Mortgage Choice and Inflation Experiences in the Eurozone: Online Appendix

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A. Data and Experience Measure

A.1. Dataset

The following table presents the number of observations by country in our final sample. Table A.2 shows the total number of homeowners and mortgage holders by country in the complete HFCS sample, and presents summary statistics —the average homeowner share is 74% and among those, 30% have a mortgage on their main residence.

Code	Country	Observations
AT	Austria	517
BE	Belgium	880
DE	Germany	1202
ES	Spain	2055
FR	France	5937
GR	Greece	436
IT	Italy	892
LU	Luxembourg	920
PT	Portugal	2363
Total		15203

Table A.1: Observations in final sample

Table shows final number of observations per country and the total number of observations used in the main analysis.

Code	Country	Actual Population (M)	Observations: Households in sample	Homeowners	Homeowners and Mortgage Holders
AT	Austria	8.8	8449	3612	1162
BE	Belgium	11.4	4433	2980	1140
CY	Cyprus	1.2	1739	1304	645
DE	Germany	82.7	7244	4065	1539
EE	Estonia	1.3	3177	2533	687
ES	Spain	46.6	19789	16830	3890
FI	Finland	5.5	30042	23297	11396
FR	France	66.9	36288	24842	7339
GR	Greece	10.8	8981	6015	954
HR	Croatia	4.1	1357	1199	122
HU	Hungary	9.8	12175	10484	2013
IE	Ireland	4.8	10212	7419	3101
IT	Italy	60.5	18968	13491	1340
LT	Lithuania	2.8	1664	1540	169
LU	Luxemburg	0.6	4167	3047	1414
LV	Latvia	1.9	1783	1408	258
MT	Malta	0.5	1438	1127	166
NL	Netherlands	17.1	3545	2391	1850
PL	Poland	38	7096	5507	799
PT	Portugal	10.3	16535	12976	5230
SI	Slovenia	2.1	4910	3842	426
SK	Slovakia	5.4	5665	4713	709
Total			209657	154622	46349
Percentage (out of Total)				74%	22%
Percentage (out of Homeowners)					30%

Table A.2: Number of observations in HFCS sample

Column 3 shows the number of households in sample by country, column 4 restricts the sample to those who are homeowners and column 5 to those that are homeowners and also have a mortgage. Data for actual population in 2017 is from the World Bank.

A.2. Descriptive Statistics

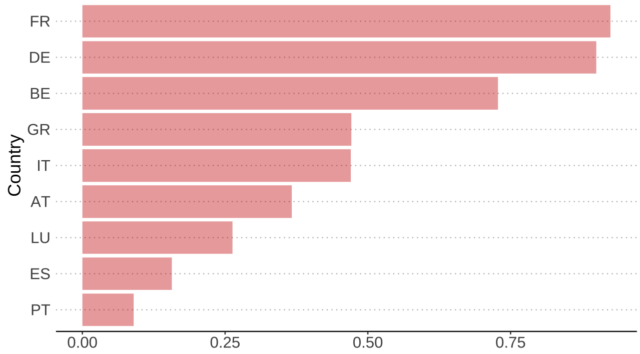


Figure A.1: Share of home-owners with a fixed-rate mortgage in Europe

The figure plots the share of households who hold fixed rate mortgages for each country, given that they are home-owners and have a mortgage on their main residence. Shares are weighted to be representative of the population. Source: Eurosystem Household Finance and Consumer Survey. Data includes information on households who were interviewed in either Wave 1, Wave 2 or Wave 3 of HFCS. Figures for each wave individually exhibit similar heterogeneity.

Figure A.2 and A.3 plot average historical inflation and rolling volatility of inflation for the first and fourth quartile of FRM shares among countries in our final sample. For Figure A.3 we first consider windows of eight years for the inflation rate of each country and compute, for those years, the standard deviation of the inflation rate. Then we take an average for each year across the countries in each quartile..

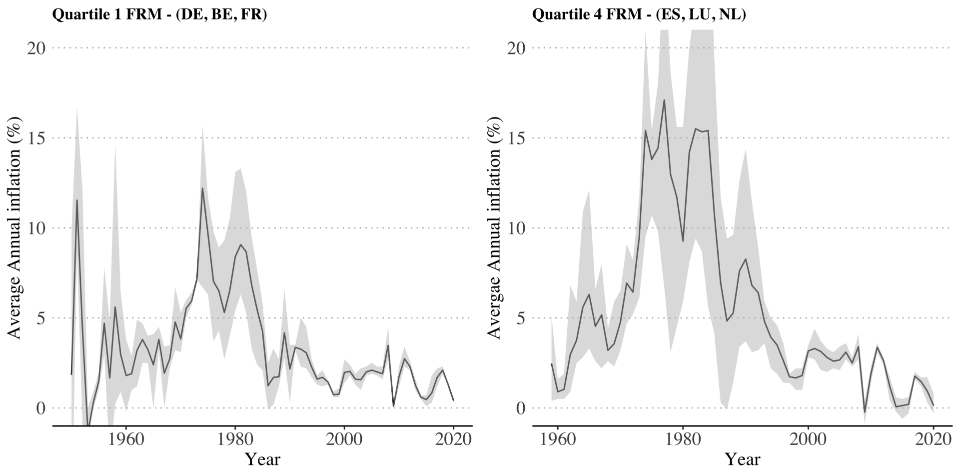


Figure A.2: Average Inflation, by quartile of fixed-rate mortgage

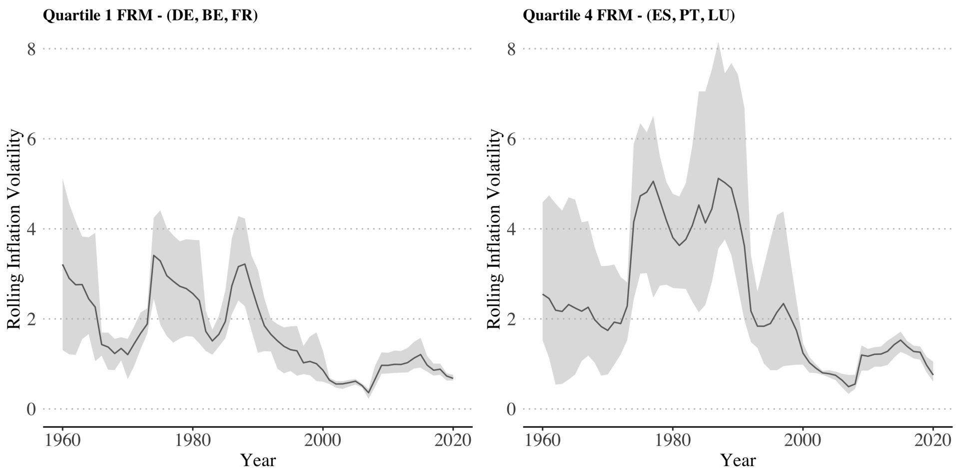


Figure A.3: Rolling Inflation Volatility, by quartile of fixed-rate mortgage

Quartile 1 includes countries with the highest share of fixed-rate mortgages (or lowest share of adjustable-rate mortgages) and quartile 4, the lowest. The above figures plot the mean and range of historical inflation across countries belonging to each quartile, while the ones below plot the average rolling volatility.

Table A.3 offers a closer look into the heterogeneity of household finances across countries. In particular, it shows a summary of real estate participation measures and mortgage financing for our final sample. The table is organised by shares of FRM in a decreasing order. Column (2) shows these shares of fixed-rate mortgages by country. Importantly, there is considerable variation as regards the year of mortgage take-out. By pooling all origination years together, one could end up ignoring time-series variation that might be relevant for mortgage choice (such as the relative cost between the two products).

The last five columns of Table A.3 show the share of fixed-rate mortgages taken within each year quintile for each country, highlighting not only cross-country but also time-series variation. We address this in our regressions: we control for origination-year fixed effects, allowing us to compare households choice within a given year.

Table A.4 illustrates the mean of experienced inflation constructed for households in each country of our dataset using Equation 1 with $\lambda = 1$. The first column summarises actual historical inflation for each country, from 1925 until 2017. The second column is the average of our measure of experienced inflation for each country. Since experienced inflation is calculated using the year of mortgage take out, for a better comparison with historical inflation, the last five columns report the average experienced inflation of those households who took the mortgage in each of the origination-year quintile. Comparing the first and last column, we can see a clear difference between mean historical inflation until 2017 and mean experienced inflation of those who took the mortgage around 2017. For example, households in Italy have a mean experienced inflation of around 5 while the mean historical inflation is above 7 percent.

Code	Country	Home-ownership Rate (share)	Fixed-rate mortgages (share)	FRM by year quintile (share)				
				1	2	3	4	5
FR	France	0.57	0.93	0.85	0.86	0.94	0.95	0.99
DE	Germany	0.44	0.9	0.98	0.92	0.94	0.84	0.83
BE	Belgium	0.7	0.73	0.56	0.8	0.69	0.71	0.88
GR	Greece	0.72	0.47	0.43	0.49	0.6	0.47	0.34
IT	Italy	0.68	0.47	0.46	0.39	0.5	0.46	0.52
AT	Austria	0.47	0.37	0.23	0.34	0.42	0.36	0.42
LU	Luxembourg	0.68	0.26	0.06	0.18	0.22	0.37	0.41
ES	Spain	0.8	0.16	0.13	0.09	0.15	0.13	0.23
PT	Portugal	0.75	0.09	0.1	0.06	0.08	0.1	0.12

