Inflation Expectations and Consumption Expenditure[*]

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Abstract

Households that expect an increase in inflation have an 8% higher reported readiness to spend on durables compared to other households. This positive cross-sectional association is stronger for more educated, working-age, high-income, and urban households. We document these novel facts using German micro data for the period 2000-2013. We use a natural experiment for identification. The German government unexpectedly announced in November 2005 a three-percentage-point increase in value-added tax (VAT) effective in 2007. This shock increased households' inflation expectations during 2006, as well as actual inflation in 2007. Matched households in other European countries, which were not exposed to the VAT shock, serve as counterfactuals in a difference-in-differences identification design. Our findings suggest fiscal and monetary policy measures that engineer higher inflation expectations may succeed in stimulating consumption expenditure.

JEL classification: D12, D84, D91, E21, E31, E32, E52, E65

I Introduction

Do households act on their inflation expectations? The zero-lower-bound constraint on conventional monetary policy has revived this question, which is at the center of all New Keynesian models. Temporarily higher inflation expectations might increase aggregate demand, stimulate GDP, and bring the economy back to its steady-state growth path.

This argument hinges on two premises: in times of fixed nominal interest rates, higher inflation expectations decrease real interest rates (Fisher equation), and lower real interest rates reduce savings and stimulate consumption (Euler equation).[1] However, the effect of real interest rates on consumption depends on assumptions regarding preferences. In addition, households use paper money as a medium of exchange. Higher inflation is an implicit tax on paper money, and could lower economic activity.[2] Higher inflation might also increase inflation uncertainty, and reduce consumption spending via a precautionary-savings channel.[3] Ultimately, the sign of the association between households' inflation expectations and their willingness to spend on consumption goods is an empirical question.

In this paper, we use German micro data to study the cross-sectional relationship between inflation expectations and households' readiness to spend on durable consumption goods. The market research firm GfK surveys households on a monthly basis to measure expectations about business-cycle conditions and inflation on behalf of the European Commission. Figure 1 shows our main finding in a scatter plot for a period from January 2000 until December 2013. The figure plots the average monthly willingness to purchase durable goods across surveyed households, against the share of households that expect inflation to increase in the following 12 months. The solid line is the slope of a regression of the average willingness to purchase durable goods on our measure of inflation expectations.[4] A positive correlation of 0.59 is present between inflation expectations and the readiness to spend on durable goods.

The size of this correlation is stable and statistically different from zero throughout the sample period. The association between inflation expectations and willingness to purchase durable goods is more pronounced during 2006 (blue points). We discuss this

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[1]Higher inflation expectations may also boost consumption spending through a wealth-redistribution channel, if borrowers have higher marginal propensities to consume out of wealth (Doepke and Schneider (2006) and Mian, Rao, and Sufi (2013)).
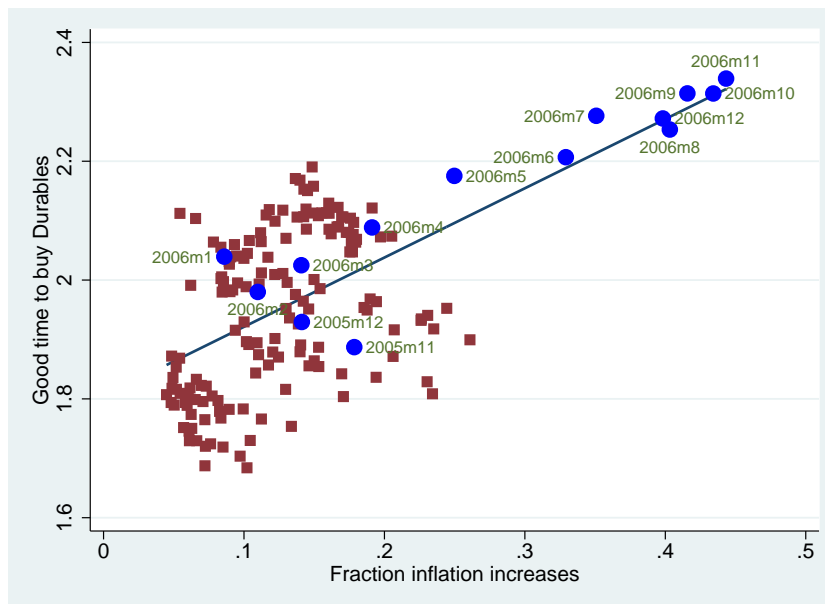
[2]See Aruoba and Schorfheide (2011).

[3]See Taylor (2013), Bloom (2009), and Pástor and Veronesi (2013).

[4]We describe the data and the construction of our variables in detail in Section II.

subperiod in detail below.

Figure 1: **Readiness to spend on durables and inflation expectations**

This figure plots the average monthly readiness to purchase durables on the y-axis against the average monthly inflation expectation. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households whether it is a good time to purchase durables given the current economic conditions. Higher values correspond to better times. GfK also asks how consumer prices will evolve in the next 12 months compared to the previous 12 months. We create a dummy variable that equals 1 when a household expects inflation to increase. The sample period is January 2000 to December 2013.

In our baseline analysis, we estimate a set of multinomial logit regressions of a categorical variable that describes the willingness of households to purchase durable goods on their inflation expectations as well as other household-level characteristics.[5] Households that expect higher inflation are on average 8% more likely to report that it is a good time to buy durable goods, compared to households that expect constant or decreasing inflation. This positive association holds when we control for observed household-level heterogeneity with a rich set of demographic variables, households' expectations regarding other dimensions such as income or unemployment, and macroeconomic conditions common to all households. Households expecting higher

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[5]The survey asks households whether it is a good time for them to purchase durable goods given current economic conditions. Households can answer "it is neither a good nor a bad time," "it is a bad time," or "it is a good time." All our results are similar if we interpret the three options as an ordered set of choices, and hence use an ordered probit model for estimation, or if we estimate the relationship using ordinary-least squares. See Table A.6 in the online appendix.

inflation are also less likely to save, which suggests *overall* consumption might increase.

We exploit an unexpected, pre-announced value-added tax (VAT) increase as a natural experiment to assess whether the effect of households' inflation expectations on their willingness to purchase durable goods might be causal. Feldstein (2002) suggests that pre-announced VAT increases can be a discretionary fiscal policy measure to increase inflation expectations and stimulate private spending.[6] Hall and Woodward (2008) propose temporary sales tax holidays to generate future consumer-goods inflation and incentivize current spending. Hall (2011) reiterates on this idea in his presidential address. Correia, Farhi, Nicolini, and Teles (2013) show theoretically that a set of unconventional fiscal policies, including increasing consumption taxes over time, can fully offset the zero-lower-bound constraint via stimulating consumer price inflation and achieve a first-best outcome.

In November 2005, the newly-formed German government unexpectedly announced a three-percentage-point increase in the VAT effective in January 2007. The administration legislated the VAT increase to consolidate the federal budget. The increase was unrelated to prospective economic conditions, and hence it qualifies as an exogenous tax change in the taxonomy of Romer and Romer (2010). Inflation expectations surged in 2006, and an increase in realized inflation in 2007 followed. This pattern was unique to Germany within the European Union.[7] The European Central Bank (ECB), which is responsible for monetary policy and price stability for the whole Euro area, did not increase nominal rates to offset the higher inflation expectations in Germany. Our natural experiment therefore provides a setting in which inflation expectations increased while nominal rates were stable.

We use households in European Union countries not exposed to the VAT shock as a control group in a difference-in-differences identification strategy. The difference-in-differences results confirm our baseline findings. To the best of our knowledge, this paper is the first paper to exploit a natural experiment and a difference-in-differences identification strategy, to test for the effect of inflation expectations on the readiness to spend.

We also study the heterogeneity of the relationship between inflation expectations

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[6]Feldstein (2002): "This [VAT] tax-induced inflation would give households an incentive to spend sooner rather than waiting until prices are substantially higher."

[7]Figure A.2 shows the evolution of inflation expectations for the European Union (EU) and other EU membership countries.

and willingness to spend. The association is higher for household heads with a college degree, for urban households, for larger households, and for high-income households. The size of the association is similar across age groups, but it drops by 20% for those in retirement age.

Two features of the German data make them ideal for studying the relationship between households' inflation expectations and their willingness to purchase durable goods. First, the survey asks households about *their* willingness to spend on consumption goods, as opposed to their opinion on whether it is a good time *for people in general* to consume, which the Michigan Survey of Consumer (MSC) asks. Second, we can exploit a natural experiment for identification. This identification setting is close to the ideal experiment of exogenously increasing households' inflation expectations in times of constant nominal interest rates.

Our analysis contains a series of caveats. The survey consists of repeated cross sections of households. We cannot exploit within-household variation in inflation expectations to control for time-invariant unobserved heterogeneity at the household level. The rich set of household demographics, the perception of past inflation, household expectations regarding their personal economic outlook (e.g., future personal income), and macroeconomic aggregates (e.g., GDP and unemployment) help alleviate this concern. Moreover, the survey only elicits a measure of households' willingness to purchase consumption goods, and we do not observe the actual consumption behavior of households. In Figure 11, we show households' average willingness to spend closely tracks the actual consumption expenditure on durables. A third potential shortcoming is that the survey only elicits qualitative measures of inflation expectations. However, evidence suggests inflation expectations bunch at salient threshold values, and households often report implausible values for expected inflation rates when asked for quantitative expectations (see Binder (2015)). Last, pre-announced VAT increases are a salient way to generate future consumer price inflation and induce current spending. Our baseline findings continue to hold when we exclude the period after the announcement and before the effectiveness of the VAT increase. The salience of consumption taxes could be an advantage of using taxes to engineer negative real interest rates.

Our paper provides empirical support for a growing theoretical literature that emphasizes the stabilization role of inflation expectations. On the monetary policy side,

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Krugman (1998), Eggertsson and Woodford (2003), Eggertsson (2006), and Werning (2012) argue a central bank can stimulate current spending by committing to higher future inflation rates when the zero lower bound binds. On the fiscal policy side, Eggertsson (2011), Christiano, Eichenbaum, and Rebelo (2011), Woodford (2011), and Farhi and Werning (2015) show inflation expectations can increase fiscal multipliers in standard New Keynesian models in times of a binding zero lower bound. Correia, Farhi, Nicolini, and Teles (2013) show "unconventional" fiscal policy, including higher future consumption taxes, can completely offset the zero-lower-bound constraint by generating consumer price inflation. From a historical perspective, Romer and Romer (2013) argue deflation expectations caused the Great Depression, whereas Eggertsson (2008) and Jalil and Rua (2015) suggest a fiscal and monetary policy mix engineered higher inflation expectations and spurred the recovery from the Great Depression. From an international perspective, Hausman and Wieland (2014) study the monetary easing of the Bank of Japan and the expansionary fiscal policy commonly known as "Abenomics." Their evidence based on aggregate time series data is consistent with higher inflation expectations raising consumption and GDP.

We also contribute to the recent literature that uses micro-level data to study the relationship between inflation expectations and households' readiness to purchase consumption goods. Bachmann, Berg, and Sims (2015) start this literature using survey data from the MSC. They find an economically and statistically insignificant association between households' inflation expectations and their readiness to spend on durables. Burke and Ozdagli (2014) confirm these findings using panel data from the New York Fed/RAND-American Life Panel household expectations survey for a period from April 2009 to November 2012. Ichiue and Nishiguchi (2015) show Japanese households that expect higher inflation plan to decrease their future consumption spending.[8]

We also relate to Cashin and Unayama (2015), who use micro data from the Japanese Family Income and Expenditure Survey to exploit the VAT increase in Japan to estimate the intertemporal elasticity of substitution. They do not observe households' inflation expectations.

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[8]Other recent papers using inflation expectations data from the MSC are Piazzesi and Schneider (2009), Malmendier and Nagel (2009), Dräger and Lamla (2013), Carvalho and Nechio (2014), and Coibion and Gorodnichenko (2012).

II Data

A. Data Sources

We use the confidential micro data underlying the GfK Consumer Climate MAXX survey. GfK conducts the survey on behalf of the Directorate General for Economic and Financial Affairs (DG ECFIN) of the European Commission.[9] GfK monthly asks a representative repeated cross-section of 2,000 German households questions about general and personal economic conditions, inflation expectations, and willingness to spend on consumption goods. We obtained access to the micro data for the period starting in January 2000 and ending in December 2013. Our sample period includes large variation in macroeconomic fundamentals, two major recessions, and an unexpected increase in German VAT in 2007.

We use the answers to the following two questions in the survey to construct the main variables in our baseline analysis:

Question 8 *Given the current economic situation, do you think it's a good time to buy larger items such as furniture, electronic items, etc.?*

Households can answer, "It's neither a good nor a bad time," "No, it's a bad time," or "Yes, it's a good time."

Question 3 *How will consumer prices evolve during the next twelve months compared to the previous twelve months?*

Households can answer, "Prices will increase more," "Prices will increase by the same," "Prices will increase less," "Prices will stay the same," or "Prices will decrease." We create a dummy variable that equals 1 when households answer, "Prices will increase more," to get a measure of higher expected inflation.[10]

Households' inflation expectations are highly correlated with their perception of past inflation (see Jonung (1981)). We also use survey question 2 in our baseline analysis to disentangle the effects of inflation expectations from inflation perceptions:

Question 2 *What is your perception on how consumer prices evolved during the last twelve months?*

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[9]We use similar data from the harmonized surveys of DG ECFIN for several other European countries in Section IV. We discuss the data in more detail in the online appendix.

