. In other columns, we omit *age* and instead add *age* dummies. Detailed definitions of the explanatory variables are provided in Appendix Table A1. The sample encompasses monthly data from October 2014 to December 2024. Standard errors clustered at age level are presented in parentheses. ***, ** and * denote statistical significance at 1%, 5%, and 10%, respectively.

12 months as the dependent variable. The results indicate that individuals with greater exposure to past inflation perceive current inflation more strongly when actual inflation is high. While the direct effect of inflation exposure is insignificant in column (1), it becomes positive and significant in columns (2) and (3). The interaction term is significant across all specifications, suggesting that the influence of lifetime inflation exposure on individuals' inflation perceptions is amplified during periods of high inflation. The coefficient estimates imply that the effect of a one–percentage point increase in inflation exposure on inflation perceptions of individuals in the past 12 months is about 0.32 percentage points ($0.212 + 10 \times 0.011$) when inflation is 10 percent, but rises to 1.147 percentage points ($0.212 + 85 \times 0.011$) when inflation is 85 percent (October 2022 level).

Heterogeneity in learning and lifetime experiences with inflation has previously been documented in the literature (Madeira and Zafar, 2015). Table 6 examines how the effect of lifetime inflation exposure varies across demographic groups. We report two main findings.

Table 5: Current Inflation, Inflation Exposure and Perceived Inflation

	(1)	(2)	(3)
Inflation exposure	-0.026	0.232***	0.212***
	(0.046)	(0.068)	(0.067)
Inflation exposure $\times$ π_{t-1}	0.013***	0.012***	0.011***
	(0.001)	(0.001)	(0.001)
Other controls	Yes	Yes	Yes
Year-month FE	Yes	Yes	Yes
Age FE	No	Yes	Yes
Birth Cohort FE	No	No	Yes
Observations	389,993	389,993	389,993
R-squared	0.397	0.397	0.398

Note: The dependent variable, *perceived inflation*, represents households' inflation perceptions for the previous 12 months. In column (1), we control for *age*, *gender*, *income* and *years of schooling*. In other columns, we omit *age* and instead add *age* dummies. Detailed definitions of the explanatory variables are provided in Appendix Table A1. The sample encompasses monthly data from October 2014 to December 2024. Standard errors are clustered at the age level and presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

First, the effect of lifetime inflation exposure on inflation expectations is larger for less educated individuals. The coefficient on inflation exposure is strongly significant at the 1% level for individuals with below high-school education, and only marginally significant for those with above high-school education. A one–percentage point increase in inflation exposure raises inflation expectations by 20.2 basis points for individuals with below–high school education and by 12.6 basis points for those with above–high school education, respectively. Second, we find a positive and significant effect for individuals with very low and low income levels, but no significant effect for medium- and high-income individuals. This indicates that the overall results are primarily driven by households in the low and very low income groups.

In the next step, we examine whether the credit usage behaviors of individuals who have been exposed to high inflation in the past differ. To examine this, we estimate Equation 2 using data aggregated at the year–month–age–gender level. Although loan data are available at the individual level, the CTS does not provide unique respondent identifiers, which pre-

Table 6: The Regressions on Subgroups

Groups	Below High School (1)	Above High School (2)	Very Low Income (3)	Low Income (4)	Medium Income (5)	High Income (6)
Inflation exposure	0.202***	0.126*	0.160***	0.170**	0.107	0.119
	(0.062)	(0.065)	(0.051)	(0.071)	(0.092)	(0.084)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year-month FE	Yes	Yes	Yes	Yes	Yes	Yes
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Birth Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	167,788	153,555	120,355	82,000	60,254	58,734
R-squared	0.301	0.292	0.311	0.295	0.296	0.256

Note: This table shows the association between inflation exposure and inflation expectations for subgroups. The dependent variable, *inflation expectation*, represents households' inflation expectations for the next 12 months. *Inflation exposure* indicates the average annual inflation rate experienced by each individual since birth. We control for *gender*, *income* and *years of schooling*. Detailed definitions of the explanatory variables are provided in Appendix Table A1. The sample encompasses monthly data from October 2014 to December 2024. Standard errors are clustered at the age level and presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

vents merging the loan data with the inflation expectations data at the individual level. To address this limitation, we aggregate the data at the year–month–age–gender level, summing the loan variables and averaging the inflation expectations measures. Table 7 shows that lifetime inflation exposure is positively and significantly associated with all types of retail loans. The largest effects are observed for mortgage loans (0.428) and vehicle loans (0.461). As the regulatory framework in Türkiye does not allow households to use variable-rate or foreign currency–denominated loans, the dataset consists solely of fixed-rate TL retail loans. Individuals with higher inflation exposure also tend to have higher inflation expectations for the next 12 months. Consequently, they may prefer to increase their use of retail loans, since these are fixed-rate and denominated in TL, expecting that higher future inflation will reduce the real value of their loan repayments. In addition, individuals with greater inflation exposure hold higher credit card balances, possibly because they prefer to bring consumption forward under the assumption that the real price of goods will rise in the future.