Table A.3: Summary of real estate participation and mortgage type

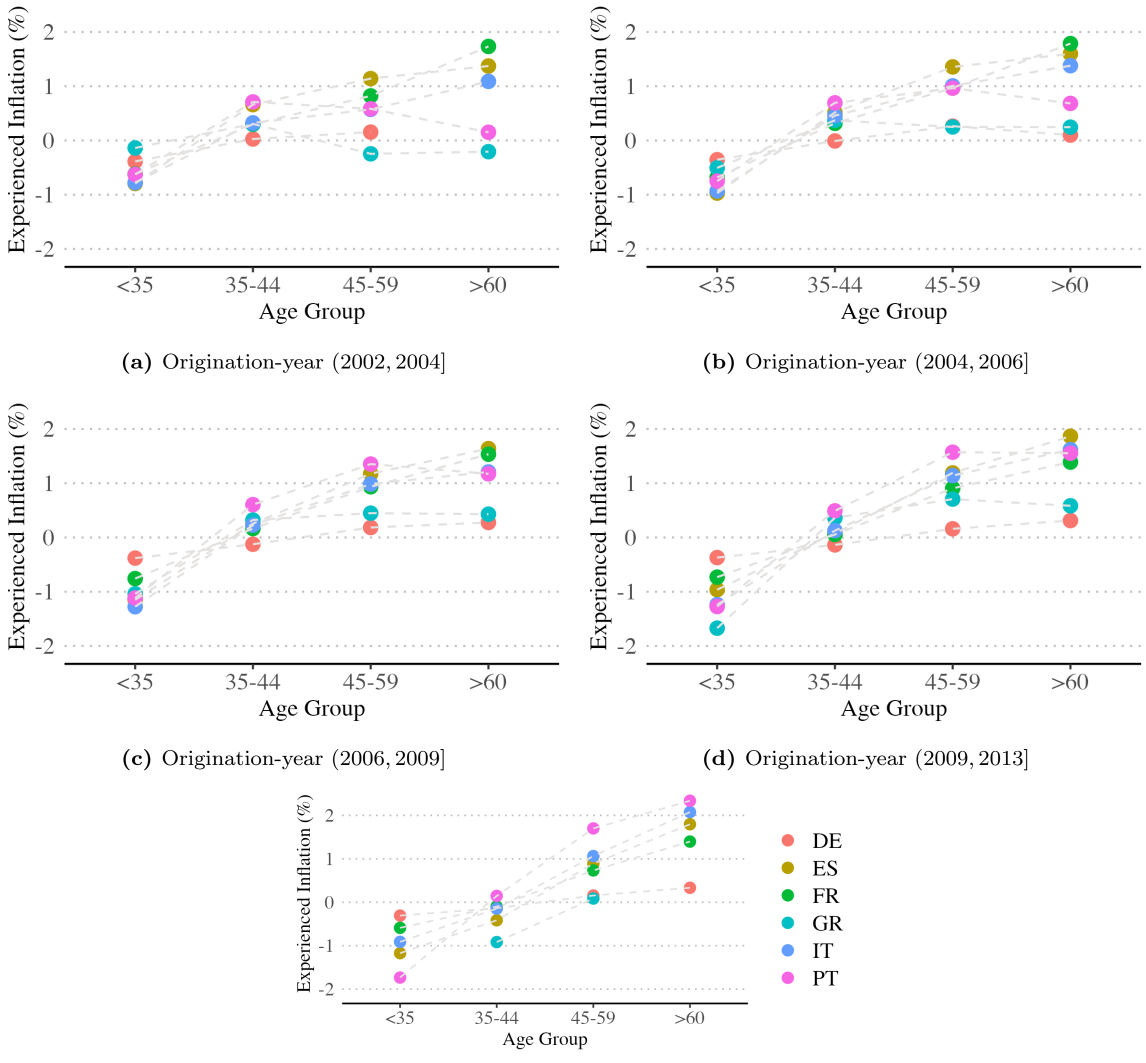
HFCS sample summary statistics of real state participation and financing rates, weighted to be representative of the population. The table is sorted by fixed-rate mortgage shares. Last 5 columns show FRM shares in each origination-year quintile: $(2002, 2004]$, $(2004, 2006]$, $(2006, 2009]$, $(2009, 2013]$, $(2013, 2018]$

Country	Past Inflation (%)	Experienced Inflation (%)	Exp. Infl. by year quintile (%)				
			1	2	3	4	5
AT	5.42	2.5	2.88	2.68	2.49	2.28	2.29
BE	4.41	2.62	3.01	2.77	2.66	2.55	2.23
DE	2.27	2.15	2.36	2.28	2.17	2.09	1.97
ES	6.35	5.55	6.43	6.35	5.81	5.35	4.43
FR	7.61	2.88	3.87	3.38	3.03	2.54	2.11
GR	9.92	9.16	10.37	9.76	9.09	8.8	7.94
IT	7.2	5.02	6.5	5.62	5.16	4.56	3.83
LU	3.83	2.73	3.22	2.92	2.76	2.59	2.39
PT	5.33	6.74	8.49	7.44	6.89	6.14	5.33

Table A.4: Summary of experienced and average historical inflation

The table shows mean of past historical inflation and mean of past experienced inflation by country. Historical inflation data is an average from 1925 until 2017. Experienced inflation is calculated for each household in our sample and aggregated at country level using weights provided by HFCS. Last 5 columns show experienced inflation of households who took a mortgage in each origination-year quintile.

Figure A.4 plots the experienced inflation by country and age group, as deviations from country mean, for each origination-year quintile. While previous figures highlighted heterogeneity across countries, the current ones show the substantial within-country variation, as can be seen by the grey dashed lines connecting different age groups within the same country. Moreover, these cross sectional differences within country also change over time.



(a) Origination-year (2002, 2004]

(b) Origination-year (2004, 2006]

(c) Origination-year (2006, 2009]

(d) Origination-year (2009, 2013]

(e) Origination-year (2013, 2018]

Figure A.4: Experienced Inflation by country, age group and origination-year for selected countries

Within each origination-year quintile, we group households according to their age when they took the loan. We then calculate the experienced inflation of each group, as deviation from country mean experienced inflation (within that quintile). Throughout, HFCS survey weights are used.

In Panel (a), we can observe young and middle-aged households in Greece who have a higher measure of experienced inflation than older ones. Greece has gone through an inflationary period in the 90's, which is over-weighted by young agents, as it accounts for a larger share of their lives. As we move through the panels, we see that this pattern is reversed when we approach the last years in our sample, with older mortgage-takers having experienced more inflation than young ones. These figures stress that even after controlling for country fixed effects and origination year, there is substantial variation in experiences.[1] In our identification strategy, we are going to exploit the variation stemming from experiences that is left after controlling for country fixed effects, origination year fixed effects and demographic controls.

Table A.5 presents summary statistics for the final data set of mortgage holders.

Variable	Mean	Median	SD
Age (years)	44.17	43	10.12
Male	0.726	1	0.45
Has child	0.482	0	0.5
Marital Status			
Single/never married	0.197		
Married or legal union	0.669		
Widowed	0.03		
Divorced	0.103		
Education Level			
Below high school	0.182		
High school	0.369		
Above high school	0.448		
Employment Status			
Employed	0.76		
Self-employed	0.124		
Unemployed	0.035		
Retired	0.06		
Other	0.012		
Age at origination-year (years)	40.19	38	10.1
Length of Loan (years)	20	20	8.61
Share of FRM	0.625	1	0.484

Table A.5: Summary of HFCS mortgage holders characteristics

HFCS sample summary statistics weighted to be representative of the population. Mean and median are the averages across imputations. Standard deviation is the square root of the average weighted variance of each imputation.

[1] Figures show variation within year-quintile for expositional clarity but the same pattern holds when done for each year.

There are around 15,000 households in this sample, with an average age of 44 years old. 73% of household heads are males and 48% have at least one child. Almost 70% of households heads are married, 20% are single, 3% are widowed and 10% are divorced. As regards education, 37% has completed high school education, 45% above high school and the rest has an education below high school. 88% of households heads were employed at the time of the survey, 3.5% unemployed and 6% retired. We calculate the age of the households when they took the loan using the age at survey and the year when they took the mortgage. We find that the average age to take a mortgage is 40, the average length of the loan is 20 years and the average share of fixed-rate mortgages across countries in our sample is 62.5%.

The following table shows average length of mortgage duration.

Country	Mean	ARM	FRM
AT	21.88	22.38	21.02
BE	19.6	21.66	18.83
DE	12.92	16.29	12.55
ES	25.41	25.98	22.33
FR	18.82	20.12	18.72
GR	21.45	21.4	21.51
IT	21.4	22.49	20.18
LU	22.1	22.5	20.97
PT	30.66	31.26	24.61

Table A.6: Average mortgage length (in years) by country and type of financing

Table shows average mortgage length in years for each country and type or mortgage financing. All averages are calculated using survey weights to ensure they are representative of the population and they are themselves averages across imputations.

Table A.5 plots average expected inflation rates and average inflation uncertainty by country using household-level data from the Consumer Expectations Survey collected by the ECB monthly from 2022 till 2024.

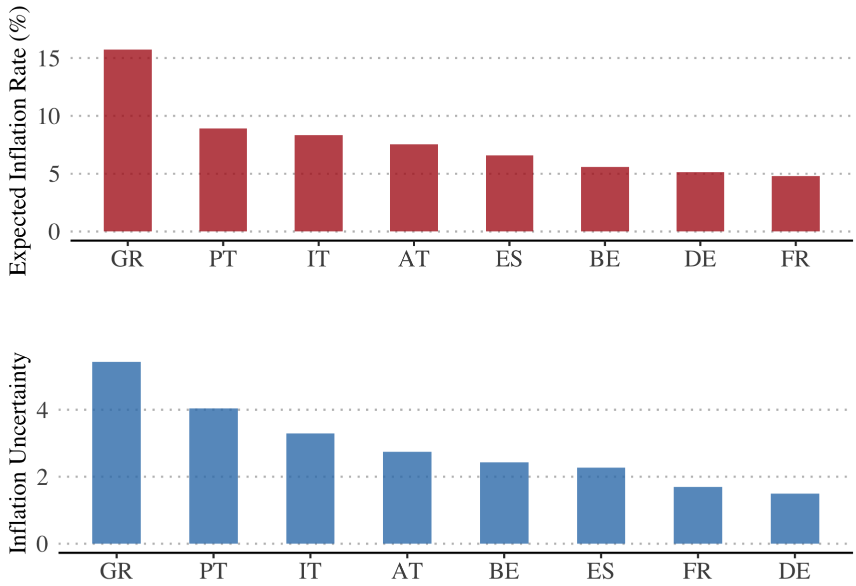


Figure A.5: CES Inflation Expectations and Uncertainty

The figures show households' expected inflation rate and inflation uncertainty using the Consumer Expectations Survey from the ECB (2022-2024).