[10]Results do not change if we introduce separate dummies for the individual answer possibilities (see Table A.5 in the online appendix).

Households can answer, "Prices increased substantially," "Prices increased somewhat," "Prices increased slightly," "Prices remained about the same," or "Prices decreased."

The online appendix contains the original survey and a translation to English.

We also use questions regarding expectations about general economic variables, personal income or unemployment, and a rich set of socio-demographics from the GfK survey. In robustness checks, we use data on contemporaneous macroeconomic aggregates, such as GDP and unemployment numbers from the German statistical office (DeStatis), nominal interest rates, the value of the German stock index DAX, and measures of European and German policy uncertainty from Baker, Bloom, and Davis (2014). The online appendix describes in detail the data sources and variable definitions.

B. Descriptive Statistics

Table 1 contains some basic descriptive statistics. On average, 20% of households say it is a good time to buy durables, 24% say it is a bad time, and the others are indifferent. Fourteen percent of households expect higher inflation in the following 12 months. More than 80% of respondents think prices in the previous 12 months increased substantially, somewhat, or slightly, with equal proportions for each answer. Only 13% think prices remained the same, and essentially nobody thinks prices decreased.

The sample is balanced between women and men. Most respondents completed high school, but have no college education.[11] The mean household's size is 2.5, the majority of households live in cities with fewer than 50,000 inhabitants, and roughly 75% of households have a monthly net income below EUR 1,500.

Panel C of Table 1 reports statistics for households' personal expectations. Most households think their financial situation has not changed in the previous 12 months, and they expect the same for the future. Most households do not save or save only a little, and expect a constant or slightly increasing unemployment rate. Panel D of Table 1 describes macroeconomic aggregates. The inflation rate averaged around 1.6% per year, and the average unemployment rate was slightly below 8%. The average level of the DAX stock index was 5,840 points, with an average annual volatility of 22.79%. Industrial production grew about 1.6% per year, and the average oil price was $63.

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[11]Most respondents completed either *Hauptschule* or *Realschule*, and only 8% of respondents have a college degree.

Figure 2 is a time-series plot of the fraction of households that expect higher inflation, and of the average willingness to buy durable goods. Higher values correspond to a higher propensity to spend. Expected inflation increases hover around the time-series mean at the beginning of the sample, and then spike in 2001 before dropping and staying below the mean until 2005. A sharp increase in expected inflation occurs in 2006, with a subsequent drop and two minor spikes in mid-2007 and 2008. The series fluctuates around its mean for the rest of the sample. The propensity to purchase durables drops below the mean in 2001. The series increases slightly before a sharp increase in 2006. The increase reverts in 2007. The series starts trending upward at the end of 2008.

The top-left panel of Figure 3 plots the time series of the harmonized German CPI inflation rate in percent at an annual rate. The inflation rate is 1.5% at the beginning of the sample and increases to 2.8% in May 2001, before it drops to 0.6% in May 2003. Inflation fluctuates between 1% and 2% until the end of 2006. At the beginning of 2007, the annualized inflation rate is 1.7%, and increases to 3.2% in November 2007. Inflation remains high and above its sample mean until October 2008, before we see short periods of negative inflation in July and September 2009. After 2009, inflation slowly increases, and is above 1% in March 2010.

The inflation expectations in the GfK survey lead actual inflation throughout the sample. We discuss in detail in Section VI the relation between inflation expectations and actual inflation, willingness to purchase durables, and actual purchases.

III   Baseline Analysis

A.   **Econometric Model**

Our outcome variable of interest, households' readiness to purchase durable goods, derives from discrete, non-ordered choices in a survey. We therefore model the response probabilities in a multinomial-logit setting.

We assume the answer to the question on the readiness to spend is a random variable representing the underlying population. The random variable may take three values, $y \in \{0, 1, 2\}$: 0 denotes it is neither a good nor a bad time to purchase durable goods; 1 denotes it is a bad time to purchase durable goods, and 2 denotes it is a good time to purchase durable goods.

We define the response probabilities as $P(y = t|X)$, where $t = 0, 1, 2$, and X is a $N \times K$ vector where N is the number of survey participants. The first element of X is a unit vector, and the other $K - 1$ columns represent a rich set of household-level observables, including demographics and expectations. The set of observables X allows us to control for heterogeneity across households in purchasing propensities, which may be correlated with inflation expectations.

We assume the distribution of the response probabilities is

$$P(y = t|X) = \frac{e^{X\beta_t}}{1 + \sum_{z=1,2} e^{X\beta_z}} \tag{1}$$

for $t = 1, 2$, and β_t is a $K \times 1$ vector of coefficients. The response probability for the case $y = 0$ is determined, because the three probabilities must sum to unity

$$P(y = 0|X) = \frac{1}{1 + \sum_{z=1,2} e^{X\beta_z}}. \tag{2}$$

We estimate the model via maximum likelihood to obtain the vector β_t of coefficients for $t = 1, 2$, and set the category $y = 0$ as the baseline response.

We compute the marginal effects of changes in the covariates on the probability that households choose any of three answers in the survey.

For approximately continuous covariates, we can compute the marginal effect of each covariate x on the response probability as the derivative of $P(y = t|x)$ with respect to x :

$$\frac{\partial P(y = t|x)}{\partial x} = P(y = t|x) \left[\beta_{tx} - \sum_{z=0,1,2} P(y = z|x)\beta_{zx} \right], \tag{3}$$

for $z = 0, 1, 2$. For discrete covariates, we calculate marginal effects by predicting the response probabilities for the potential values of the covariates, and compute the average across predicted probabilities.

B.   Baseline Estimation

Table 2 reports the average marginal effects computed from the multinomial logit regressions. We cluster standard errors at the quarter level (56 clusters) to allow for correlation of unknown form in residuals across contiguous months. In the first

two columns, the inflation-increase dummy is the only explanatory variable. Column (1) reports the marginal effect of the inflation-increase dummy on the likelihood that households respond, "it's a bad time to buy durables," whereas column (2) reports the marginal effect on the likelihood that households reply, "it's a good time to buy durables." Both marginal effects are positive and statistically significant. Column (2) implies households that expect increasing inflation over the following 12 months are on average 6.2% more likely to answer, "it's a good time to buy durables" compared to households that expect constant or decreasing inflation. Households with higher inflation expectations also seem to have a higher propensity to say, "it's a bad time to buy durables" compared to other households. This result disappears once we control for expectations about other outcomes, as we discuss below.

Perceptions of past inflation shape households' expectations about future inflation (Jonung (1981)). Controlling for past inflation perceptions reduces the marginal effect on the negative consumption propensity, and increases the marginal effect on the positive consumption propensity (see columns (3) and (4)). High perceptions of past inflation decrease the marginal propensity to consume durables, whereas they increase consumers' negative attitude toward buying durables, consistent with the consumption Euler equation.

Households differ in their purchasing propensity (see, e.g., Attanasio and Weber (1993)). Household characteristics that determine purchasing propensity and inflation expectations might be systematically related, and hence controlling for the observed heterogeneity across households is important. We add a rich set of demographics, expectations about personal and macroeconomic variables, and contemporaneous macroeconomic variables. Adding demographics has little impact on the statistical significance and economic magnitude of the effect of higher inflation expectations on the willingness to purchase durables (columns (5) and (6)). Controlling for households' expectations regarding their own prospects or future macroeconomic variables (columns (7) and (8)) increases the marginal effect of the inflation-increase dummy on the "good time" outcome. It reduces the marginal effect on the "bad time" outcome to zero. Households that expect higher inflation are on average 8.9% more likely to have positive spending attitudes compared to households that expect constant or decreasing inflation. Adding contemporaneous macroeconomic variables in columns (9) and (10) does not affect

these findings.[12]

Economically, a back-of-the-envelope calculation implies that the marginal effect of inflation expectations on the willingness to buy durables translates into 4.8% higher real durable consumption expenditure if all Germans expect higher inflation. To reach this suggestive conclusion, we regress the natural logarithm of real durable consumption expenditure at the quarterly frequency on the end-of-quarter value of the average durable purchasing propensity and quarterly dummies, and multiply the resulting coefficient of 0.5396 with the marginal effect of 8.88% (column (8) of Table 2).

Table 3 studies the role of household-level expectations in more detail. Columns (1) to (4) split the sample based on the median perception of households regarding their financial situation. Columns (5) to (8) split the sample based on the median expectations of households regarding their future financial situation.[13] The probability of responding that it is a good time to purchase durables is about 6%–8% higher for households that expect inflation to increase compared to households that expect constant or decreasing inflation across specifications (columns (2), (4), (6), and (8)). Note the positive marginal effect of inflation expectations on replying that it's a bad time to buy durables is solely driven by households with a negative perception regarding their financial situation or with a negative outlook (compare columns (3) and (7) to columns (1) and (5)).

IV Natural Experiment and Identification Strategy

A. Exogenous Shock to Inflation Expectations

We need an exogenous shock to inflation expectations – which does not affect households' willingness to purchase durable goods through other channels – to establish a causal link on the readiness to buy durables. We attempt to get close to such an ideal shock following a narrative approach (see Romer and Romer (2010)).

In November 2005, the newly-formed German government unexpectedly announced a three-percentage-point increase in the VAT effective January 2007. The narrative records show the VAT increase was legislated to consolidate the federal budget unrelated to future

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[12]Table A.1 in the appendix reports marginal effects for all control variables.

[13]The discrete nature of the survey with five possible answers results in unbalanced samples when we use the median answer as the cutoff. Results are virtually identical when we assign households with median expectations to the sample with a positive economic outlook (see Table A.3).

economic conditions. The VAT increase, hence, falls within the exogenous tax-change-category following the taxonomy of Romer and Romer (2010).

A pre-announced VAT increase in a fixed-nominal-rates environment resembles the unconventional fiscal policies to stimulate spending through higher inflation expectations described in Correia et al. (2013). Feldstein (2002) proposes pre-announced VAT increases to mechanically generate higher future inflation and incentivize households to frontload consumption expenditure. Hall and Woodward (2008) argue along similar lines for sales-tax holidays to generate an increasing path of consumption taxes over time and stimulate current spending. Hall (2011) emphasizes the use of consumption taxes to alter intertemporal prices.

We discuss the narrative records, the scope of the VAT increase, and the relation between future VAT increases and inflation expectations in detail in Section VI.

The announcement of the VAT increase is a shock to inflation expectations, and should result in higher consumption expenditure as long as nominal interest rates do not increase sufficiently to leave real rates constant. Germany is part of the Euro area, and the ECB is responsible for monetary policy and price stability in the whole currency area. The ECB did not tighten monetary policy to counteract the increase in inflation expectations in Germany. Figure A.10 in the online appendix shows nominal borrowing rates for consumption loans were 6.7% in January 2006 and 6.4% in December 2007.

The VAT increase in January 2007 should result in higher inflation expectations of German households throughout 2006. We see in Figure 4 that German households immediately adjust their inflation expectations upwards in January 2006. Inflation expectations remain elevated for the remaining year and revert once the VAT increase is in effect in January 2007. Realized inflation jumps up in January of 2007 and remains high for the whole year.

B. Difference-in-Differences Approach

The VAT shock alone does not allow a causal test for the effect of inflation expectations on consumption expenditures, because all German households were exposed to the same shock. For identification, we miss a counterfactual: a group of households not affected by the shock, but similar to German households based on observables before the shock.

The European Commission conducts harmonized surveys in all European Union

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countries. We obtained access to the confidential micro data for three additional countries (France, Sweden, and the United Kingdom) through national statistical offices and GfK subsidiaries.[14] We use the households in these three countries to construct our control group.

Our identification strategy is a difference-in-differences approach: we compare German households' readiness to purchase durables with that of households in other European countries, before and after the VAT shock.

We estimate the average treatment effect (ATE) of the VAT shock on the readiness to purchase durables as

$$(\overline{Dur}_{German,\ post} - \overline{Dur}_{German,\ pre}) - (\overline{Dur}_{foreign,\ post} - \overline{Dur}_{foreign,\ pre}), \qquad (4)$$

where $\overline{Dur}_{German,\ post}$ is German households' average readiness to purchase durable goods after the announcement of the VAT increase, $\overline{Dur}_{German,\ pre}$ is German households' average readiness to purchase durables goods before the announcement of the VAT increase, and $\overline{Dur}_{foreign,\ post}$ and $\overline{Dur}_{foreign,\ pre}$ are the analogous averages for foreign households not exposed to the VAT shock.

C. Identifying Assumptions

The *parallel-trends assumption* is a necessary condition for identification. It requires that our control group behaves similarly to German households *before* the announcement of the VAT increase. Under this assumption, we can interpret the evolution of inflation expectations and consumption behavior of matched foreign households *after* the announcement as a valid counterfactual to the evolution of the behavior of German households absent the VAT shock.

The top panels of Figure 5 and Figure 6 provide graphical evidence that the parallel-trend assumption seems satisfied in our setting. The trends in inflation expectations and purchasing propensities are parallel for German and foreign households before the announcement of the VAT increase (November 2005). Starting in January 2006, both the inflation expectations and willingness to buy durable goods of German households start to increase substantially. Trends for foreign households do not move compared to the

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[14]The online appendix contains details of the data sources and the surveys used in national language.

pre-shock period. We see in the bottom panels of Figure 5 and Figure 6 that the similarity of pre-shock trends is even more pronounced when we only use French households as a control group. France and Germany face the same monetary policy, they share a common border, and are structurally similar.