6 Conclusion

This paper examines how individuals' lifetime exposure to inflation shapes their inflation expectations and broader economic behavior. Using a rich micro-level dataset from Türkiye, an economy characterized by a long history of volatile and persistently high inflation, we exploit substantial variation in inflation experiences across cohorts and over time. Exploiting this variation, we show that past inflation experiences leave a persistent and economically meaningful imprint on how individuals interpret current and future price dynamics. Individuals who have lived through higher inflation form systematically higher inflation expectations. Moreover, they respond more strongly to contemporaneous inflation developments and report higher perceived inflation, even when controlling for current macroeconomic conditions. Overall, our findings indicate that expectation formation is not driven solely by current inflation or aggregate economic conditions, but is strongly conditioned by the cumulative

Table 7: Inflation Exposure and Retail Loans

Variables	Retail	Credit Cards	General Purpose	Overdraft Accounts	Vehicle	Mortgage
	(1)	(2)	(3)	(4)	(5)	(6)
Inflation exposure	0.255***	0.225***	0.308***	0.268***	0.461***	0.428***
	(0.016)	(0.015)	(0.024)	(0.018)	(0.033)	(0.035)
Age	-0.126***	-0.123***	-0.162***	-0.131***	-0.227***	-0.163***
	(0.007)	(0.006)	(0.012)	(0.008)	(0.019)	(0.019)
Female	-1.531***	-1.543***	-1.870***	-1.588***	-2.133***	-1.643***
	(0.080)	(0.077)	(0.185)	(0.089)	(0.334)	(0.273)
Years of schooling	0.020	0.002	0.005	0.025	0.063	0.157**
	(0.024)	(0.029)	(0.053)	(0.026)	(0.057)	(0.065)
Year-month FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,455	2,455	2,455	2,455	2,455	2,455
R-squared	0.907	0.922	0.773	0.879	0.744	0.684

Note: This table shows the association between inflation exposure and retail loans. The dependent variables are expressed as log(1 + loans). *Inflation exposure* indicates the average annual inflation rate experienced by each individual since birth. Detailed definitions of the explanatory variables are provided in Appendix Table A1. The sample encompasses monthly data from July 2023 to December 2024. Standard errors are clustered at the age level and presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

inflation exposure individuals have experienced throughout their lives.

The findings also reveal substantial heterogeneity in learning from inflation experiences. The influence of lifetime inflation exposure is significantly stronger for individuals with lower levels of education, suggesting that informational constraints or reliance on experience-based heuristics may play an important role. Similarly, individuals in the very low and low income groups exhibit a pronounced response, while we find no statistically significant effect for medium- and high-income individuals. These results imply that inflation memories are not uniformly distributed across the population, but are more influential among economically vulnerable groups.

Importantly, the effects of inflation exposure extend beyond beliefs. Individuals with greater lifetime inflation exposure also engage more actively in retail borrowing, particularly through fixed-rate loans. This pattern suggests that past inflation experiences shape not only expectations and perceptions, but also forward-looking financial decisions, as households may anticipate that higher future inflation will erode the real value of nominal debt.

Taken together, these results highlight the central role of economic memory in shaping inflation dynamics. Policies aimed at stabilizing inflation may therefore have limited immediate effects on expectations in economies where households have experienced prolonged periods of high inflation. Moreover, the unequal distribution of inflation experiences across socioeconomic groups can generate persistent heterogeneity in expectations, even under similar macroeconomic conditions. Recognizing the role of past inflation exposure can help policymakers design more effective and targeted communication strategies, particularly for groups that are more sensitive to their inflation history. More broadly, our findings suggest that anchoring inflation expectations requires not only credible current policy actions, but also sustained macroeconomic stability over time.

Appendix: Definition of Variables

Table A1: Definition of Variables

Variable	Definition
inflation expectation	inflation expectations of individuals for the next 12 months (in percent). This variable reflects responses to the question: "How much do you think the consumer price index will change in the next 12 months?" in the CTS.
perceived inflation	inflation perceptions of individuals over the past 12 months (in percent). This variable reflects responses to the question: "How much do you think the consumer price index has changed over the past 12 months?" in the CTS.
inflation exposure	the average annual inflation rate that each individual was exposed to from their year of birth up to the date of their survey response.
exposure>30	the number of years during which each individual faced an inflation rate exceeding 30%.
age	the age of individuals responding to the CTS.
female	a binary variable that takes the value 1 if the individual is female and 0 if the individual is male.
years of schooling	the number of years the individual completed in formal education.
income	a categorical variable that takes the value 1 if the household's monthly income is less than 12,400 TL, 2 if the income is between 12,401 TL and 19,400 TL, 3 if the income is between 19,401 TL and 30,500 TL, and 4 if the income exceeds 30,500 TL in 2024. For other years, the thresholds for income groups are adjusted based on the inflation rate.
retail loans	log(1+retail loans) where retail loans represent the sum of balances from credit cards, general purpose loans, overdraft accounts, vehicle loans, and mortgage loans.
credit cards	log(1+credit card balances) where credit card balances represent unpaid balances on credit cards.
general purpose loans	log(1+general purpose loans) where general purpose loans are unsecured loans utilized by individuals for a wide range of purposes not restricted to specific uses.
overdraft accounts	log(1+overdraft account balances) where an overdraft account is a bank account that allows individuals to withdraw more money than they have in their account.
vehicle loans	log(1+vehicle loans) where vehicle loans represent balances of loans used to finance the purchase of vehicles by households.
mortgage loans	log(1+mortgage loans) where mortgage loans represent balances of loans used to finance the purchase of homes by households.

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