A.3. Measuring Experiences

The experienced inflation for household i, in country j and year t is

$$\pi_{i,j,t}(\lambda) = \frac{\sum_{k=1}^{age_{i,t-1}} w_{i,t}(k,\lambda)\pi_{j,t-k}}{\sum_{k=1}^{age_{i,t-1}} w_{i,t}(k,\lambda)} \qquad \text{where} \qquad w_{it}(k,\lambda) = \left(\frac{\text{age}_{it} - k}{\text{age}_{it}}\right)^{\lambda} \tag{1}$$

where $w_{it}(k,\lambda)$ are weights and λ controls the shape of the weighting function. A $\lambda = 0$ represents the case of constant weights in which all experiences receive the same weight, $\lambda = 1$ captures linearly declining weights and $\lambda = 2$ captures a decreasing and convex weighting function. As soon as $\lambda > 0$ recent experiences receive a higher weight than those in the distant past and the higher the λ the stronger the discount.

The heterogeneity in our measure of experienced inflation (Equation 1) emerges from differences in inflation experiences across time, countries and also across age groups within countries. We now fix two of these dimensions —country and year of mortgage take out— to illustrate the effect of changing the weighting parameter λ on experiences for different age cohorts. Similarly to Kuchler and Zafar (2019), we focus on three countries with different historical inflation rates. Figure A.6 shows historical inflation rates for Germany, Greece and Spain until 2010. The plot also shows the amount of data used to construct the life-time experienced inflation measure (Equation 1) for different cohorts who took a mortgage at the same point in time, i.e. 2010. For example, 30-year old households would apply the weighting function $w_{it}(k, \lambda)$ to the last 30 years of inflation experiences.

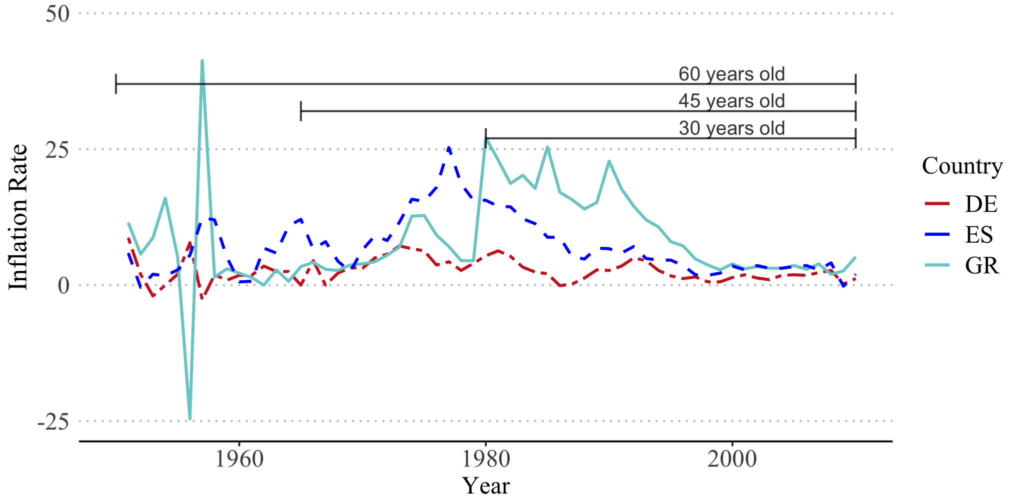
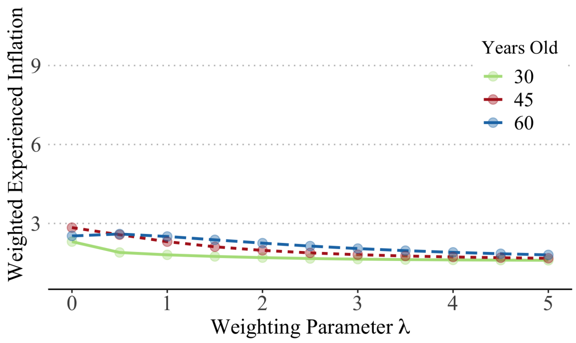


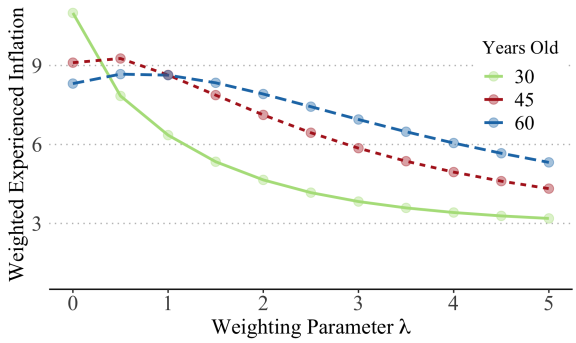
Figure A.6: Historical Inflation rates for Germany, Spain and Greece

The figure plots time series of historical inflation rates until 2010 for Germany, Spain and Greece. The grey lines highlight the amount of information that is used to calculate the experienced-inflation measure in Equation 1 of a 30 year old, 45 year old and 60 year old.

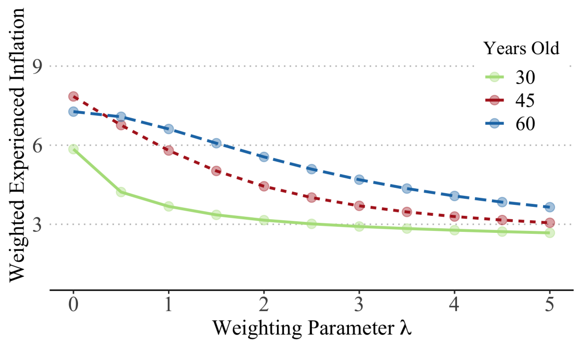
We combine this historical inflation rates and the weighting function to construct a measure of experienced inflation for each household in each country and year. Figure A.7 shows the dynamics of the weighted experienced inflation measure for a household who took a mortgage in 2010 in (A.7a) Germany, (A.7c) Spain, (A.7b) Greece for each age group within country and different values of the weighting parameter λ. As expected, there are no big differences among German households of different cohorts, neither across different values of λ. For the three panels we can observe that as λ increases, our measure of weighted experiences goes down for all groups (within and across countries). This is driven by the decline and convergence of inflation rates among European countries in recent decades. A further implication that can be observed from theses figures is that higher values of λ are associated with less heterogeneity in weighted experienced inflation across countries and across age groups within the same country, as recent homogeneous experiences receive higher weight.



(a) $\pi_{ijt}(\lambda)$ for a mortgage taker in Germany 2010



(b) $\pi_{ijt}(\lambda)$ for a mortgage taker in Greece 2010



(c) $\pi_{ijt}(\lambda)$ for a mortgage taker in Spain 2010

Figure A.7: Weighted Experienced Inflation for mortgage takers in 2010, for different λ values

The figures show the resulting inflation experienced measure (in y-axis) for different countries (in each panel), age (in each color) and weighting parameter (in x-axis).

B. Institutional Context

The share of FRMs in a country is an outcome of household choice albeit influenced by housing finance regulation (Badarinza et al., 2018). To study the determinants of household financial decisions we thus need to evaluate whether there are institutional hurdles in the supply of either ARM or FRM products that might constrain these household choices. In this subsection, we briefly introduce the characteristics of European mortgage markets, emphasising the key differences with the US.

Even though both type of of mortgages are accessible in EU domestic markets (Bouyon et al., 2017), there is large heterogeneity across countries in their share of FRMs and ARMs. Some markets have on average been dominated by ARMs (e.g. Portugal, Spain, Austria), whereas others have placed further emphasis on FRMs (Belgium, Germany, France). The variation in the share of FRMs over total new loans also varies across countries, with little variation across time for Germany, France and Portugal as opposed to Greece and Italy (ECB, 2009; Albertazzi et al., 2024). These trends are also visible in our HFCS data (see Figure B.8).

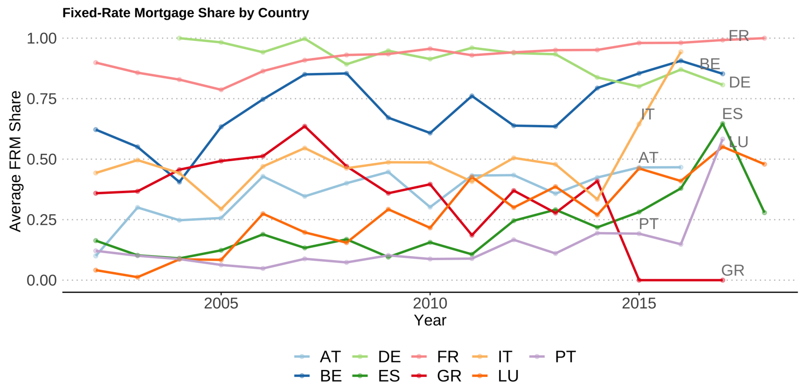


Figure B.8: Dynamics of FRM share amongst new mortgages in the HFCS database

This figure plots the share of fixed-rate mortgages among newly issued loans for each country and year in our HFCS sample.

A possible important determinant of the dynamics of the FRM share are the changes in the relative cost of FRMs vs ARMs. The literature has broadly found a negative co-movement between the spread between ARM and FRM rates and FRM market shares, suggesting that households might be accustomed to comparing FRM rates with ARM rates when seeking finance for their housing (Albertazzi et al., 2024; Bouyon et al., 2017). Nevertheless, the degree of correlations is highly heterogeneous both amongst EU economies and across time, suggesting that the analysis should be extended to other factors such as other mortgage characteristics, households characteristics and macroeconomic elements.

Another consistent pattern found in the literature is a negative correlation between inflation variance in consumer prices and the FRM market share. Bouyon et al. (2017) argues that "*this can notably be explained by the prepayment fees scheme that prevails in each domestic market. If a fixed-rate mortgage cannot be prepaid without significant penalties, as is the case in Germany, then an FRM is risky to the extent that inflation is volatile and persistent*". This brings us to an important institutional feature of the European market: "*while partial or total early repayments are allowed in all Eurozone countries, fees are generally charged for the early repayment of fixed rate housing loans, whereas early repayment is free of charge in the case of variable rate housing loans in several Eurozone countries*" (ECB, 2009). While prepayment regulations are heterogeneous, in all countries in our sample the borrower bears most of the inflation risk of an FRM.[2]

The existence of prepayment penalties is a key factor that differentiates European and US mortgage markets. The US housing market is largely dominated by a 30-year, fixed rate, pre-payable mortgage. This type of mortgage financing has benefited consumers through payment stability and the right to prepay the mortgage without penalty (Lea and Sanders, 2011), but it relies on a very specific feature of the US market: the presence of government-sponsored enterprises (GSEs), originating from the era of the Great Depression, that acquired a central role following the savings and loan (S&L) crisis in the 1980s. GSEs such as Fannie Mae and Freddie Mac helped removing mortgages from the balance sheet of banks and S&L institutions, thus after selling a fixed-rate mortgage loan, it is GSEs that bear the risk of rising interest rates. Therefore, GSEs and ultimately the US government support the provision of mortgage credit in the United States, and specifically the supply of FRM that has been dominating the market. Moreover, the GSEs enjoyed lower funding costs compared with private banks due to an implicit government guarantee (that was made explicit during the Great Financial Crisis), thus reducing banks' funding costs. In contrast, Eurozone governments do not act in a comparable way to reduce banks' funding cost and interest rate risk. Furthermore, in some Eurozone countries accounting rules pose strict criteria for the removal of securitised loans from banks' balance sheets, thus mortgage loans (and the associated default risk) remain to a large extent on banks' balance sheets. Eurozone banks, unlike their US peers, often need to bear the risk of financing long-term assets with short-term funds. In such a context, high volatility of inflation makes this long-term nominal contracts risky - lenders can insure themselves by setting high prices for FRM or, alternatively, imposing prepayment penalties.