We verify in Table 4 that households in each of the three foreign countries unconditionally display a positive association between inflation expectations and consumption expenditure similar to German households. Foreign households are therefore likely to react to increases in inflation expectations in a similar fashion as German households.

We match each German household in each month with a household in another country, interviewed in the same month, with similar demographic characteristics. We use a nearest-neighbor algorithm to match households based on propensity scores.[15] We estimate propensity scores with a logit regression of the treatment indicator on gender, age, education, income, and social status.[16] Our samples are repeated cross sections, and we cannot track German and matched foreign households before and after the shock. We perform a second level of matching, which pairs up similar households interviewed before and after the shock separately within the German and the foreign survey waves.

The matching exercise is meaningful only for German and foreign households in the *common support* of the distributions of the propensity score for the two groups. In Figure 7, we plot the distribution of the propensity score for the treatment group (red) and the control group (blue). Households are distributed across the full range of the propensity score in both groups.

Moreover, we formally test whether households' characteristics are balanced after the matching process. In Table 5, we report the mean of the matching categories for households in the control group and treated group as of June 2005, our baseline month before the announcement of the VAT increase. Columns (3) and (4) test the null hypothesis that the means across the two groups are equal. We cannot reject the null for any of the five matching variables.

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[15]All the results are virtually identical if we perform the monthly matching using a group of control households for each German household, and we minimize the difference in observables of the German household and the group of foreign households.

[16]We show in subsection V below that age, income, and education are the strongest determinants of cross-sectional heterogeneity in the relation between households' inflation expectations and their consumption behavior.

All our results are similar or become stronger if we only use households from France as a control group. Neither inflation expectations nor nominal rates changed in the UK and Sweden during 2006, and using a larger pool of control households increases the size of the common support, and improves the balancing of matched households' characteristics ex post.

D. Threats to Identification

Changes in VAT might affect households' decisions to purchase durables through channels different from inflation expectations. A positive average treatment effect in equation (4) might reflect those other channels, in which case we could interpret our finding only as an impulse response of consumption expenditure to the announcement of a VAT increase, as opposed to the causal effect of inflation expectations on consumption expenditure. We test below whether the VAT shock affected households' expectations other than inflation expectations, which might affect the readiness to spend on durables irrespective of inflation expectations.

Table 3 documents that the perception of past income and the expectation of future individual income are important determinants of the marginal effects of inflation expectations on consumption choices. Figure 8 plots the evolution of average income perceptions and income expectations together with inflation expectations to test whether improved income perceptions or improved income expectations after the announcement to increase VAT might drive our findings. The announcement of the VAT increase does immediately increase average inflation expectations, whereas the average perception of income and the average expectation of future income do not move.

We cannot test whether the announcement of an increase in VAT affected *all* channels different from inflation expectations, because most of these channels are unobservable. Figure 8, however, shows household expectations regarding future income and the perception of current income, which are important determinants of individual purchasing behavior, are unlikely to drive a potentially positive average treatment effect in equation (4).

E. Causal Effect of VAT Shock on Readiness to Spend

We run a set of cross-sectional regressions on the matched sample before and after the announcement of the VAT increase to estimate the average treatment effect of the VAT shock in equation (4). We set the reference month to June 2005, and we change the end month m across regressions.[17]

We estimate the following specification:

$$\Delta Dur_{i,\ 06/2005 \to m} = \alpha + \beta_m \times VATshock_i + \Delta X'_{i,\ 06/2005 \to m} \times \gamma + \epsilon_i, \qquad (5)$$

where $\Delta Dur_{i,\ 06/2005 \to m}$ is the difference in the willingness to spend on durable goods between month m and June 2005, $VATshock_i$ is an indicator equal to 1 if the household was exposed to the VAT shock, β_m captures the effect of the VAT shock on the willingness to buy durables for household i in month m, and $\Delta X'_{i,06/2005 \to m}$ is the difference in a set of observables between month m and the baseline month. To economize on notation, we use the same indicator i for matched households interviewed in different months.

Figure 9 plots the estimated coefficient $\hat{\beta}_m$ (solid line) of equation (5) for each month m from July 2005 to December 2007, and the 95% confidence intervals (dashed line). We find no difference in the readiness to spend on durable goods between German and matched households before the announcement of the VAT increase. Starting in December 2005, the VAT shock results in a positive effect on the willingness of German households to purchase compared to matched households: German households are 3.8 percentage points (s.e. 1.5 percentage points) more likely to declare that it is a good time to purchase durable goods after the announcement compared to before, and compared to matched foreign households. The effect increases in magnitude throughout 2006 and peaks at 34 percentage points in November 2006. The average treatment effect drops to zero in January 2007 once VAT increases and higher inflation materializes.[18]

Figure 9 shows that the VAT shock has a strong and positive effect on the willingness of German households to purchase durable goods after the announcement and before the increase took effect, even after controlling for the purchasing propensities of similar

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[17]All the results are similar if we use any other month before the announcement of the VAT increase in November 2005.

[18]Figure A.3 in the online appendix plots the average treatment effect of a specification in which we also match on income expectations for the next 12 months in addition to gender, age, education, income, and social status. Results are virtually identical.

households not exposed to the shock in a difference-in-differences setting. Interestingly, we do not detect any reversal of the positive effect of the VAT shock on the willingness to purchase durable goods after January 2007.

V   Heterogeneity of the Effects

A.   Household Heterogeneity

In this section, we study the role of demographics in shaping the marginal effect of inflation expectations on consumption expenditure.

We first look at education. Germany has a three-tier school system, and pupils choose their secondary education track after four years of primary school. *Hauptschule* offers a total of 9 years of basic education, *Realschule* offers 10 years, and *Gymnasium* offers 13 years, concluding with A levels (required to enter college). Table 6 studies the relationship between inflation expectations and the willingness to spend on durables separately for household heads with different levels of education. Survey participants with a *Hauptschule* degree who expect inflation to increase are 6.9% more likely to have a positive stance toward buying durables compared to households that expect constant or decreasing inflation (column (2)). This marginal effect increases with education, and is more than 60% larger for household heads that hold a college degree (columns (4), (6), (8)).

Lifetime inflation experiences matter for how recent inflation shapes inflation expectations of young and old households (see Malmendier and Nagel (2009)). Retirees have different time-use and consumption patterns compared to the working-age population (see Aguiar and Hurst (2005)) and typically have nominal pensions in Germany, hold few real assets, and have lower human capital compared to someone in the labor force. The marginal effect of inflation increases on the willingness to spend is constant across age groups, but drops for those aged 65 or higher. Household heads between 14 to 65 that expect inflation to increase are 9% more likely to buy durables compared to households that expect constant or decreasing inflation (Table 7, columns (2), (4), (6), (8)). This effect is about 20% lower for households in retirement age (column (10)).

City size, marital status, and household size might shape the effect of inflation expectations on consumption expenditure through financial literacy (see, e.g., Lusardi

and Mitchell (2011) and Campbell (2006)). Table 8 shows the marginal effect is about 40% lower for households living in rural areas than households in large cities (columns (2), (4), (6)). In Table 9, richer survey participants with a monthly net income above EUR 2,500 possess a 15% to 20% higher marginal effect of inflation increases on the likelihood to reply, "it's a good time to buy durables" (column (6)), compared to survey participants with less than EUR 2,500 monthly net income (columns (2) and (4)).

Table 10 looks at financial constraints. Hand-to-mouth consumers might think it is a good time to purchase durables in times of high inflation, but might be unable to substitute intertemporally (see Campbell and Mankiw (1989)). Following Zeldes (1989) and Kaplan, Violante, and Weidner (2014), we split the sample to households that currently save and households that dis-save or take on debt. Table 10 shows the marginal effect of higher inflation expectations on the willingness to purchase durable goods is about 40% larger for unconstrained households compared to hand-to-mouth consumers.

B. Effect over Time

Households may perceive it is a favorable time to purchase durable goods for several reasons, including low prices, expected price increases, low nominal interest rates, generally good economic times, or prosperous times for the household. The motive to purchase durable goods because of higher future prices and lower real interest rates is likely to be more important and salient just before an announced increase in VAT compared to other reasons. We therefore expect to find a larger marginal effect of inflation expectations on purchasing propensities in 2006.

Figure 1 shows the marginal effect of inflation expectations on purchasing propensities is especially high in 2006. Table 11 studies this relationship using micro data to control for household characteristics and expectations. From November 2005 to December 2006, households that expect inflation to increase are 19% more likely to have a positive spending attitude. Our baseline findings continue to hold when we exclude the period November 2005 to December 2006 (see columns (3) and (4)). We do not find different marginal effects when we study the time period of the European financial debt crisis in columns (5) and (6). We estimate our baseline specification year-by-year and plot the marginal effect in Figure 10. The marginal effect is around 5%–6% throughout the sample but spikes in 2006.

C. Additional Results

The online appendix reports additional results and robustness checks. Households that expect inflation to increase are also more likely to answer that it is a bad time to save, consistent with the consumption Euler equation (see Table A.7). Results are quantitatively and statistically similar when we split the sample based on expectations regarding macroeconomic aggregates such as GDP or unemployment, when we use dummy-variable specifications for past inflation perceptions and expected inflation, when we estimate a linear probability or an ordered probit model, when we add month and year fixed effects, and when we exclude past inflation perception from the set of covariates. We also show that households that expect deflation are on average more likely to say that it is a bad time to buy compared to households that expect constant or increasing inflation. GfK also asks households on a quarterly basis whether they want to spend more, the same amount, or less for specific consumption goods in the following 12 months compared to the previous 12 months. We find that households which expect inflation to increase want to spend more on cars, furniture, appliances, and renovations to their house. The effect does not seem to differ across genders and across households with or without children. We find similar marginal effects for single, couple, married, and divorced households. Renters have a slightly higher marginal effect than house- or apartment-owners. Full-time employed survey participants have a higher marginal effect than part-time employed and unemployed survey participants.

VI   Discussion

In section III, we document that households with higher inflation expectations are more willing to purchase durable goods. The answer to the question we posed at the beginning of the paper might, therefore, be an affirmative yes: temporarily higher inflation expectations could indeed stimulate current consumption spending. However, a few important points should be discussed before we can infer any policy recommendations from our analysis.

Willingness to spend versus actual spending: We are ultimately interested in how inflation expectations transmit to *actual* consumption. Our survey only reports the willingness to purchase durable goods. Figure 11 shows the time series of the average readiness to purchase durable goods across households and realized real durable

consumption growth at the quarterly frequency in Germany track each other closely.[19] Figure 12 is a scatter plot of the cyclical components of log real durable consumption and the average propensity to purchase durables.[20] Real and reported spending on durables are positively related with a correlation of 0.46.

The reported willingness to purchase has potential advantages compared to measures of actual expenditures elicited with surveys. Spending data in surveys typically contain noise, because survey participants might not recall their actual purchases, or they might overstate their purchases of visible products such as cars and understate the consumption of "sin" products, such as tobacco and alcohol (see Hurd and Rohwedder (2012) and Atkinson and Micklewright (1983)).

Durable consumption versus GDP: Academics and policy makers typically advocate temporarily higher inflation expectations during a liquidity trap to stimulate GDP. The ultimate aim is to bring the economy back to its long-run steady-state growth path. We document that households with higher inflation expectations are more willing to purchase durable goods, but we do not observe whether households cut back on other components of consumption. Households that expect higher inflation are less likely to save, which suggests that they increase total consumption (see Table A.7 in the online appendix). We also do not study how inflation expectations affect firm investment. Evidence for aggregate real GDP growth (Figure A.1) suggests higher inflation expectations might have indeed increased aggregate demand, because real GDP growth increased from 1.6% in the last quarter of 2005 to 4.38% in the last quarter of 2006.

Temporary versus permanent increases in inflation expectations: We focus our discussion on temporary increases of inflation expectations to stimulate consumption. Some economists have suggested *unexpectedly* increasing inflation to "inflate away" government debt and delever household balance sheets. Blanchard, Dell'Ariccia, and Mauro (2010) and Ball (2013), on the contrary, recommend permanently higher inflation *targets* to lower the probability of hitting the zero-lower bound on nominal interest rates. Our evidence does not speak to the positive or negative effects of permanently higher

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[19]We use the end-of-quarter value of the index to construct a quarterly series. We get similar results if we plot the average within a quarter or use the first or second monthly observation within a quarter.

[20]We use a Hodrick-Prescott filter with smoothing parameter λ of 1,600 to extract the cyclical component.

inflation targets, whether expected or unexpected, on welfare. Hilscher, Raviv, and Reis (2014) suggest unexpected higher inflation is unlikely to lower real debt significantly. Mishkin (2011) argues the occurrence of zero-lower-bound periods is too rare to justify the cost of higher inflation. Findings by Gorodnichenko and Weber (2015), Weber (2015), and D'Acunto, Liu, Pflueger, and Weber (2015) suggest substantial costs of nominal price adjustment. Ultimately, Coibion, Gorodnichenko, and Wieland (2012) and Ascari, Phaneuf, and Sims (2015) derive the optimal inflation rate in a New Keynesian model with infrequent occurrences at the zero lower bound, and conclude the welfare-optimal inflation rate is below 2%.

Fiscal versus monetary policy: Macro models often rely on monetary policy to engineer higher inflation expectations. Our survey data do not allow us to identify the origin of the cross-sectional heterogeneity in inflation expectations. When we use the unexpected increase in VAT as a shock to inflation expectations, we can trace the cause of higher inflation expectations back to fiscal policy. Our findings might therefore not speak to the effects of higher inflation expectations induced by monetary policy. Our baseline findings hold when we exclude the period after the announcement and before the effectiveness of the VAT increase, which alleviates those considerations.

Reduced and full VAT tax: All services and products in Germany are subject to a value-added tax that is part of the European VAT system. The general tax rate was 16% until December 2006 and increased to 19% in 2007. A reduced rate of 7% applies to many convenience goods such as food, books, or flowers. The reduced rate has been unchanged since 1983. Rent, services for non-profit organizations, and medical expenses are not subject to VAT.

VAT increase as a shock to inflation: Prices in Germany are typically tax-inclusive; that is posted prices are gross prices including value-added tax. Many convenience goods are only subject to a reduced VAT. If the VAT increase of 2007 indeed led to an increase in inflation, we should observe an immediate rise in inflation for durable goods that are subject to full VAT, whereas we should see a smaller response for non-durable inflation. The lower left panel of Figure 3 shows an immediate increase in durable-goods inflation, which remained high and increased throughout 2007. On the contrary, the lower-right panel shows a constant non-durable-goods inflation rate during 2007. Figure A.2 plots inflation expectations for the European Union (EU), Germany, and

several other EU membership countries. We observe an increase in inflation expectations immediately after the announcement of the VAT increase in Germany in November 2005 with high inflation expectations throughout 2006. Neither the European Union as a whole nor any of the individual member countries, including direct neighbor countries such as France or Austria, exhibits an increase in inflation expectations throughout 2006.

Election promises during the 2005 campaign and reality: The Christian Democrats (CDU) under the leadership of Mrs. Merkel campaigned to increase VAT by 2% to lower non-wage labor costs (see CDU (2005) page 14). The Social Democrats strongly opposed an increase in VAT and instead favored an increase in income tax by 3% for top income earners (see SPD (2005) page 39). The Greens and Liberals also strongly opposed an increase in VAT. The Liberals, for example, promised to decrease the general tax burden by EUR 19bn.

The 2005 general election was a close election. A few days before the election, most polling institutes predicted a victory of a coalition between Christian Democrats and Liberals by a tight margin. Eleven days before the election, the polling institute Infratest Dimap predicted a vote share of 41% for the Christian Democrats, 34% for the Social Democrats, 8.5% for the Left, 7% for the Greens, and 6.5% for the Liberals.[21] Neither of the two blocks – Christian Democrats and Liberals on the one hand and Social Democrats and Greens on the other hand – had a majority in pools before the elections. In the actual election on September 18, 2005, the Christian Democrats gained 35.2% electoral support; the Social Democrats, 34.2%; the Liberals, 9.8%; the Left, 8.7%; and the Greens, 8.1%. Neither the Christian Democrats nor the Social Democrats were able to form a "small" coalition with their preferred coalition partner (Liberals and Greens, respectively). Finally, the Christian Democrats and Social Democrats formed a "grand" coalition and decided to increase VAT by 3%, lower non-wage labor costs by 1%, and use the additional tax revenue to consolidate the federal budget. The opposition parties and popular press claimed election fraud and criticized the new administration fiercely. The online appendix contains press clippings commenting on the VAT policy of the coalition (see Section III of the online appendix).

While the Christian Democrats campaigned to increase VAT by 2% to lower indirect taxes, all other parties strongly opposed raising VAT, including their preferred coalition

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[21]See http://www.infratest-dimap.de/en/umfragen-analysen/bundesweit/sonntagsfrage/.

partner, the Liberals. At the same time, the outcome of the election was unclear until the actual election. A VAT increase by 3% for fiscal consolidation was therefore certainly unexpected. Figure 2 is direct evidence that households did not expect higher inflation: households' inflation expectation did not increase until December 2005 after the new administration announced its plans to increase VAT.

VII   Concluding Remarks

We document a positive cross-sectional association between households' inflation expectations and their willingness to purchase durable consumption goods using novel German survey data. Households that expect higher inflation are 8% more likely to have a positive attitude toward buying durable consumption goods compared to households that expect constant or decreasing inflation. The German setting allows the use of the unexpected announcement of a VAT increase in 2005 as an exogenous shock to inflation expectations, which we exploit for identification. We use households in other European countries to form a control group not exposed to the shock. This difference-in-differences analysis confirms our baseline finding.

The effect of inflation expectations on consumption behavior is stronger for more educated, working-age, high-income, and urban households and builds up in 2006 after the announcement and before the effectiveness of the VAT increase. Our results provide the first empirical evidence using survey data at the household level that temporarily higher inflation expectations might stimulate consumption expenditure in a fixed nominal interest rate environment, such as during a liquidity trap or in a currency union.

The heterogeneous marginal effect of inflation expectations on consumption behavior across households, and the temporal buildup of the effect in 2006, may represent major impediments to the transmission of economic and monetary policies that target households' consumption and savings behaviors and might result in unintended consequences such as a redistribution of wealth. Future studies should examine which household characteristics, such as limited attention or cognitive abilities, hinder households from updating expectations about future macroeconomic variables to policy interventions.

References

Aguiar, M. and E. Hurst (2005). Consumption versus expenditure. *Journal of Political Economy 113*(5), 919–948.

Aruoba, S. B. and F. Schorfheide (2011). Sticky prices versus monetary frictions: An estimation of policy trade-offs. *American Economic Journal: Macroeconomics 3*(1), 60–90.

Ascari, G., L. Phaneuf, and E. Sims (2015). On the welfare and cyclical implications of moderate trend inflation. Technical report, National Bureau of Economic Research.

Atkinson, A. B. and J. Micklewright (1983). On the reliability of income data in the family expenditure survey 1970-1977. *Journal of the Royal Statistical Society. Series A (General) 146*(1), 33–61.

Attanasio, O. P. and G. Weber (1993). Consumption growth, the interest rate and aggregation. *The Review of Economic Studies 60*(3), 631–649.

Bachmann, R., T. O. Berg, and E. Sims (2015). Inflation expectations and readiness to spend: cross-sectional evidence. *American Economic Journal: Economic Policy 7*(1), 1–35.

Baker, S. R., N. Bloom, and S. J. Davis (2014). Measuring economic policy uncertainty. *Unpublished Manuscript, Stanford University*.

Ball, L. (2013). The case for four percent inflation. *Central Bank Review 13*(2), 17–31.

Binder, C. (2015). Consumer inflation uncertainty and the macroeconomy: evidence from a new micro-level measure. *Unpublished Manuscript, UC Berkeley*.

Blanchard, O., G. Dell'Ariccia, and P. Mauro (2010). Rethinking macroeconomic policy. *Journal of Money, Credit and Banking 42*(6), 199–215.

Bloom, N. (2009). The impact of uncertainty shocks. *Econometrica 77*(3), 623–685.

Burke, M. A. and A. Ozdagli (2014). Household inflation expectations and consumer spending: evidence from panel data. *Unpublished Manuscript, Federal Reserve Bank of Boston 13*(25), 1–43.

Campbell, J. Y. (2006). Household finance. *The Journal of Finance 61*(4), 1553–1604.

Campbell, J. Y. and N. G. Mankiw (1989). Consumption, income and interest rates: Reinterpreting the time series evidence. In *NBER Macroeconomics Annual 1989, Volume 4*, pp. 185–216. MIT Press.

Carvalho, C. and F. Nechio (2014). Do people understand monetary policy? *Journal of Monetary Economics 66*, 108–123.

Cashin, D. and T. Unayama (2015). Measuring intertemporal substitution in consumption: evidence from a VAT increase in Japan. *Review of Economics and Statistics (forthcoming)*.

CDU (2005). Deutschlands Chancen nutzen. Wachstum. Arbeit. Sicherheit. *Electoral Manifest*.

Christiano, L., M. Eichenbaum, and S. Rebelo (2011). When is the government spending multiplier large? *Journal of Political Economy 119*(1), 78–121.

Coibion, O. and Y. Gorodnichenko (2012). What can survey forecasts tell us about information rigidities? *Journal of Political Economy 120*(1), 116–159.

Coibion, O. and Y. Gorodnichenko (2015). Is the Phillips curve alive and well after all? Inflation expectations and the missing disinflation. *American Economic Journal: Macroeconomics 7*(1), 197–232.

Coibion, O., Y. Gorodnichenko, and J. Wieland (2012). The optimal inflation rate in new keynesian models: Should central banks raise their inflation targets in light of the zero lower bound? *Review of Economic Studies 79*(4), 1371–1406.

Correia, I., E. Farhi, J. P. Nicolini, and P. Teles (2013). Unconventional fiscal policy at

the zero bound. *American Economic Review 103*(4), 1172–1211.

D'Acunto, F., R. Liu, C. Pflueger, and M. Weber (2015). Flexible prices and leverage. *Unpublished manuscript, University of Chicago Booth School of Business*.

Doepke, M. and M. Schneider (2006). Inflation and the redistribution of nominal wealth. *Journal of Political Economy 114*(6), 1069–1097.

Dräger, L. and M. J. Lamla (2013). Anchoring of consumers' inflation expectations: Evidence from microdata. *Unpublished Manuscript, University of Hamburg*.

Eggertsson, G. B. (2006). The deflation bias and committing to being irresponsible. *Journal of Money, Credit and Banking 38*(2), 283–321.

Eggertsson, G. B. (2008). Great expectations and the end of the depression. *The American Economic Review 98*(4), 1476–1516.

Eggertsson, G. B. (2011). What fiscal policy is effective at zero interest rates? In *NBER Macroeconomics Annual 2010, Volume 25*, pp. 59–112. University of Chicago Press.

Eggertsson, G. B. and M. Woodford (2003). The zero bound on interest rates and optimal monetary policy. *Brookings Papers on Economic Activity 34*(1), 139–235.

Farhi, E. and I. Werning (2015). Fiscal multipliers: Liquidity traps and currency unions. *Unpublished Manuscript, MIT*.

Feldstein, M. (2002). The role for discretionary fiscal policy in a low interest rate environment. Technical report, National Bureau of Economic Research.

Gorodnichenko, Y. and M. Weber (2015). Are sticky prices costly? Evidence from the stock market. *American Economic Review (forthcoming)*.

Hall, R. and S. Woodward (2008, December 11). Measuring the effect of infrastructure spending on GDP, *Financial Crisis and Recession* (blog).

Hall, R. E. (2011). The long slump. *American Economic Review 101*(2), 431–69.

Hausman, J. K. and J. F. Wieland (2014). Abenomics: preliminary analysis and outlook. *Brookings Papers on Economic Activity 2014*(1), 1–63.

Hilscher, J., A. Raviv, and R. Reis (2014). Inflating away the public debt? An empirical assessment. Technical report, National Bureau of Economic Research.

Hurd, M. D. and S. Rohwedder (2012). Measuring total household spending in a monthly internet survey: Evidence from the American Life Panel. Technical report, National Bureau of Economic Research.

Ichiue, H. and S. Nishiguchi (2015). Inflation expectations and consumer spending at the zero bound: micro evidence. *Economic Inquiry 53*(2), 1086–1107.

Jalil, A. and G. Rua (2015). Inflation expectations and recovery from the depression in 1933: Evidence from the narrative record. *Unpublished Manuscript, Federal Reserve Board*.

Jonung, L. (1981). Perceived and expected rates of inflation in Sweden. *The American Economic Review 71*(5), 961–968.

Kaplan, G., G. L. Violante, and J. Weidner (2014). The wealthy hand-to-mouth. Technical report, National Bureau of Economic Research.

Krugman, P. R. (1998). It's baaack: Japan's slump and the return of the liquidity trap. *Brookings Papers on Economic Activity 1998*(2), 137–205.

Lusardi, A. and O. S. Mitchell (2011). Financial literacy and retirement planning in the United States. *Journal of Pension Economics and Finance 10*(4), 509–525.

Malmendier, U. and S. Nagel (2009). Learning from inflation experiences. *Unpublished manuscript, UC Berkeley*.

Mian, A., K. Rao, and A. Sufi (2013). Household balance sheets, consumption, and the economic slump. *The Quarterly Journal of Economics 128*(4), 1687–1726.

Mishkin, F. S. (2011). Monetary policy strategy: lessons from the crisis. Technical report,

National Bureau of Economic Research.

Pástor, L. and P. Veronesi (2013). Political uncertainty and risk premia. *Journal of Financial Economics 110*(3), 520–545.

Piazzesi, M. and M. Schneider (2009). Momentum traders in the housing market: survey evidence and a search model. *The American Economic Review 99*(2), 406–411.

Romer, C. D. and D. H. Romer (2010). The macroeconomic effects of tax changes: estimates based on a new measure of fiscal shocks. *The American Economic Review 100*(3), 763–801.

Romer, C. D. and D. H. Romer (2013). The missing transmission mechanism in the monetary explanation of the Great Depression. *The American Economic Review 103*(3), 66–72.

SPD (2005). Vertrauen in Deutschland. Das Wahlmanifest der SPD. *Electoral Manifest*.

Taylor, J. B. (2013, January 28). Fed policy is a drag on the economy. *Wall Street Journal*.

Weber, M. (2015). Nominal rigidities and asset pricing. *Unpublished manuscript, University of Chicago Booth School of Business*.