In summary, it is important to take into consideration country-specific conditions that might affect the supply, such as banks' risk assessment and pricing when analysing the composition of European mortgage market (which we will control for in our analysis), but also keep in mind the importance of the existence of prepayment fees, or the lack of them, as in the US.

[2]For details, see the Online Institutional Appendix of Badarinza et al. (2018) and Badarinza et al. (2016) for a review on international comparative household finance.

C. FRM vs. ARM: A Simulation Exercise

To illustrate our research hypothesis, we conduct a simple simulation exercise. Our aim is to show how real payments would vary for different paths of inflation and how this can affect the valuation of a mortgage contract. First, we simulate $N = 1000$ price level paths for a 20 year horizon. We assume that monthly year-on-year inflation develops according to an $AR(1)$ process, where the error terms are randomly drawn from a normal distribution:

$$\pi_t = \mu_\pi(1-\rho) + \rho\pi_{t-1} + \varepsilon_t, \quad \varepsilon_t \sim \mathcal{N}(0, \sigma_\varepsilon^2) \tag{2}$$

Next, using the simulated price level paths, we simulate ARM and FRM contracts and their monthly payments using the parameters in Table C.7. For an FRM contract, the simulation of monthly payments is straightforward, using the standard formula:

$$M^{FRM} = L \times (i^{FRM}/12)\frac{[(1+i^{FRM}/12)^{T\times 12}}{[(1+i^{FRM}/12)^{T\times 12} - 1]} \tag{3}$$

where M^{FRM} is the (nominal) monthly payment due throughout the length of the FRM contract, L is the size of the loan, i^{FRM} is the annual fixed rate, T is the length of the contract in years.

Loan value	112.500 euros
Length of mortgage (T)	20 years
FRM annual rate (i^{FRM})	6%
Real interest rate ($\bar{r}$)	2%
Risk premium (ψ)	1%
ARM adjustment period	1 year
AR-1 parameter ρ	0.98

Table C.7: Parameters used in the simulation exercise

ARM contracts, on the other hand, are less straightforward as we need to simulate interest rate adjustments as well. We follow Campbell and Cocco (2003) in assuming that lenders adjust the interest rate in the following way:

$$i_t^{ARM} = \bar{r} + \psi + \frac{1}{N}\sum_{n=1}^{N}\pi_{t-n} \tag{4}$$

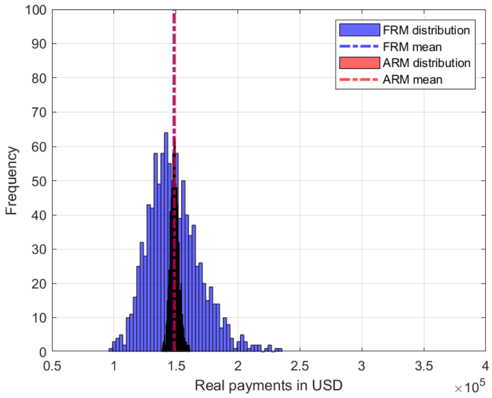
where $\bar{r}$ is a (constant) real rate, ψ is a risk premium expected by the lender, and $\frac{1}{N}\sum_{n=1}^{N}\pi_{t+n}$ is the average inflation in the past N period (since the last interest rate adjustment). Then, we can calculate a corresponding path of nominal interest rates. Using this path of interest rates, we can calculate the nominal monthly payment for each period t as

$$M_t^{ARM} = L_t \times (i_t^{ARM}/12)\frac{[(1+i_t^{ARM}/12)^{TT\times 12}}{[(1+i_t^{ARM}/12)^{TT\times 12}-1]}$$

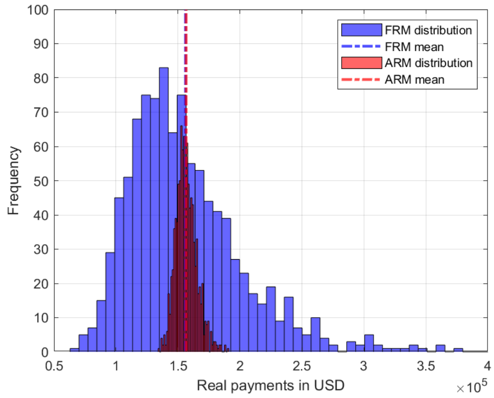
where M_t^{ARM} is the (nominal) monthly payment due throughout the length of the ARM contract, L_t is the outstanding amount of the loan at time t, i_t^{ARM} is the annual adjustable rate, TT is the remaining length of the contract at time t, in years. For both ARM and FRM, we assume that there is no possibility of early repayment.[3]

As a last step, we divide the nominal payments of the simulated FRM and ARM contracts by the corresponding price level to obtain the real payments. The top figures of Figure C.9 plot the distribution of real payments for two inflation processes with the same mean but different variance (σ_ε^2 in equation 2), where Panel (a) has lower inflation variance than Panel (b). It can be seen that while the mean of the distribution of payments from an ARM is the same as for an FRM, real payments are significantly more dispersed for an FRM, with a right-skewed distribution, and the dispersion increases with the volatility of inflation (moving from Panel (a) to Panel (b)).

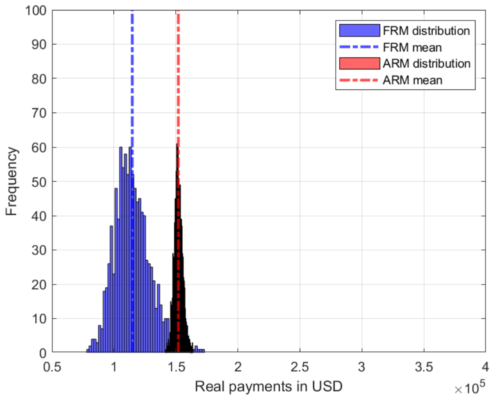
[3]As previously described, the European mortgage market is generally characterized by the existence of some prepayment penalty. For simplicity, we rule out this possibility as a whole.



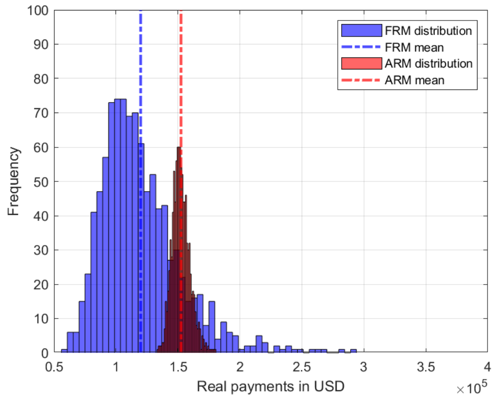
(a) $\mu = 3\%, \sigma_\varepsilon = 3\%$



(b) $\mu = 3\%, \sigma_\varepsilon = 6\%$



(c) $\mu = 6\%, \sigma_\varepsilon = 3\%$



(d) $\mu = 6\%, \sigma_\varepsilon = 6\%$

Figure C.9: Histogram of simulated real payments for ARM and FRM

Since households are uncertain about the future path of inflation when deciding their type of mortgage financing, they need to form expectations about it. These expectations about mean inflation and volatility are crucial, as they directly influence their perceived future real payments (mean and variance).[4] As Figure C.9 highlights, even if two households expect the same inflation mean, they might have a very different assessment of the distribution of real payments depending on what their perceived expected volatility is.

According to our experienced-based hypothesis, a household who experienced high and volatile inflation would expect high and volatile inflation. From their lenses, an FRM could protect them against future higher inflation compared to an ARM but it would expose them to higher volatility. These two effects have opposing implications on their

[4]A household who expects inflation to behave as depicted in Panel (b) would expect the same mean of real payments from an FRM as a household who expects inflation to behave as depicted in Panel (a), but the former might see this FRM as much more riskier. These plots highlight the inflation risk inherent in an FRM.

behavior. Therefore, we want to test whether:

1. Higher experienced inflation *increases* the likelihood of choosing an FRM (inflation hedge)
2. Higher experienced inflation *reduces* the likelihood of choosing an FRM (inflation risk)

Our setup provides an ideal laboratory to test which of the two channels prevails on average, as FRMs in Europe can be seen as both a hedging device but they also contain an inflation risk.

D. Regression Results

D.1. Baseline Analysis

The following tables present regression results for the country-level analysis.

Panel A: in Levels			
Dep. Var: FRM share	(1)	(2)	(3)
(Intercept)	1.364***	1.642***	0.601***
	(0.051)	(0.106)	(0.066)
Experienced Inflation (log)	−0.579***	−0.663***	−0.262***
	(0.039)	(0.043)	(0.047)
Country FE	No	No	Yes
Time FE	No	Yes	No
Pseudo R^2	0.611	0.625	0.900
Observations	142	142	142

Panel B: Volatility			
Dep. Var: FRM share	(1)	(2)	(3)
(Intercept)	1.282***	1.316***	0.618***
	(0.064)	(0.128)	(0.103)
Experienced Volatility (log)	−0.470***	−0.476***	−0.245***
	(0.045)	(0.049)	(0.083)
Country FE	No	No	Yes
Time FE	No	Yes	No
Pseudo R^2	0.436	0.387	0.884
Observations	142	142	142

Table D.8: Inflation Experiences and Country-Level Share of Fixed Rate Mortgages

Table presents results OLS regressions of country-level shares of FRM on country-level averages of experienced inflation in levels (Panel A) and volatility (Panel B). Averages account for survey weights. Column (1) includes no controls, Column (2) adds time FE and exploits heterogeneity across countries in a given year, while Column (3) controls for country FE and exploits heterogeneity across time for a given country. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

For our analysis at the household level, we use the HFCS multiple imputation data, which allows us to use the full sample despite missing data for some households. Standard errors account for the multiply imputed nature of the data.