Werning, I. (2012). Managing a liquidity trap: monetary and fiscal policy. *Unpublished Manuscript, MIT*.

Woodford, M. (2011). Simple analytics of the government expenditure multiplier. *American Economic Journal: Macroeconomics 3*(1), 1–35.

Zeldes, S. P. (1989). Consumption and liquidity constraints: an empirical investigation. *The Journal of Political Economy 97*(2), 305–346.

Figure 2: **Expected Increase in Inflation and Average Readiness to Spend on Durables**
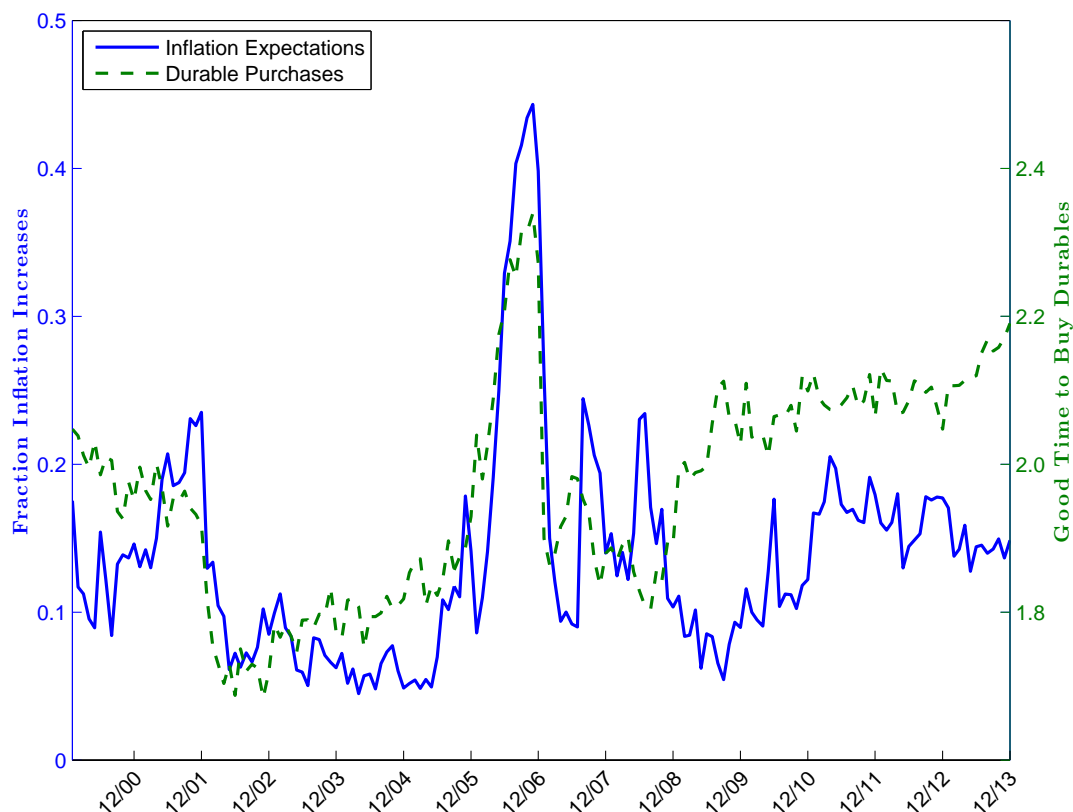
This figure plots average monthly inflation expectation (blue line, left y axis) and the average monthly readiness to purchase durables (green dashed line, right y axis) over time. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households how consumer prices will evolve in the next twelve months compared to the previous twelve months and whether it is a good time to purchase durables given the current economic conditions. We create a dummy variable which equals 1 when a household expects inflation to increase. Higher values correspond to better times to purchase durables. The sample period is January 2000 to December 2013 for a total of fourteen years.

Figure 3: **Time Series of CPI Inflation Rate**
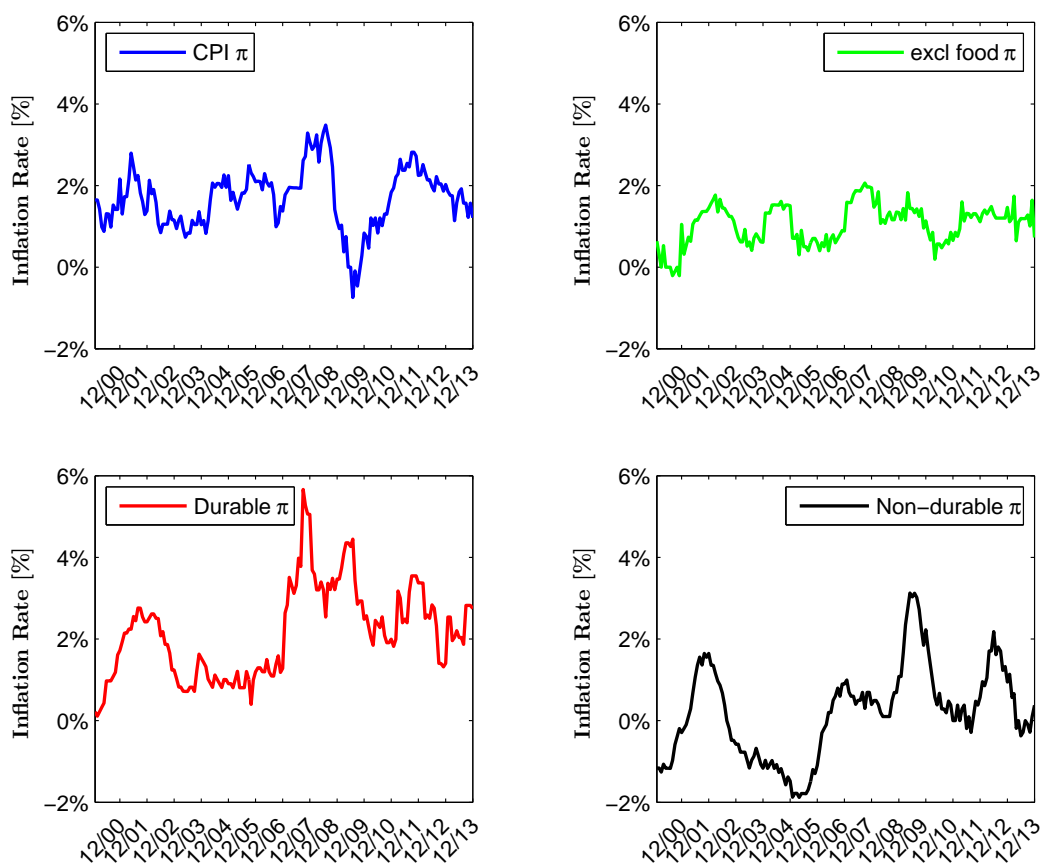
This figure plots the monthly time series of the German consumer price (CPI) inflation rate π in percent at an annual rate. The top left panel plots the harmonized overall consumer price inflation rate. The top right panel plots all items CPI excluding food and energy. The bottom left panel plots major durables CPI. The bottom right panel plots the non-durable households goods CPI. The sample period is January 2000 to December 2013 for a total of fourteen years.

Figure 4: **Standardized Lagged Inflation Expectations and CPI Inflation Rate**
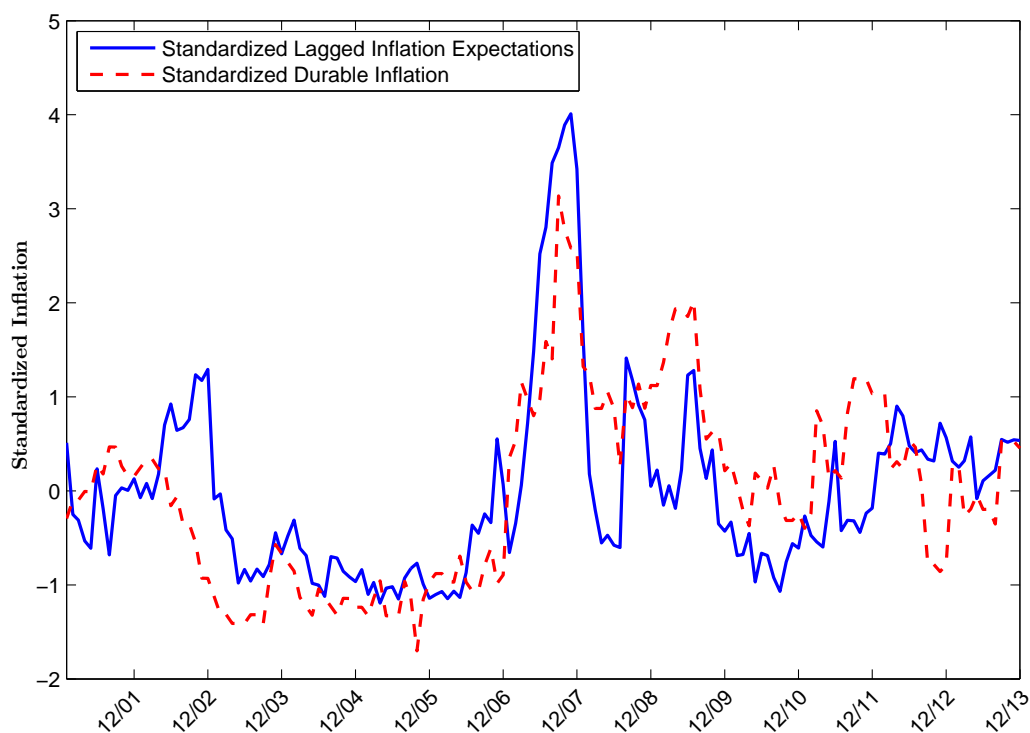
This figure plots the monthly time series of the one-year lagged standardized average monthly inflation expectation and the harmonized major durables consumer price inflation rate in percent at an annual rate. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct inflation expectations. GfK asks a representative sample of 2,000 households how consumer prices will evolve in the next twelve months compared to the previous twelve months. We create a dummy variable which equals 1 when a household expects inflation to increase. The sample period is January 2000 to December 2013 for a total of fourteen years.

Figure 5: **Expected Increase in Inflation: Germany and European Union**
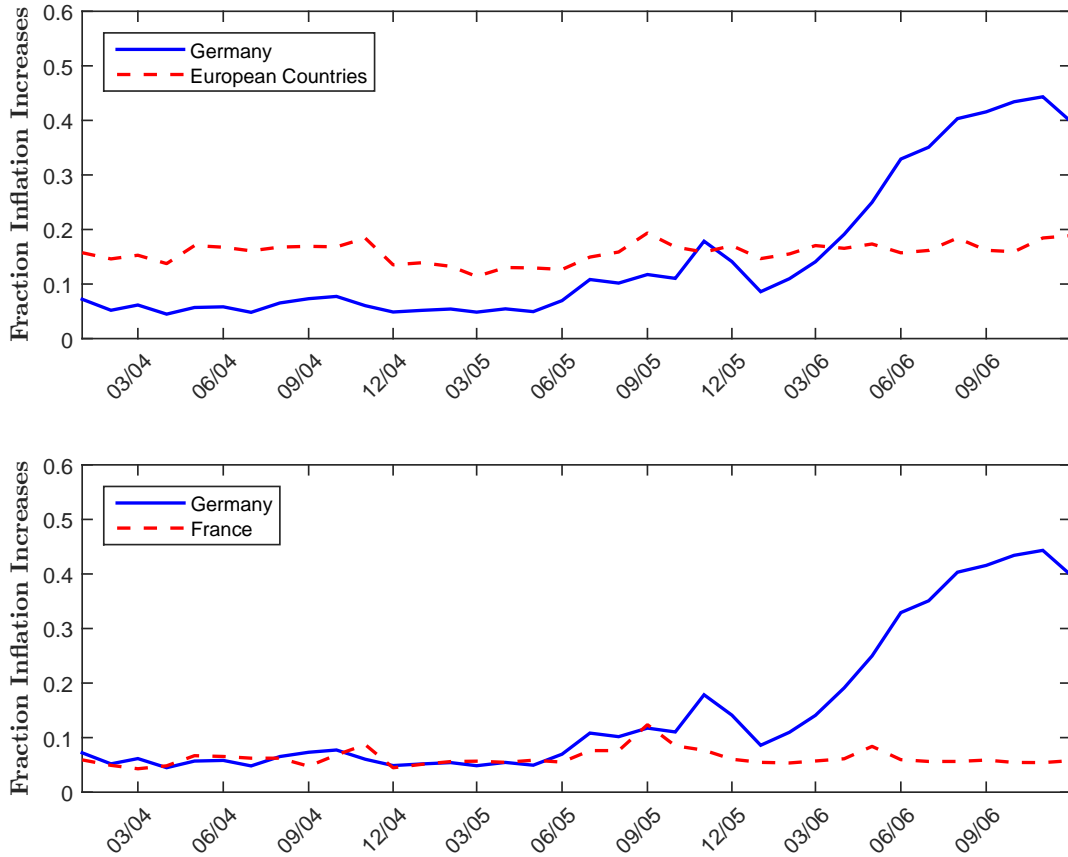
This figure plots average monthly inflation expectation over time. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct the variables for Germany and similar data from national statistical agencies and GfK subsidiaries for the United Kingdom, Sweden, and France. GfK asks a representative sample of 2,000 households how consumer prices will evolve in the next twelve months compared to the previous twelve months. We create a dummy variable which equals 1 when a household expects inflation to increase. The sample period is January 2004 to December 2006 for a total of three years.

Figure 6: **Readiness to Spend on Durables: Germany and European Union**
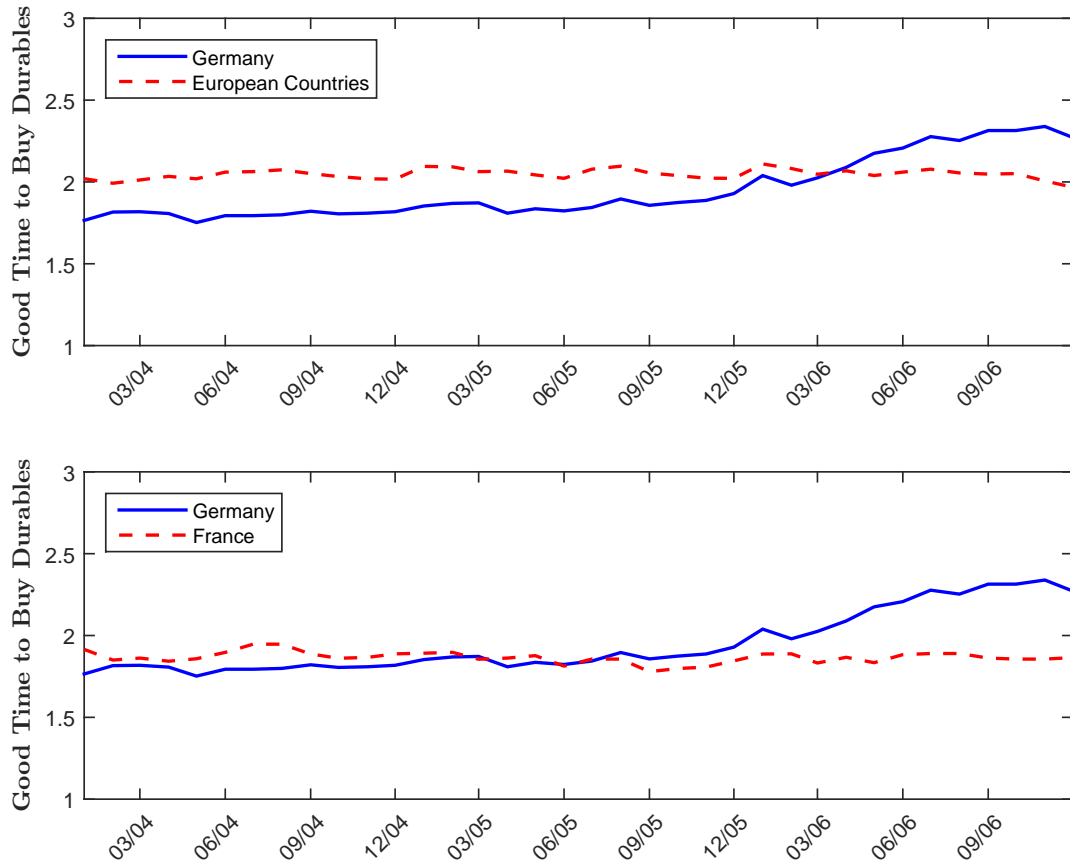
This figure plots the average monthly readiness to purchase durables over time. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables for Germany and similar data from national statistical agencies and GfK subsidiaries for the United Kingdom, Sweden, and France. GfK asks a representative sample of 2,000 households whether it is a good time to purchase durables given the current economic conditions. Higher values correspond to better times to purchase durables. The sample period is January 2004 to December 2006 for a total of three years.

Figure 7: **Common Support of Treated and Matched Households**
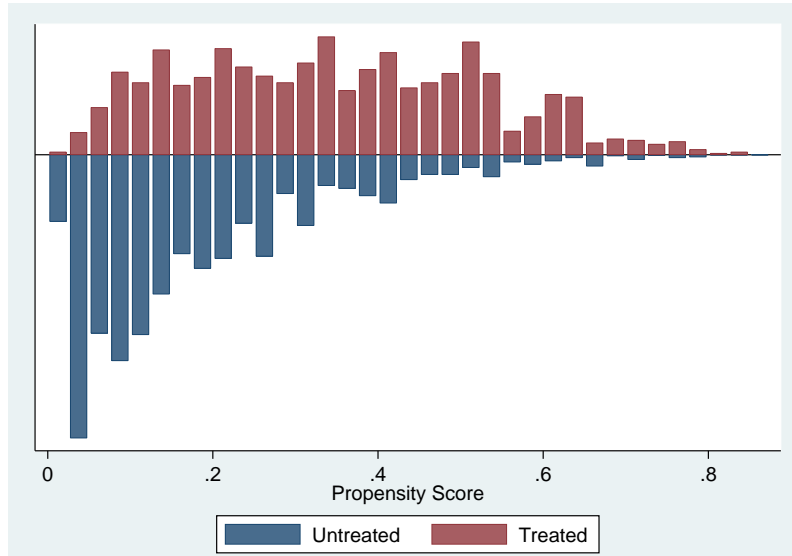
This figure plots the number of households in the untreated (blue) and treated (red) group across 40 equal-length partitions of the distribution of the propensity score in the baseline month (June 2005) for the difference-in-differences analysis. We estimate the propensity score with a logit specification whose outcome variable is the indicator for whether a household is in the treated or control group, and the controls are the observables we use for the matching of households: age group, gender, education group, income group, and social status group. The treated group includes 1,431 German households, whereas the control group includes 5,108 households from the UK, France, and Sweden.

Figure 8: **Household Expectations**
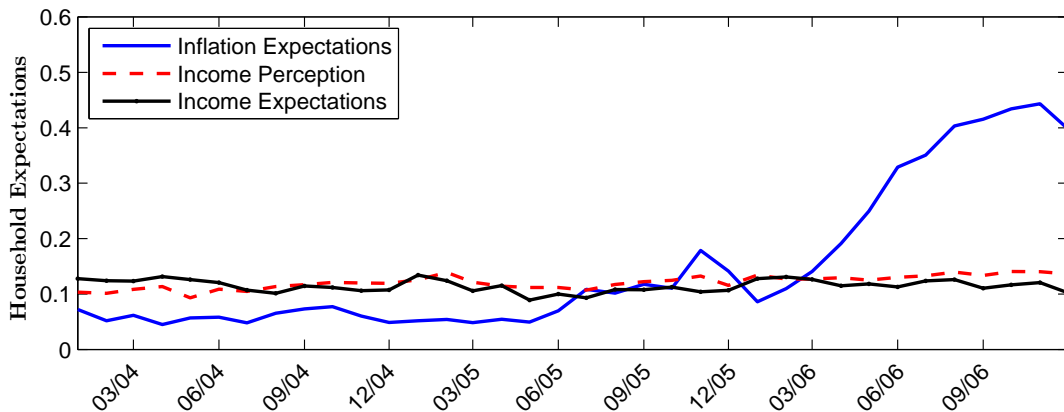
This figure plots average monthly inflation expectation, perception of past income and expectation of future income over time. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct those variables. GfK asks a representative sample of 2,000 households how consumer prices will evolve in the next twelve months compared to the previous twelve months, how the financial situation of the household evolved during the past twelve months, and how the financial situation of the household will evolve during the next twelve months. We create dummy variables which equal 1 when a household expects inflation to increase, perceives an improved financial situation, and expects an improved financial situation. The sample period is January 2004 to December 2006 for a total of three years.

Figure 9: **Readiness to Spend: German vs. Foreign Households**

This figure plots β_m coefficient (solid line) of $\Delta Dur_{i,06/2005 \to m} = \alpha + \beta_m \times VATshock_i + \Delta X'_{i,06/2005 \to m} \times \gamma + \epsilon_i$ and two standard deviation error bands (dashed line). $\Delta Dur_{i,06/2005 \to m}$ is the difference in the willingness to spend on durable goods between month m and June 2005, $VATshock_i$ is an indicator which equals 1 if the household was exposed to the VAT shock, β_m captures the effect of the VAT shock on the willingness to buy durables for household i in month m, and $\Delta X'_{i,06/2005 \to m}$ is the difference in a set of observables between month m and the baseline month. We use the micro data underlying the Directorate-General for Economic and Financial Affairs of the European Commission harmonized consumer surveys to construct these variables.

Figure 10: **Readiness to Spend and Inflation Expectations Over Time**
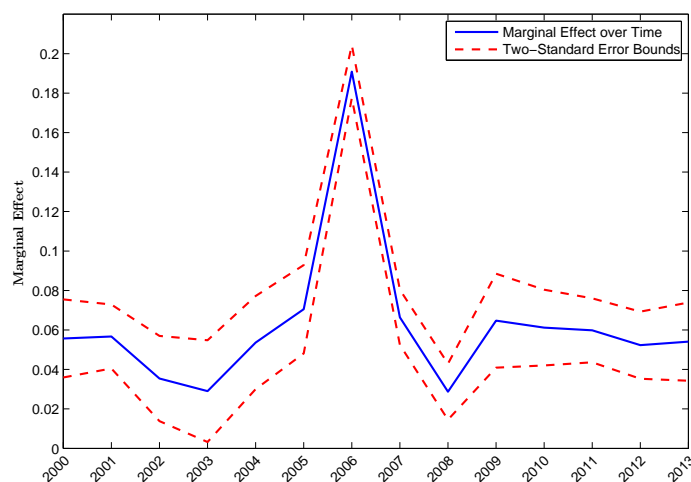
This figure plots the average marginal effect of inflation expectation on households' readiness to purchase durable goods of a multinomial logit regression over time and two standard deviation error bands. Inflation expectation is a dummy variable which equals 1 when a household replies that inflation will increase. The same covariates as in Table 11 were added. We use the micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years.

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Figure 11: **Average Readiness to Spend on Durables and Real Durable Consumption Growth**
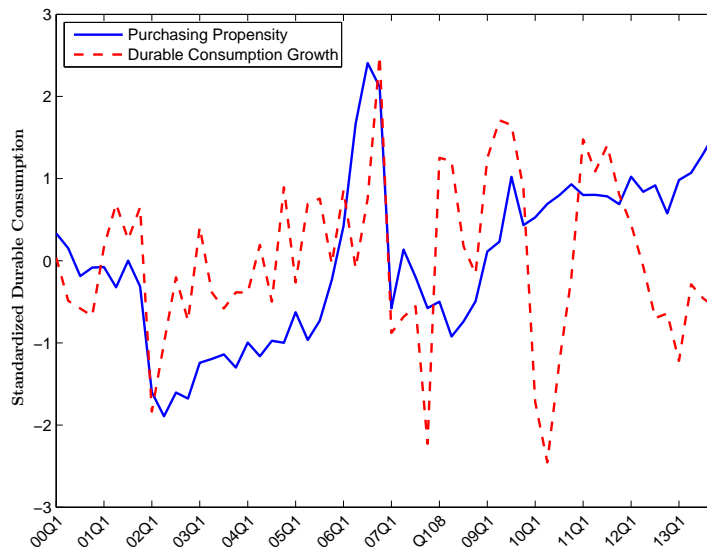
This figure plots average monthly readiness to purchase durables over time and the realized real durable consumption growth. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct the readiness to purchase durables index. GfK asks a representative sample of 2,000 households whether it is a good time to purchase durables given the current economic conditions. Higher values correspond to better times. We use the end of quarter value to get a quarterly time series. The sample period is first quarter 2000 to fourth quarter 2013 for a total of fourteen years.

Figure 12: **Cyclical Readiness to Spend on Durables and Real Durable Consumption**
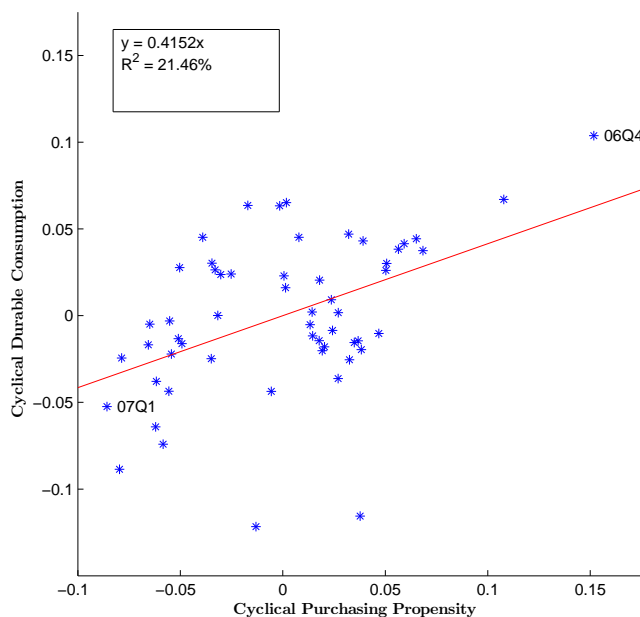
This figure is a scatter plot of the cyclical components of the average monthly readiness to purchase durables over time and of the natural logarithm of the real durable consumption at the quarterly frequency. We use a Hodrick–Prescott filter with smoothing parameter $\lambda = 1,600$ to estimate the cyclical component. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct the readiness to purchase durables index. GfK asks a representative sample of 2,000 households whether it is a good time to purchase durables given the current economic conditions. Higher values correspond to better times. We use the end of quarter value to get a quarterly time series. The sample period is fist quarter 2000 to fourth quarter 2013 for a total of fourteen years.