In particular, we follow the HFCS User Guide provided by ECB on how to generate best point estimates and best estimates of variances for parameters of interest, which is based on methodology developed by Rubin (2004). We first analyse each of the five data sets separately and then we combine the results across implicates. Point estimates are calculated as the average across the five implicates: $\bar{y} = \frac{1}{5}\sum_{i=1}^{5}\hat{y}_i$. The total variance associated with this estimate is $T = W + (1 + \frac{1}{5})B$, where $W = \frac{1}{5}\sum_{i=1}^{5}\hat{V}_i$ is the within imputation sampling variance (which is the average of the five complete-data variance estimates, $\hat{V}_i$) and $B = \frac{1}{4}\sum_{i=1}^{5}(\hat{y}_i - \bar{y})^2$ is the variance between implicates (which reflects variability due to imputation uncertainty). In all analyses we use the HFCS household weights that are representative of each country and the EU population (inverse probability of being sampled and non-response).

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
(Intercept)	4.093***	3.538***	4.584***	1.241**	0.290	−5.224
	(0.145)	(0.554)	(0.614)	(0.632)	(0.774)	(8.010)
Experienced Infl (log)	−2.792***	−2.790***	−2.070***	−2.117***	−1.959***	−1.259**
	(0.100)	(0.118)	(0.125)	(0.278)	(0.519)	(0.499)
Age at loan		0.051***	0.041***	0.048***	0.044***	0.030**
		(0.006)	(0.006)	(0.008)	(0.013)	(0.012)
Length of loan		−0.076***	−0.070***	−0.049***	−0.050***	−0.049***
		(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Employed, temporary		−0.497*	−0.466	−0.308	−0.322	−0.299
		(0.295)	(0.306)	(0.336)	(0.332)	(0.292)
Employed, other		0.043	0.271	0.816	0.623	0.539
		(0.638)	(0.621)	(0.614)	(0.628)	(0.653)
Employed, no info		−0.442***	−0.450***	−0.032	−0.039	0.053
		(0.135)	(0.140)	(0.160)	(0.163)	(0.158)
Retired		−0.283*	−0.231	−0.383*	−0.385*	−0.258
		(0.166)	(0.181)	(0.204)	(0.229)	(0.221)
Self-employed		−0.203*	−0.233*	−0.199	−0.207	−0.210
		(0.111)	(0.121)	(0.136)	(0.136)	(0.132)
Unemployed		−0.166	−0.283	0.025	0.047	0.179
		(0.201)	(0.206)	(0.267)	(0.272)	(0.256)
Educ - below high-school		−0.003	−0.018	0.049	0.050	0.048
		(0.103)	(0.111)	(0.134)	(0.136)	(0.130)
Educ - high-school		0.141	0.011	−0.067	−0.066	−0.039
		(0.094)	(0.100)	(0.110)	(0.110)	(0.108)
Divorced		0.212	0.100	0.099	0.048	0.098
		(0.151)	(0.163)	(0.187)	(0.185)	(0.182)
Single		0.278***	0.270**	0.106	0.089	0.075
		(0.097)	(0.107)	(0.124)	(0.125)	(0.120)
Widowed		0.100	0.076	0.348	0.335	0.361
		(0.279)	(0.291)	(0.339)	(0.333)	(0.296)
Child = 1		0.231***	0.218**	0.085	0.074	0.042
		(0.083)	(0.089)	(0.100)	(0.100)	(0.098)
Female = 1		0.085	0.071	−0.020	−0.018	−0.006
		(0.085)	(0.092)	(0.106)	(0.108)	(0.102)
Demographic and Mortgage	No	Yes	Yes	Yes	Yes	Yes
Country Macro Conditions at t	No	No	Yes	Yes	Yes	No
Country FE	No	No	No	Yes	Yes	No
Year FE	No	No	No	No	Yes	No
Country-Year FE	No	No	No	No	No	Yes
Pseudo R^2	0.257	0.357	0.321	0.490	0.487	0.470
Observations	15225	15220	13218	13218	13218	15220

Table D.9: Inflation Experiences and Mortgage Choice in detail - logit coefficients

The table reports coefficients and standard errors for households and mortgage characteristics of variables that are significant (education, marital status and income quintiles are not reported as they are never significant). Reference for employment status is "Employed, permanent". Each Column corresponds to the respective Column in Table 1. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Income q2		0.071	−0.041	0.143	0.154	0.176
		(0.240)	(0.274)	(0.308)	(0.312)	(0.292)
Income q3		0.030	−0.072	0.125	0.116	0.173
		(0.222)	(0.257)	(0.286)	(0.288)	(0.268)
Income q4		0.027	−0.071	0.046	0.036	0.080
		(0.227)	(0.262)	(0.295)	(0.296)	(0.273)
Income q5		0.143	0.089	0.227	0.235	0.255
		(0.237)	(0.272)	(0.304)	(0.306)	(0.282)
Wealth q2		−0.182	−0.073	−0.392	−0.454	−0.634
		(0.432)	(0.440)	(0.436)	(0.444)	(0.411)
Wealth q3		0.057	0.009	−0.710	-0.750^{*}	-0.864^{**}
		(0.432)	(0.435)	(0.441)	(0.448)	(0.417)
Wealth q4		0.026	−0.070	-0.751^{*}	-0.812^{*}	-0.912^{**}
		(0.429)	(0.435)	(0.441)	(0.448)	(0.413)
Wealth q5		−0.105	−0.237	-0.872^{*}	-0.916^{**}	-1.018^{**}
		(0.436)	(0.443)	(0.446)	(0.453)	(0.418)
E(income), less		0.021	−0.122	−0.156	−0.148	−0.104
		(0.111)	(0.121)	(0.127)	(0.125)	(0.126)
Past Inc. Growth, equal/higher		-0.198^{**}	-0.260^{**}	0.007	0.021	0.017
		(0.099)	(0.105)	(0.119)	(0.121)	(0.121)
Int. Rate Spread (FRM-ARM)			-0.599^{***}	-0.193^{**}	−0.091	
			(0.086)	(0.097)	(0.162)	
Inflation Rate			−0.017	0.100^{*}	0.272^{***}	
			(0.055)	(0.056)	(0.098)	
Unemployment Rate			-0.056^{***}	0.010	0.055^{*}	
			(0.013)	(0.022)	(0.030)	
GDP Growth			-0.163^{***}	−0.029	0.101^{*}	
			(0.025)	(0.028)	(0.052)	
Credit Standards			-0.021^{***}	−0.006	-0.009^{**}	
			(0.003)	(0.004)	(0.004)	
Demographic and Mortgage	Yes	Yes	Yes	Yes	Yes	
Country Macro Conditions at t	No	No	Yes	Yes	Yes	No
Country FE	No	No	No	Yes	Yes	No
Year FE	No	No	No	No	Yes	No
Country-Year FE	No	No	No	No	No	Yes
Pseudo R^2	0.257	0.357	0.321	0.490	0.487	0.470
Observations	15225	15220	13218	13218	13218	15220

Table D.10: Inflation Experiences and Mortgage Choice in detail - continued - logit coefficients

The table reports coefficients and standard errors for the country specific macro conditions at the time of mortgage origination. Each Column corresponds to the respective Column in Table 1. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

D.2. Counterfactual Exercise and Size of the Effect

To gain a better understanding of the magnitude of the effects, we conduct a counterfactual exercise in the spirit of Malmendier and Wellsjo (2023): what would be the FRM share in a given country if their average experienced inflation would have been different?

To do this, we rely on estimates from Table 1 Column (4) and keep demographics and country specific macro conditions at their average value in both actual and counterfactual. First, we take France and Italy. France has a relatively low average experienced inflation and an associated FRM rate of 93%. Italy, on the other hand, has higher average experienced inflation and their predicted FRM rate under their actual average experienced inflation is close to 50 percent. If France were to experience Italy's average experienced inflation, their predicted FRM rate would drop to 84%, while if Italy were to experience France's average experienced inflation their predicted FRM rate would jump to 73%. In case of such a hypothetical scenario, France would still have higher FRM share but the gap between the share of these two countries would be much smaller.

In the second example we look at Belgium with a predicted FRM share of 78% under their actual experienced inflation, and Portugal with a predicted FRM share of 11% under their actual experienced inflation. If Belgium were to experience Portugal's average experienced inflation, their FRM share would drop by 52 pp, while if Portugal were to experience Belgium's average experienced inflation their FRM share would increase by 44 pp. This hypothetical change would lead to a stronger prevalence of FRM in Portugal than in Belgium, and it would decrease the existing cross-country differences.

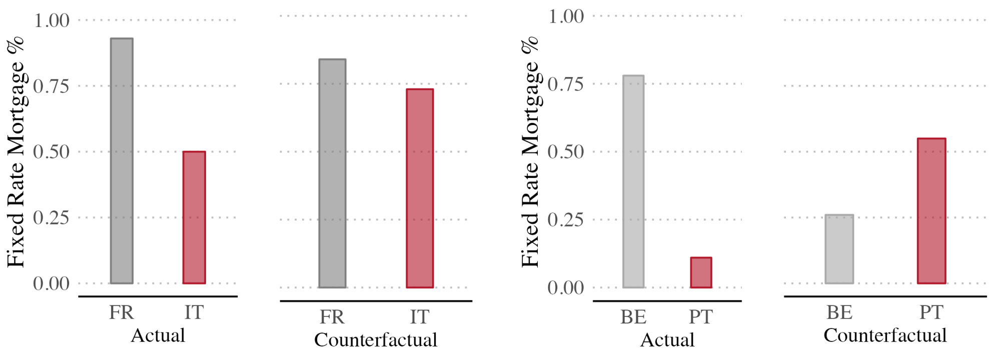


Figure D.10: Actual FRM Rates and Counterfactual with Alternative Inflation Experiences

The figure shows predicted fixed-rate mortgage rates using true average experienced inflation in each country and counterfactual using alternative average experienced inflation. Estimates are based on the results from Table 1 Column (4). Demographics and country specific macro conditions are kept at their average value in both actual and counterfactual.

D.3. Different weights for our experience measure

We estimate Equation 1 on a range of $\lambda \in [0, 5]$ in intervals of 0.5. Note that this regression equation includes the full set of controls: demographic and mortgage controls and country-time fixed effects and is therefore equivalent to column (5) in Table 1. In the following table we report the best fit parameters for $\lambda \leq 2$, as higher values are associated with higher standard errors.

	Best Fit Parameters for Past Experience Measures							
	Weighted Experienced Inflation				Weighted Experienced Volatility			
	R^2	λ	Coefficient	Standard Error	R^2	λ	Coefficient	Standard Error
	0.4704	0	-0.2721	0.330	0.4708	0	-0.3396**	0.162
	0.4703	0.5	-0.8307**	0.374	0.4707	0.5	-0.3372*	0.177
	0.4703	1	-1.2592**	0.499	0.4707	1	-0.322*	0.185
	0.4704	1.5	-1.4603**	0.623	0.4706	1.5	-0.3081	0.191
	0.4704	2	-1.440**	0.681	0.4706	2	-0.297	0.194
Obs	15220							

Table D.11: Best Fit Parameters for different values of the weighting parameter λ

For a given value of λ, experienced measures are constructed and then used as explanatory variable to re run estimation in Column (5) of Table 1. The table reports the value of λ and the resulting coefficient of experienced inflation, its standard error and the R^2 of the regression. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table D.11 shows that $\lambda = 0$ has a good fit for experienced volatility but not for experienced inflation in terms of standard errors. It can also be observed that there are no important differences across $\lambda \in \{0.5, 1\}$. But $\lambda > 1$ is not a good fit for experienced volatility, and $\lambda \geq 2$ is associated with high standard errors for both measures.

Our interpretation of these results is that recent experiences should receive a relatively higher weight, but past experiences also matter —as long as past historical experiences receive a sufficiently high weight, experiences are sufficiently heterogeneous and thus we can identify their role. As λ increases, experiences become more homogeneous (as can be observed in Appendix Figure A.7).

The objective of the exercise is to look for a weight that would be a good fit for both of our experienced measures when using our specification with the full set of controls (given that the aim is to test weather experiences are a good determinant beyond the known ones). Alternatively, we could also look at the results without controls —although not ideal, it could provide us with a useful picture.

	Inflation Experience		
	1	2	3
(Const)	5.367***	4.093***	3.873***
	(0.249)	(0.145)	(0.128)
Infl.$_{\lambda=0}$	−2.946***		
	(0.135)		
Infl.$_{\lambda=1}$		−2.792***	
		(0.100)	
Infl.$_{\lambda=2}$			−3.122***
			(0.107)
R^2	0.233	0.257	0.272
Obs.	15225	15225	15225

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

	Inflation Volatility Experience		
	1	2	3
(Const)	3.125***	3.375***	3.381***
	(0.167)	(0.182)	(0.183)
Vol$_{\lambda=0}$	−2.059***		
	(0.119)		
Vol$_{\lambda=1}$		−2.087***	
		(0.119)	
Vol$_{\lambda=2}$			−2.070***
			(0.118)
R^2	0.122	0.131	0.133
Obs.	15225	15225	15225

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table D.12: Inflation Experience Measures and FRM - No Controls

When there are no controls, measures in which recent experiences receive relatively higher weight explain more of the data (increasing R-squared as $\lambda \geq 0$), and when controls are added as in Table D.11, only measures in which $\lambda \in \{0.5, 1\}$ remain an important determinant (in terms of R-squared and standard errors). We thus conclude that the weighted experienced inflation that best fit our data lies between $\lambda = 0.5$ and $\lambda = 1$

These results are also in line with the evidence we provide below in Section D.3.1 on the impressionable years hypothesis —measures in which early life experiences receive higher weight do not provide a good fit to our data.

D.3.1. Alternative Experience Measures

Recency Bias versus Impressionable Years Hypothesis. The weighting function in our baseline estimation with declining weights looks as follows:

$$w = \left(\frac{Year - \min(Year)}{\max(Year) - \min(Year)} \right)^{\lambda} \tag{5}$$

where 'max(Year)' refers to the year of mortgage take out, 'min(Year)' refers to the birth year, and 'Year' refers to the current year. λ regulates the weight each data point receives, with $\lambda = 1$ capturing linearly declining weights. At birth the weight is 0, while at the year of mortgage take out the weight is maximal. Alternatively, we can modify the weighting function to have linearly increasing weights from the day of mortgage takeout till birth:

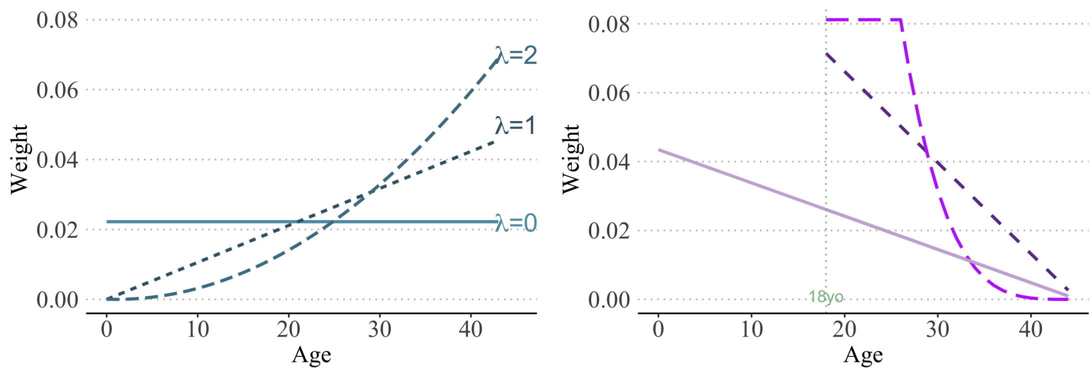
$$w = \frac{\max(Year) - Year}{\max(Year) - \min(Year)} \tag{6}$$

One the 'Year' equals the max year in the sample (i.e. current year), the weight is minimal, whereas when 'Year' equals birth year, the weight is maximal. We test for two other alternatives. First, linearly increasing weights from the day of mortgage takeout till 18 years old:

$$w = \begin{cases} 0 & \text{if } Year < \min(Year) + 18 \\ \left(\frac{\max(Year) - Year}{\max(Year) - (\min(Year) + 18)}\right)^n & \text{if } Year \geq \min(Year) + 18 \end{cases} \tag{7}$$

Linearly increasing weights require $n = 1$, while for $n > 1$ the weights would increase faster. Second, the impressionable years hypothesis —highest weights between 18-25 years old and then decreasing until today.

$$w = \begin{cases} 0 & \text{if } Year < \min(Year) + 18 \\ 1 & \text{if } Year \in [18, 25] \\ \left(\frac{\max(Year) - Year}{\max(Year) - (\min(Year) + 25)}\right)^n & Year > \min(Year) + 25 \end{cases} \tag{8}$$



(a) Baseline Weighting Function **(b)** Alternative Weighting Function

The figure illustrates the different weighting functions. Panel (a) considers the baseline case with decreasing weights till birth, while Panel (b) considers the alternative cases with increasing weights.

Panel A: No Controls

Dep.Var.: FRM	(1)	(2)	(3)	(4)
(Intercept)	4.093***	5.517***	2.268***	2.007***
	(0.145)	(0.287)	(0.077)	(0.071)
Experienced Inflation Measures:				
Recency Bias:				
Linearly Decreasing w	−2.792***			
	(0.100)			
Impressionable Years:				
Linearly Increasing w		−2.675***		
		(0.140)		
Linearly Increasing w from 18yo			−1.450***	
			(0.053)	
Higher w for 18-25yo				−1.183***
				(0.046)
R^2	0.257	0.185	0.145	0.120
Observations	15225	15225	15221	15223

Panel B: Full Controls

Dep.Var.: FRM	(1)	(2)	(3)	(4)
(Intercept)	0.290	−0.392	−0.736	−0.790
	(0.774)	(0.808)	(0.760)	(0.766)
Experienced Inflation Measures:				
Recency Bias:				
Linearly Decreasing w	−1.959***			
	(0.519)			
Impressionable Years:				
Linearly Increasing w		−0.220		
		(0.235)		
Linearly Increasing w from 18yo			−0.267	
			(0.238)	
Higher w for 18-25yo				−0.244
				(0.190)
Time FE and Country FE	Y	Y	Y	Y
Indiv. Controls	Y	Y	Y	Y
R^2	0.487	0.488	0.488	0.488
Observations	13218	13218	13216	13217

Table D.13: Alternative Experienced Inflation Measures and FRM

The table presents regression coefficients from individual-level logit regressions of FRM on different measures of experienced inflation, with robust standard errors, $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Panel A does not include controls, while Panel B includes year fixed effects, country fixed effects, and demographic and mortgage controls.

Unemployment Experiences. We test for the role of unemployment experiences, beyond the one of inflation experiences.

Dep. Var.: FRM (dummy)	(1)	(2)
(Intercept)	-2.586	0.824
	(1.875)	(0.605)
Experienced Inflation (log)	-2.244^{***}	
	(0.570)	
Experienced Unemployment (log)	1.789^{*}	
	(1.063)	
Experienced Infl. Volatility (log)		-0.324^{*}
		(0.172)
Experienced Unemp. Volatility (log)		-0.213
		(0.249)
Full Controls	Y	Y
Pseudo R^2	0.488	0.522
Observations	13218	15220

Table D.14: Inflation and Unemployment Experiences

The table presents regression coefficients from individual-level logit regressions of FRM on experienced inflation and unemployment in levels and volatility, with robust standard errors, $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. All regressions control for household and mortgage characteristics, country specific conditions at the time of taking the mortgage, country fixed effects and year fixed effects.

D.4. Robustness

	Spread $< Q1$	Spread $> Q1$
(Intercept)	-6.952	0.627
	(8.447)	(0.970)
Experienced Inflation (log)	-1.037	-1.697^{***}
	(1.287)	(0.587)
Demographic and Mortgage Controls	Yes	Yes
Country-Year FE	Yes	Yes
Pseudo R^2	0.339	0.451
Observations	3152	9894

Table D.15: Inflation Experiences and Mortgage Choice conditional on Low vs High Spreads

The table presents coefficients from logit regressions with robust standard errors, $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Column 1 restricts the sample to mortgages taken during times in which the value of the spread between FRM and ARM was below its first quartile, while Column 2 restricts the sample to mortgages taken during times in which the value of the spread between FRM and ARM was above its first quartile. Demographic Controls include age, gender, marital and employment status, educational attainment, quintile of net wealth and quintile of household gross-income and Mortgage Controls refers to length of the mortgage. Multiple imputation techniques and survey weights are used throughout.