Table 1: **Descriptive Statistics**

This table reports descriptive statistics for households' inflation expectations and readiness to purchase durables in Panel A, household demographics in Panel B, household expectations and perceptions in Panel C, and macroeconomics aggregates in Panel D. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to measure the variables in Panel A to Panel C. GfK asks a representative sample of 2,000 households questions about general economic expectations, income expectations, and willingness to buy in order to create an aggregate measure labeled "consumer climate." For Panel A, GfK asks whether it is a good time to purchase durables given the current economic conditions. GfK also asks how consumer prices will evolve in the next twelve months compared to the previous twelve months. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. GfK also asks how consumer prices evolved in the previous twelve months. See the online appendix for data sources and detailed data definitions. The sample period is January 2000 to December 2013 for a total of fourteen years.

		Nobs	Mean	Std	Min	p25	p50	p75	Max
Panel A: Inflation expectations and readiness to spend									
Readiness to buy durables	Good time	326,011	20.26%						
	Neither		56.15%						
	Bad time		23.59%						
Inflation increase		355,400	13.77%	0.34	0	0	0	0	1
Inflation perception	increased substantially	348,521	28.06%						
	increased somewhat		29.69%						
	increased slightly		27.80%						
	remained the same		13.23%						
	decreased		1.23%						
Panel B: Household demographics									
Sex	Male	355,400	53.83%						
	Female		46.17%						
Age		355,400	46.07	17.49	14	33	45	60	99
Education	Hauptschule	350,093	42.74%						
	Realschule		38.96%						
	Gymnasium		10.34%						
	Universitaet		7.97%						
Household members		355,400	2.49	1.17	1	2	2	3	5
City	City<9,999	355,400	28.24%						
	9,999<=City<49,999		34.46%						
	50,000<=City<199,999		15.66%						
	199,999<=City		21.64%						
Kids at home	yes	355,400	26.88%						
	no		73.12%						
Number of kids		352,256	0.42	0.78	0	0	0	1	4
Net income (inc)	inc< 1,000	270,592	43.60%						
	1,000<=inc<1,500		28.66%						
	1,500<=inc<2,500		20.81%						
	2,500<=inc		6.93%						
Panel C: Household expectations and perceptions									
Past Financial situation	Improved substantially	351,486	0.02						
	Improved somewhat		0.12						
	Identical		0.61						
	Worsened somewhat		0.21						
	Worsened substantially		0.05						
Financial outlook	Improves substantially	341,105	0.01						
	Improves somewhat		0.11						
	Identical		0.73						
	Worsens somewhat		0.13						
	Worsens substantially		0.02						
Current financial situation	Save a lot	345,683	0.04						
	Save little		0.39						
	Don't save		0.41						
	Dissave		0.13						
	Take on debt		0.02						
Expected unemployment rate	Increases substantially	342,563	14.10						
	Increases somewhat		32.24						
	Identical		35.28						
	Decreases somewhat		17.27						
	Decreases a lot		1.12						

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Table 1: **Descriptive Statistics continued**

Continued from previous page.

	Nobs	Mean	Std	Min	p25	p50	p75	Max
Panel D: Macroeconomic aggregates								
CPI Inflation	355,400	1.61%	0.65%	−0.50%	1.21%	1.64%	1.98%	3.27%
Unemployment rate	355,400	8.99	1.61	6.40	7.60	9.00	10.30	12.70
European Uncertainty Index	355,400	134.25	62.78	46.61	83.54	116.53	170.93	331.54
German Uncertainty Index	355,400	119.79	57.60	28.43	79.13	106.68	144.33	377.84
MRO rate	355,400	3.09	1.53	0.25	1.00	4.25	4.25	4.25
Dax	355,400	5840	1511	2424	4769	5970	6949	9552
Volatility DAX	355,400	22.79	8.67	11.24	16.88	20.62	25.91	57.96
Industrial Production Growth	355,400	1.60%	6.97%	−27.25%	0.00%	2.41%	5.65%	14.55%
Oil Price	355,400	63.42	33.66	18.71	29.80	58.76	94.99	132.72

Table 2: **Inflation Expectations and Readiness to Spend: Baseline**

This table reports the average marginal effects of a multinomial logit regression. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics, household expectations, and contemporaneous macroeconomic variables where indicated. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level (56 clusters). The sample period is January 2000 to December 2013.

	Bad time (1)	Good time (2)	Bad time (3)	Good time (4)	Bad time (5)	Good time (6)	Bad time (7)	Good time (8)	Bad time (9)	Good time (10)
Inflation increase	0.0461***	0.0624***	0.0225**	0.0749***	0.0242***	0.0755***	−0.0078	0.0888***	0.0051	0.0875***
	(0.0109)	(0.0162)	(0.0091)	(0.0152)	(0.0094)	(0.0156)	(0.0083)	(0.0160)	(0.0073)	(0.0116)
Past Inflation			0.0632***	−0.0342***	0.0570***	−0.0300***	0.0376***	−0.0200***	0.0331***	−0.0114***
			(0.0048)	(0.0028)	(0.0045)	(0.0030)	(0.0033)	(0.0035)	(0.0020)	(0.0023)
Demographics					X	X	X	X	X	X
Individual expectations							X	X	X	X
Macro aggregates									X	X
Pseudo R^2	0.0031		0.0161		0.0292		0.0654		0.0762	
Nobs	326,011		321,496		244,497		219,799		219,799	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table 3: **Inflation Expectations and Readiness to Spend: Idiosyncratic Expectations**

This table reports the average marginal effects of a multinomial logit regression for different subsets of households. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) to (4) split the sample based on the median perception of households' financial situation over the last twelve months. Columns (5) to (8) split the sample based on the median expectation of households' financial situation over the next twelve months.

	Positive financial perception		Negative financial perception		Positive financial expectation		Negative financial expectation	
	Bad time	Good time	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflation increase	-0.0009	0.0829***	0.0276***	0.0718***	0.0026	0.0745***	0.0261***	0.0747***
	(0.0081)	(0.0153)	(0.0095)	(0.0155)	(0.0099)	(0.0128)	(0.0095)	(0.0159)
Past Inflation	0.0351***	-0.0362***	0.0664***	-0.0326***	0.0588***	-0.0397***	0.0639***	-0.0332***
	(0.0034)	(0.0039)	(0.0049)	(0.0027)	(0.0060)	(0.0039)	(0.0046)	(0.0028)
Pseudo R^2	0.0082		0.0173		0.013		0.0168	
Nobs	45,085		276,411		49,580		271,916	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table 4: **Inflation Expectations and Readiness to Spend: matched sample**

This table reports the average marginal effects of a multinomial logit regression. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We use the confidential micro data underlying the Directorate-General for Economic and Financial Affairs of the European Commission harmonized consumer surveys to construct these variables. The surveys ask representative samples of households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. In this table we study the "it is a good time" outcome. Standard errors are clustered at the quarter level. The sample period is January 2004 to December 2012 for France, January 2004 to April 2015 for Sweden, and January 2005 to April 2015 for the United Kingdom. We use the longest sample available for each country.

	France (1)	Sweden (2)	UK (3)
Inflation Increase	0.0265***	0.0381***	0.0465***
	(0.0037)	(0.0053)	(0.0061)
Past Inflation	−0.0163***	−0.0315***	−0.0061
	(0.0015)	(0.0055)	(0.0019)
Demographics	X	X	X
Individual expectations	X	X	X
Pseudo R^2	0.0445	0.0288	0.0508
Nobs	163,419	176,829	113,774

Standard errors in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

Table 5: **Balancing of Variables - German and Foreign Households (June 2005)**

This table describes the balancing of the observables we use to match treated and control households in the baseline month (June 2005) for the difference-in-differences analysis. For each variable, the first column reports the mean within the pool of control households (UK, France, and Sweden). The second column reports the mean within the pool of treated German households. The third and fourth column report the results for a two-sided t-test whose null hypothesis is that the means across groups are equal. The two pools are constituted by 1,431 households (treated) and 5,108 households (control) that overlap on the same common support.

Variable	Mean Control	Mean Treated	t-stat	p-value
Age (four groups)	2.33	2.30	1.01	0.31
Male	0.47	0.47	0.22	0.82
Education (three groups)	1.77	1.81	-1.15	0.25
Income (four quartiles)	2.31	2.28	0.8	0.42
Social Status (three groups)	2.60	2.61	-0.37	0.71
Obs in common support	5,108	1,431		

Table 6: **Inflation Expectations and Readiness to Spend: by Education**

This table reports the average marginal effects of a multinomial logit regression for different levels of education. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics and household expectations. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) restrict the sample to respondents with a Hauptschule degree (nine years of schooling), columns (3) and (4) to respondents with a Realschule degree (ten years of schooling), columns (5) and (6) to respondents with a Gymnasium degree (thirteen years of schooling), and columns (7) and (8) to respondents with a university degree.

	Hauptschule		Realschule		Gymnasium		University	
	Bad time	Good time	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflation increase	0.0108	0.0689***	−0.0117	0.0985***	−0.0342***	0.0979***	−0.0387***	0.1128***
	(0.0105)	(0.0152)	(0.0080)	(0.0162)	(0.0118)	(0.0225)	(0.0080)	(0.0188)
Past Inflation	0.0414***	−0.0194***	0.0373***	−0.0188***	0.0319***	−0.0264***	0.0252***	−0.0214***
	(0.0034)	(0.0032)	(0.0034)	(0.0038)	(0.0047)	(0.0048)	(0.0045)	(0.0057)
Demographics	X	X	X	X	X	X	X	X
Individual expectations	X	X	X	X	X	X	X	X
Pseudo R^2	0.0673		0.0635		0.0415		0.0508	
Nobs	89,991		88,315		23,282		18,211	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

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Table 7: **Inflation Expectations and Readiness to Spend: Age**

This table reports the average marginal effects of a multinomial logit regression for different age groups. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics and household expectations. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) restrict the sample to respondents below age 21, columns (3) and (4) to respondents between age 21 and 35, columns (5) and (6) to respondents between age 35 and 50, columns (7) and (8) to respondents between age 50 and 65, and columns (9) and (10) to respondents above age 65.

| | Age ≤ 21 | | 21 < Age ≤ 35 | | 35 < Age ≤ 50 | | 50 < Age ≤ 65 | | 65 < Age | |
| | Bad time | Good time | Bad time | Good time | Bad time | Good time | Bad time | Good time | Bad time | Good time |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Inflation increase	−0.0089	0.0934***	−0.0111	0.0906***	−0.0087	0.0938***	−0.0136	0.0910***	0.0038	0.0694***
	(0.0134)	(0.0211)	(0.0099)	(0.0191)	(0.0084)	(0.0173)	(0.0089)	(0.0147)	(0.0095)	(0.0134)
Past Inflation	0.0397***	−0.0223***	0.0367***	−0.0179***	0.0361***	−0.0201***	0.0362***	−0.0218***	0.0420***	−0.0216***
	(0.0058)	(0.0043)	(0.0040)	(0.0044)	(0.0034)	(0.0034)	(0.0036)	(0.0038)	(0.0037)	(0.0037)
Demographics	X	X	X	X	X	X	X	X	X	X
Individual expectations	X	X	X	X	X	X	X	X	X	X
Pseudo R²	0.0447		0.0664		0.0745		0.0668		0.0639	
Nobs	14,913		47,702		70,004		52,186		34,994	

Standard errors in parentheses
*p < 0.10, **p < 0.05, ***p < 0.01

Table 8: **Inflation Expectations and Readiness to Spend: by City Size**

This table reports the average marginal effects of a multinomial logit regression for different city sizes. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics and household expectations. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) restrict the sample to respondents living in cities with less than 1,999 inhabitants, columns (3) and (4) to respondents living in cities between 1,999 and 19,999 inhabitants, columns (5) and (6) to respondents living in cities between 19,999 and 99,999 inhabitants, and columns (7) and (8) to respondents living in cities with more than 99,999 inhabitants.

	City ≤ 1,999		1,999 < City ≤ 19,999		19,999 < City ≤ 99,999		99,999 < City	
	Bad time	Good time	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflation increase	−0.0123	0.0581***	0.0018	0.0847***	0.0002	0.0854***	−0.0244***	0.1013***
	(0.0132)	(0.0199)	(0.0086)	(0.0151)	(0.0102)	(0.0217)	(0.0092)	(0.0133)
Past Inflation	0.0414***	−0.0196***	0.0298***	−0.0187***	0.0414***	−0.0264***	0.0415***	−0.0177***
	(0.0052)	(0.0055)	(0.0036)	(0.0034)	(0.0037)	(0.0038)	(0.0040)	(0.0042)
Demographics	X	X	X	X	X	X	X	X
Individual expectations	X	X	X	X	X	X	X	X
Pseudo R^2	0.0738		0.0632		0.0721		0.0656	
Nobs	17,833		74,937		59,674		67,355	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table 9: **Inflation Expectations and Readiness to Spend: Income**

This table reports the average marginal effects of a multinomial logit regression by net income. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. Standard errors are clustered at the quarter–year level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) restrict the sample to respondents with monthly income below EUR 1,000, columns (3) and (4) to respondents with monthly net income between EUR 1,000 and EUR 2,500, and columns (5) and (6) to respondents with monthly net income above EUR 2,500.