	Model 1	Model 2
(Intercept)	-5.201	-4.792
	(7.987)	(7.987)
Experienced Inflation (log)	-1.230^{**}	-1.429^{***}
	(0.505)	(0.492)
Size of loan q2	-0.219^{*}	-0.171
	(0.127)	(0.157)
Size of loan q3	-0.364^{**}	-0.233
	(0.144)	(0.181)
Size of loan q4	-0.509^{***}	-0.325
	(0.157)	(0.215)
Refinance? (Yes=1)	0.060	0.065
	(0.121)	(0.123)
>1 mortgage on HMR? (Yes=1)	-0.029	0.052
	(0.141)	(0.156)
LTV Ratio q2		-0.104
		(0.146)
LTV Ratio q3		0.152
		(0.172)
LTV Ratio q4		-0.247
		(0.228)
DTI Ratio q2		-0.056
		(0.142)
DTI Ratio q3		-0.139
		(0.182)
DTI Ratio q4		-0.188
		(0.232)
Demographic and Mortgage Controls	Yes	Yes
Country-Year FE	Yes	Yes
Pseudo R^2	0.472	0.476
Observations	14656	14122

Table D.16: Controls on mortgage type and borrowing constraints

The table presents coefficients from logit regressions with robust standard errors, $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Demographic Controls include age when taking the loan, gender, marital and employment status, educational attainment, quintile of net wealth and quintile of household gross-income and Mortgage Controls refers to length of the mortgage. Multiple imputation techniques and survey weights are used throughout.

	Model 1	Model 2
(Intercept)	-4.914	-5.180
	(8.019)	(8.046)
Experienced Inflation (log)	-1.531^{***}	
	(0.514)	
Experienced Volatility (log)		-0.456^{**}
		(0.191)
Mortgage DTI>=3? (Yes=1)	-0.903^{***}	-0.712^{**}
	(0.313)	(0.327)
Experienced Inflation(log):Mortgage DTI>=3? (Yes=1)	0.476^{**}	
	(0.205)	
Experienced Volatility(log):Mortgage DTI>=3? (Yes=1)		0.319
		(0.205)
Demographic and Mortgage Controls	Yes	Yes
Country-Year FE	Yes	Yes
Pseudo R^2	0.471	0.472
Observations	15186	15186

Table D.17: Heterogeneity on the effect of experiences by DTI

The table presents coefficients from logit regressions with robust standard errors, $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Model 1 uses as main explanatory variable the personal measure of experienced inflation while Model 2 uses the personal measure of experienced volatility. Demographic Controls include age when taking the loan, gender, marital and employment status, educational attainment, quintile of net wealth and quintile of household gross-income and Mortgage Controls refers to length of the mortgage. Multiple imputation techniques and survey weights are used throughout.

	Model 1	Model 2
(Intercept)	-5.100	-5.283
	(7.987)	(7.995)
Experienced Inflation (log)	-1.414^{***}	
	(0.508)	
Experienced Volatility (log)		-0.424^{**}
		(0.189)
Mortgage LTV>=0.75? (Yes=1)	-0.863^{**}	-0.835^{**}
	(0.390)	(0.405)
Experienced Inflation(log):Mortgage LTV>=0.75? (Yes=1)	0.443^{*}	
	(0.257)	
Experienced Volatility(log):Mortgage LTV>=0.75? (Yes=1)		0.409
		(0.253)
Demographic and Mortgage Controls	Yes	Yes
Country-Year FE	Yes	Yes
Pseudo R^2	0.470	0.470
Observations	15218	15218

Table D.18: Heterogeneity on the effect of experiences by LTV

The table presents coefficients from logit regressions with robust standard errors, $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Model 1 uses as main explanatory variable the personal measure of experienced inflation while Model 2 uses the personal measure of experienced volatility. Demographic Controls include age when taking the loan, gender, marital and employment status, educational attainment, quintile of net wealth and quintile of household gross-income and Mortgage Controls refers to length of the mortgage. Multiple imputation techniques and survey weights are used throughout.

Dep. Var.: FRM (dummy)	LTV Q1	LTV Q2	LTV Q3	LTV Q4
(Intercept)	14.719	4.623**	5.884***	−2.249
	(7.549)	(1.438)	(1.019)	(7.047)
Experienced Inflation (log)	−2.017***	−2.240***	−2.134***	−2.083***
	(0.300)	(0.251)	(0.258)	(0.368)
Odds Ratio	0.13	0.11	0.12	0.12
Controls	Y	Y	Y	Y
Country Conditions at t	Y	Y	Y	Y
Pseudo R^2	0.283	0.318	0.333	0.308
Observations	2287	3296	3147	1748
Mean Dep. Var.	0.66	0.62	0.64	0.59
Quartiles Values	$(0, 0.281]$	$(0.281, 0.5]$	$(0.5, 0.739]$	$(0.739, 5.59]$

Table D.19: Inflation Experiences and Household Mortgage Decision across LTV quartiles

The table presents coefficients and odds ratios from logit regressions with robust standard errors, $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Each column refers to a different LTV quintile. Controls include age when taking the loan, gender, marital status, employment status, educational attainment, quintile of net wealth and quintile of household gross-income, length of the mortgage and country-specific conditions at the time of the loan - including inflation rate, unemployment rate, GDP growth, the spread between FRM and ARM and credit standards. Multiple imputation techniques and survey weights are used throughout. Number of observations is the maximum N across the 5 imputations. Pseudo R^2 is the average across the 5 imputations.

Among those in the highest LTV quartile, the average share of FRM is 7pp lower compared to those with in the lowest LTV quartile. Nevertheless, the effect of past experiences of inflation is relatively constant across quartiles and always negative and significant. For example, a 1 log point increase in experienced inflation predicts a decrease in the odds of holding an FRM of 86.7% among households in the first quartile of LTV and a decrease of 87.5% among households in the fourth quartile of LTV. Thus, among people who have a similar loan-to-value and across different quartiles of loan-to-value, those that experienced higher inflation are less likely to hold an FRM.

Dep. Var.: FRM (dummy)	(1)
(Intercept)	-1.651
	(2.170)
Experienced Inflation (log)	-2.764^{**}
	(1.216)
Interest Rate on Mortgage	0.376^{***}
	(0.087)
Controls	Y
Country Macro Conditions at t	Y
Country FE	Y
Time FE	Y
R^2	0.493
Observations	3042

Table D.20: Inflation Experiences and Household Mortgage Decision - Recent Mortgages

The table presents coefficients from logit regressions with robust standard errors, $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Controls include age when taking the loan, gender, marital status, employment status, educational attainment, quintile of net wealth and quintile of household gross-income, length of the mortgage, interest rate on the mortgage and country-specific conditions at the time of the loan - including inflation rate, unemployment rate, GDP growth, the spread between FRM and ARM and credit standards. Multiple imputation techniques and survey weights are used throughout. Number of observations is the maximum N across the 5 imputations. Pseudo R^2 is the average across the 5 imputations.

Dep. Var.: FRM (dummy)	IntRate Q1	IntRate Q2	IntRate Q3	IntRate Q4
(Intercept)	3.667	0.513	1.721	7.387^{***}
	(2.788)	(1.748)	(1.760)	(1.544)
Experienced Inflation (log)	-5.740^{**}	-2.568^{**}	-5.841^{***}	-1.554^{**}
	(2.230)	(1.225)	(1.673)	(0.743)
Controls	Y	Y	Y	Y
Country Conditions at t	Y	Y	Y	Y
Pseudo R^2	0.506	0.430	0.268	0.208
Observations	1006	814	637	606
Mean Dep. Var.	0.79	0.83	0.75	0.77
Quartile Values	$(0, 1.8]$	$(1.8, 2.55]$	$(2.55, 3.6]$	$(3.6, 19]$

Table D.21: Inflation Experiences and Mortgage Choice across Interest Rate Quartiles - Recent Mortgages

The table presents coefficients from logit regressions with robust standard errors, $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Each column refers to a different quartile of interest rate on households' mortgage. Controls include age when taking the loan, gender, marital status, employment status, educational attainment, quartile of net wealth and quartile of household gross-income, length of the mortgage, and country-specific conditions at the time of the loan - including inflation rate, unemployment rate, GDP growth, the spread between FRM and ARM and credit standards. Multiple imputation techniques and survey weights are used throughout. Number of observations is the maximum N across the 5 imputations. Pseudo R^2 is the average across the 5 imputations.

The average FRM for recently taken mortgages is 78%, which is considerably higher than when considering the whole sample (i.e. 62.5%), and the estimated coefficient on experienced inflation is also higher but remains negative and statistically significant across all interest rate quartiles.[5]

Although average shares of FRM are relatively constant across interest rate quartiles, experienced inflation plays a much stronger role among households who face lower interest rates. Importantly, conditional on households facing similar interest rates, we still find that higher experienced inflation is associated with lower likelihood of holding an FRM.

D.4.1. Country-by-Country Regressions

In the main body of the paper we uncover a negative relation between past experiences of inflation and current holdings of FRM mortgages. In our sample of 15000 households from 9 different Eurozone countries we found that, on average, a 1 log point increase in experienced inflation predicts a decline in the odds of holding an FRM of 71.6%. This effect was identified exploiting heterogeneity within a year-country and controlling for several household and mortgage characteristics.

Even though a thorough exploration of country by country results exceeds the scope of this paper, we provide some evidence that this result generally holds for each country in our sample. In particular, we re-run our regressions for the nine countries separately. Figures in the main body summarise the results for such regressions and Tables D.23 and D.24 show the full set of logit coefficients and standard errors.

	AT	BE	DE	FR	GR	IT	ES	LU	PT
Experienced Inflation Volatility	3.02	2.88	2.14	3.96	8.38	6.4	5.33	2.72	7.12
Experienced Mean Inflation	2.51	2.74	2.21	2.96	9.18	5.39	5.92	2.75	6.82
corr(short int, unemp)	-0.74	-0.48	**0.68**	-0.8	-0.58	-0.59	-0.66	-0.76	-0.71

Table D.22: Average Correlation between Short Term Interest Rate and Unemployment Rate

[5]The regression exploits heterogeneity across countries, while controlling for country specific conditions at the time of taking the mortgage. Results are robust when country fixed-effects are added.

Dep.Var.: FRM	AT	BE	DE	FR	GR	IT	ES	LU	PT
Exp. Infl. (log)	-3.873^{***}	-0.838	6.535^{***}	-3.305^{***}	1.792^{*}	-1.031^{**}	-2.628^{***}	-4.362^{***}	-1.095^{*}
	(1.265)	(1.312)	(2.152)	(0.334)	(1.028)	(0.475)	(0.554)	(0.936)	(0.575)
Age at loan	0.054^{**}	0.022	-0.038	0.077^{***}	-0.019	0.002	0.077^{***}	0.048^{**}	0.049^{*}
	(0.023)	(0.035)	(0.028)	(0.012)	(0.018)	(0.016)	(0.013)	(0.018)	(0.027)
Spread (FRM-ARM)	-0.156	-0.772^{***}	0.363	-0.388^{*}	-0.539^{**}	-0.173	-0.314	0.206	-0.061
	(0.141)	(0.205)	(0.347)	(0.236)	(0.261)	(0.163)	(0.191)	(0.202)	(0.150)
Observations	532	705	1202	5939	417	892	1924	932	896

Table D.23: Inflation Experiences (in level) and Households' Mortgage Choice by Country

The table presents regression coefficients from individual-level logit regressions of experienced inflation on FRM. All regressions include household characteristics, mortgage length and interest rate spread at time of mortgage take out. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

Dep. Var.: FRM	AT	BE	DE	FR	GR	IT	ES	LU	PT
Exp. Vol. (log)	-0.878^{***}	-0.153	4.795^{***}	-0.843^{***}	-1.606^{**}	-0.413	-2.056^{***}	-1.488^{***}	-0.955
	(0.322)	(0.509)	(1.662)	(0.271)	(0.741)	(0.399)	(0.571)	(0.407)	(1.842)
Age at loan	0.022	0.012	-0.047	0.030^{***}	0.013	-0.012	0.054^{***}	0.024	0.039
	(0.017)	(0.027)	(0.030)	(0.010)	(0.021)	(0.015)	(0.012)	(0.016)	(0.026)
Spread (FRM-ARM)	-0.045	-0.797^{***}	0.538	-0.868^{***}	-0.566^{**}	-0.132	-0.054	0.445^{**}	0.016
	(0.131)	(0.204)	(0.328)	(0.266)	(0.263)	(0.162)	(0.168)	(0.181)	(0.141)
Observations	532	705	1202	5939	417	892	1924	932	896

Table D.24: Inflation Experiences (volatility) and Households' Mortgage Choice by Country

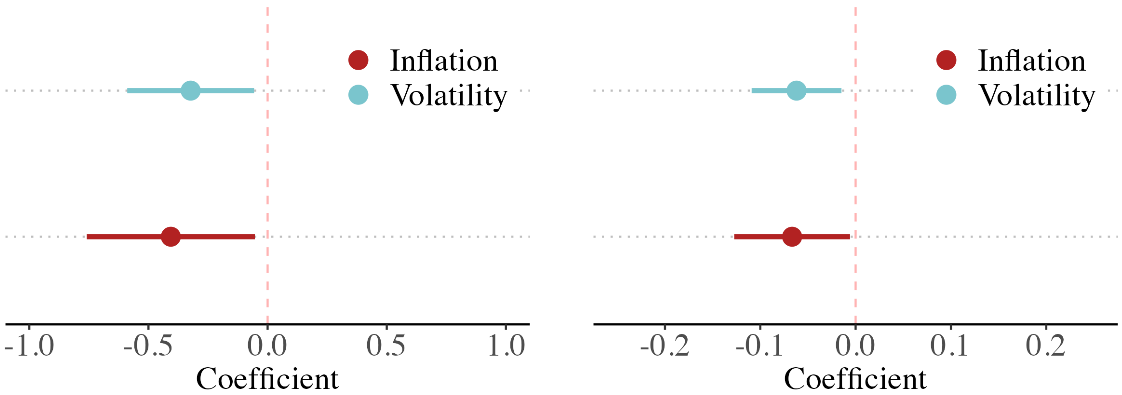
The table presents regression coefficients from individual-level logit regressions of experienced inflation volatility on FRM. All regressions include household characteristics, mortgage length and interest rate spread at time of mortgage take out as controls. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

D.5. Risk Attitudes

Households who participate in the HFCS are asked: *"Which of the following statements comes closest to describing the amount of financial risk that you (and your husband/wife/partner) are willing to take when you save or make investments? (1) Take substantial financial risks expecting to earn substantial returns; (2) Take above average financial risks expecting to earn above average returns; (3) Take average financial risks expecting to earn average returns; (4) Not willing to take any financial risk."*

In our sample, almost 800 households answer that they take above average risk (answer 1 or 2), approximately 3500 answer that they take average risk and almost 9600 households say they are not willing to take any risk. We use these responses to construct our measure of risk attitudes: a binary variable that takes value one if households are willing to take average or above average risk, and zero if they are not willing to take any financial risk.

Main Results. The figure reports estimates of the effect of experienced inflation on the risk attitude measure, while controlling for demographic characteristics, time fixed effects and country fixed effects. The negative relation between experienced inflation, both in levels and volatility, and risk taking holds when estimated both in OLS regressions and logit regressions.



(a) Logit Estimated Coefficients

(b) OLS Estimated Coefficients

Figure D.12: Effect of Experienced Inflation on Risk Attitudes

Estimates for logit and OLS regressions of households' risk attitudes on their 1) experience of inflation (in red) and 2) experience of inflation volatility (in blue), controlling for demographics and country fixed effects. All coefficients are negative and significant.

Considering the logit estimates, we find that a 1 log-point increase in experienced inflation (volatility) predicts a 34% (27.7%) decrease in the odds of taking risk. Table D.25 in the Appendix shows the estimates and standard errors in detail.

Detailed Results. The following table reports logit coefficients of significant controls. Demographics include: age at loan, employment status, education level ("above high school" reference category), marital status ("divorced" as reference), binary for having children, gender ("male" as reference), income quintiles (q1 as reference), wealth quintiles (q1 as reference).

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
(Intercept)	−0.146	−0.125	−1.766***	−1.742***	−0.713	−0.799
	(0.099)	(0.108)	(0.652)	(0.649)	(0.663)	(0.662)
Exp. Inflation (log)	−0.582***		−0.336***		−0.406**	
	(0.071)		(0.082)		(0.180)	
Exp. Volatility (log)		−0.566***		−0.360***		−0.323**
		(0.074)		(0.082)		(0.136)
Age at loan			0.000	0.000	−0.003	−0.004
			(0.005)	(0.005)	(0.006)	(0.006)
Employed, other			−1.805***	−1.736**	−2.003**	−1.872**
			(0.684)	(0.688)	(0.831)	(0.804)
Employed, temporary			−0.264	−0.270	−0.184	−0.175
			(0.196)	(0.198)	(0.203)	(0.203)
Employed, no info			−0.391***	−0.410***	−0.313**	−0.316**
			(0.135)	(0.134)	(0.141)	(0.141)
Self-employed			0.182*	0.188*	0.191*	0.190*
			(0.104)	(0.104)	(0.109)	(0.109)
Unemployed			−0.567***	−0.576***	−0.340*	−0.348*
			(0.195)	(0.195)	(0.197)	(0.197)
Below high school			−0.380***	−0.379***	−0.398***	−0.414***
			(0.115)	(0.115)	(0.120)	(0.120)
High school			−0.074	−0.085	−0.247***	−0.257***
			(0.086)	(0.085)	(0.090)	(0.089)
Married = 1			−0.048	−0.067	−0.120	−0.133
			(0.088)	(0.089)	(0.093)	(0.093)
Child = 1			−0.124	−0.075	−0.069	−0.034
			(0.084)	(0.086)	(0.089)	(0.091)
Female = 1			−0.243***	−0.230***	−0.233***	−0.230***
			(0.085)	(0.086)	(0.088)	(0.088)
Income q5			0.422*	0.433**	0.375*	0.386*
			(0.219)	(0.219)	(0.220)	(0.222)
Wealth q2			1.163*	1.174*	0.933	0.920
			(0.610)	(0.607)	(0.615)	(0.611)
Wealth q3			1.136*	1.164*	0.935	0.924
			(0.600)	(0.596)	(0.604)	(0.600)
Wealth q4			1.307**	1.331**	1.081*	1.074*
			(0.601)	(0.597)	(0.605)	(0.602)
Wealth q5			1.951***	1.970***	1.730***	1.718***
			(0.602)	(0.598)	(0.608)	(0.604)
Country FE	No	No	No	No	Yes	Yes
Pseudo R^2	0.022	0.023	0.084	0.086	0.124	0.124
Observations	13885	13885	13880	13880	13880	13880

Statistical Significance: $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table D.25: Correlation between experiences and risk attitude - logit coefficients

Experienced inflation, both in levels and volatility, predicts a lower likelihood of reporting willingness to take financial risk. The lower coefficients in columns 3 and 4 show that part of the big negative correlation found in columns 1 and 2 can be explained by demographic characteristics of these individuals, although the effect remains negative and highly significant. One might also argue that the correlation between risk attitudes and experiences might be explained by fixed heterogeneities across countries. Last columns alleviate such concern by adding country fixed effects. For robustness, we also construct new measures of experiences taking as reference the survey year. We re-run the regressions with such measures and we find similar results.

Other Assets. Households' who experienced higher inflation throughout their lives hold lower shares of mutual funds over total financial assets and lower shares of stocks over total financial assets.

	Funds/Assets	Stocks/Assets
(Intercept)	0.178^{*}	0.087
	(0.094)	(0.089)
Experienced Inflation (log)	-0.194^{**}	-0.157^{**}
	(0.082)	(0.069)
Controls	Yes	Yes
R^2	0.055	0.047
Observations	2553	2818

Table D.26: Experienced Inflation and Asset Holdings

The table shows regression coefficients from individual-level logit regressions of experienced inflation (in log) on (1) share of mutual funds over total financial assets, and (2) share of stocks over total financial assets. Both specifications control for households' characteristics, country and time fixed effects. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

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