	Income $\leq$ 1,000		1,000 < Income $\leq$ 2,500		2,500 < Income	
	Bad time (1)	Good time (2)	Bad time (3)	Good time (4)	Bad time (5)	Good time (6)
Inflation increase	−0.0099	0.0898***	−0.0055	0.0851***	−0.0109	0.1048***
	(0.0105)	(0.0168)	(0.0078)	(0.0151)	(0.0077)	(0.0203)
Past Inflation	0.0423***	−0.0194***	0.0351***	−0.0192***	0.0277***	−0.0299***
	(0.0036)	(0.0037)	(0.0032)	(0.0036)	(0.0043)	(0.0045)
Demographics	X	X	X	X	X	X
Individual expectations	X	X	X	X	X	X
Pseudo R^2	0.0655		0.0596		0.0504	
Nobs	96,555		112,710		16,477	

Standard errors in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

Table 10: **Inflation Expectations and Readiness to Spend: Contrained**

This table reports the average marginal effects of a multinomial logit regression by financial constraints. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) restrict the sample to respondents who report that they currently save or save a lot, and columns (3) and (4) to respondents who report that they dis-save or take on debt.

	Unconstrained		Constrained	
	Bad time (1)	Good time (2)	Bad time (3)	Good time (4)
Inflation Increase	−0.0057	0.1042***	−0.0105	0.0747***
	(0.0066)	(0.0180)	(0.0101)	(0.0146)
Past Inflation	0.0345***	−0.0250***	0.0388***	−0.0159***
	(0.0027)	(0.0038)	(0.0040)	(0.0035)
Demographics	X	X	X	X
Individual expectations	X	X	X	X
Pseudo R^2	0.0615		0.0608	
Nobs	98,344		121,455	

Standard errors in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

Table 11: **Inflation Expectations and Readiness to Spend: VAT Experiment**

This table reports the average marginal effects of a multinomial logit regression for different time periods. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics and household expectations. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) restrict the sample to 11/2005 – 12/2006 to study the effect of the unexpected VAT increase in 2007 which was announced in November 2005, columns (3) and (4) exclude the period 11/2005 – 12/2006, and columns (5) and (6) restrict the sample to 2010 to 2012 to study the effect of the European sovereign debt crisis.

	11/2005 – 12/2006		excluding 11/2005 – 12/2006		2010–2012	
	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)
Inflation increase	$-0.0594***$	$0.1909***$	0.0049	$0.0547***$	0.0058	$0.0576***$
	(0.0062)	(0.0067)	(0.0053)	(0.0031)	(0.0043)	(0.0052)
Past Inflation	$0.0160***$	$0.0206***$	$0.0384***$	$-0.0146***$	$0.0237***$	$-0.0129***$
	(0.0027)	(0.0033)	(0.0034)	(0.0021)	(0.0021)	(0.0043)
Demographics	X	X	X	X	X	X
Individual expectations	X	X	X	X	X	X
Pseudo R^2	0.0631		0.0676		0.0466	
Nobs	19,477		200,322		48,982	

Standard errors in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

Online Appendix:
Inflation Expectations and Consumption Expenditure

Francesco D'Acunto, Daniel Hoang, and Michael Weber

Not for Publication

I Survey Questions

Below we report the original survey questions with answer choices for Germany, the English translation, as well as the harmonized surveys from the Directorate-General for Economic and Financial Affairs of the European Commission harmonized consumer surveys used in Section IV for the matching estimator.

A. Germany

Question 1 *Wie hat sich Ihrer Meinung nach die "allgemeine Wirtschaftslage" in Deutschland in den letzten 12 Monaten entwickelt?*

Sie ...

- hat sich wesentlich verbessert
- hat sich etwas verbessert
- ist in etwa gleich geblieben
- hat sich etwas verschlechtert
- hat sich wesentlich verschlechtert
- weiss nicht

Question 2 *Wie haben sich Ihrer Ansicht nach die Verbraucherpreise in den letzten 12 Monaten entwickelt?*

Sie sind ...

- stark gestiegen
- in Massen gestiegen
- leicht gestiegen
- in etwa gleich geblieben
- gesunken
- weiss nicht

Question 3 *Wie werden sich Ihrer Ansicht nach die Verbraucherpreise in den kommenden 12 Monaten im Vergleich zu den letzten 12 Monaten entwickeln?*

Sie werden ...

- staerker als bisher steigen

- etwa im gleichen Masse wie bisher steigen
- weniger stark als bisher steigen
- in etwa gleich bleiben
- gesunken
- weiss nicht

Question 4 *Wie hat sich die finanzielle Lage Ihres Haushaltes in den letzten 12 Monaten entwickelt?*

Sie ...

- hat sich wesentlich verbessert
- hat sich etwas verbessert
- ist in etwa gleichgeblieben
- hat sich etwas verschlechtert
- hat sich wesentlich verschlechtert
- weiss nicht

Question 5 *Wie wird sich Ihrer Ansicht nach die finanzielle Lage Ihres Haushaltes in den kommenden 12 Monaten entwickeln?*

Sie wird ...

- sich wesentlich verbessern
- sich etwas verbessern
- in etwa gleichbleiben
- sich etwas verschlechtern
- sich wesentlich verschlechtern
- weiss nicht

Question 6 *Wie wird sich Ihrer Ansicht nach die allgemeine Wirtschaftslage in Deutschland in den kommenden 12 Monaten entwickeln?*

Sie wird ...

- sich wesentlich verbessern
- sich etwas verbessern
- in etwa gleichbleiben
- sich etwas verschlechtern
- sich wesentlich verschlechtern
- weiss nicht

Question 7 *Wie ist die derzeitige finanzielle Lage Ihres Haushaltes?*

- wir sparen viel
- wir sparen ein wenig
- wir kommen mit unseren finanziellen Mitteln so gerade aus
- wir greifen etwas unsere Ersparnisse an
- wir verschulden uns
- weiss nicht

Question 8 *Glauben Sie, dass es in Anbetracht der allgemeinen Wirtschaft-slage derzeit guenstig ist, groessere Anschaffungen (Moebel, elektrische/elektronische Geraete usw.) zu taetigen?*

- ja, jetzt der Augenblick ist guenstig
- der Augenblick ist weder besonders guenstig noch besonders unguenstig
- nein, der Augenblick ist nicht guenstig
- weiss nicht

Question 10 *Wie wird sich Ihrer Ansicht nach die Zahl der Arbeitslosen in Deutschland in den kommenden 12 Monaten entwickeln?*

Die Zahl wird ...

- stark steigen
- leicht steigen
- in etwa gleich bleiben
- leicht zurueckgehen
- stark zurueckgehen
- weiss nicht

Question 11 *Wollen Sie in den kommenden 12 Monaten fuer groessere Anschaffungen (Moebel, elektrische /elektronische Geraete usw.) mehr oder weniger ausgeben als in den letzten 12 Monaten?*

Ich werde ...

- wesentlich mehr ausgeben
- etwas mehr ausgeben
- in etwa gleich viel ausgeben
- etwas weniger ausgeben
- wesentlich weniger ausgeben
- weiss nicht

Question 12 *Wie wahrscheinlich ist es, dass Sie in den kommenden 12 Monaten Geld sparen werden?*

- sehr wahrscheinlich
- recht wahrscheinlich
- unwahrscheinlich
- sehr unwahrscheinlich
- weiss nicht

Question 13 *Glauben Sie, dass es in Anbetracht der allgemeinen Wirtschaftslage derzeit ratsam ist, zu sparen?*

- ja, auf alle Faelle
- wahrscheinlich ja
- eher nicht
- auf keinen Fall

3

- weiss nicht

Question 1 *How did you perceive the general economic situation in Germany over the last 12 months?*

It ...

- improved substantially
- improved somewhat
- remained about the same
- worsened somewhat
- worsened substantially
- don't know

Question 2 *What is your perception on how consumer prices evolved during the last 12 months?*

They ...

- increased substantially
- increased somewhat
- increased slightly
- remained about the same
- decreased
- don't know

Question 3 *How will consumer prices evolve during the next 12 months compared to the previous 12 months?*

They will ...

- increase more
- increase the same
- increase less
- stay the same
- decrease
- don't know

Question 4 *How did the financial situation of your household evolve during the past 12 months?*

It ...

- improved substantially
- improved somewhat
- remained about the same
- worsened somewhat
- worsened substantially
- don't know

Question 5 *How will the financial situation of your household evolve during the next 12 months?*

It will ...

- improve substantially
- improve somewhat
- remain the same
- worsen slightly
- worsen substantially
- don't know

Question 6 *How will the general economic situation in Germany evolve during the next 12 months?*

It will ...

- improve substantially
- improve slightly
- remain the same
- worsen slightly
- worsen substantially
- don't know

Question 7 *What is the current financial situation of your household?*

- we save a lot
- we save a bit
- we just manage to live from our financial inflows and don't save
- we have to de-save
- we become indebted
- don't know

Question 8 *Given the current economic situation, do you think it's a good time to buy larger items such as furniture, electronic items etc?*

- yes, it's a good time
- the time is neither good nor bad
- no, it's a bad time
- don't know

Question 10 *What is your expectation regarding the number of unemployed people in Germany in the next 12 months?*

It will ...

- increase substantially
- increase somewhat
- remain the same
- decrease somewhat

- decrease a lot
- don't know

Question 11 *Do you plan to spend more money during the next 12 months on larger items such as furniture, electronics, etc compared to the previous 12 months?*

I will ...

- spend substantially more
- spend somewhat more
- spend about the same
- spend somewhat less
- spend substantially less
- don't know

Question 12 *How likely is it that you will save money during the next 12 months?*

- very likely
- quite likely
- unlikely
- very unlikely
- don't know

Question 13 *Given the current economic situation, do you think it's a good time to save right now?*

- yes, it's a good time
- probably yes
- not really
- not at all
- don't know

B. Belgium

Question 1 *Hoe denkt u dat in het algemeen de economische situatie in Belgie in de afgelopen twaalf maanden geevolueerd is?*

Is die ...

- duidelijk beter geworden
- een beetje beter geworden
- hetzelfde gebleven
- een beetje slechter geworden
- merkelijk slechter geworden
- weet niet

Question 2 *En hoe denkt u dat in de komende twaalf maanden de economische situatie in Belgie in het algemeen zal evolueren?*

Zal die ...

- duidelijk beter worden
- een beetje beter worden
- hetzelfde blijven
- iets slechter worden
- duidelijk slechter worden
- weet niet

Question 3 *Vindt u dat in het algemeen de consumptieprijzen in de loop van de laatste twaalf maanden?*

- sterk gestegen zijn
- matig gestegen zijn
- zwak gestegen zijn
- min of meer gelijk gebleven zijn
- gedaald zijn
- weet niet

Question 4 *En wat verwacht u voor de volgende twaalf maanden? Denkt u dat de consumptieprijzen in vergelijking met de afgelopen twaalf maanden ...*

- sterker zullen stijgen
- evenveel zullen stijgen
- minder sterk zullen stijgen
- gelijk zullen blijven
- dalen
- weet niet

Question 5 *Hoe denkt u dat in de komende twaalf maanden de werkloosheid zich in Belgie zal ontwikkelen?*

Zal het aantal werklozen in ons land volgens u ...

- duidelijk stijgen
- een beetje stijgen
- gelijk blijven
- iets dalen
- duidelijk dalen
- weet niet

Question 6 *Als het gaat om de aankoop van duurzame goederen, zoals meubelen, een TV, een wasmachine, een computer ..., vindt u dan, rekening houdend met de algemene economische situatie, dat het momenteel voor de mensen ...*

- een gunstig ogenblik is voor dergelijke aankopen
- niet echt gunstig is, maar ook niet ongunstig
- een ongunstig moment voor dergelijke aankopen
- weet niet

Question 7 *Als het om aankopen gaat zoals meubelen, een TV, enzovoort, wat verwacht u dat er in uw gezin in de komende twaalf maanden zal besteed worden in vergelijking met de afgelopen twaalf maanden?*

- veel meer
- een beetje meer
- even veel
- iets minder
- veel minder
- weet niet

Question 8 *Is de financiele situatie van uw gezin volgens u in de loop van de voorbije twaalf maanden ...*

- duidelijk beter geworden
- iets beter geworden
- ongewijzigd gebleven
- iets slechter geworden
- duidelijk slechter geworden
- weet niet

Question 9 *Hoe zou u de financiele situatie van uw gezin op dit moment het best kunnen omschrijven ...*

- er kan veel worden gespaard
- er kan een beetje worden gespaard
- er kan precies worden rondgekomen
- de spaarmiddelen moeten worden aangesproken
- er moeten schulden worden gemaakt
- weet niet

Question 10 *En wat verwacht u van de financiele situatie van uw gezin in de komende twaalf maanden?*

Die zal in de komende twaalf maanden volgens u, ofwel ...

- duidelijk verbeteren
- iets verbeteren
- ongewijzigd blijven
- iets verslechteren
- duidelijk verslechteren
- weet niet

Question 11 *Denkt u in de komende twaalf maanden geld opzij te kunnen leggen, te kunnen sparen dus?*

- ja zeker en vast
- ja misschien
- waarschijnlijk niet
- zeker en vast niet
- weet niet

Question 12 *Als u let op de algemene economische situatie, vindt u dan dat het op dit ogenblik ...*

- zeer gunstig is om te sparen
- redelijk gunstig is om te sparen
- eerder ongunstig is om te sparen
- zeer ongunstig is om te sparen
- weet niet

C.   France

Question 1 *A votre avis, au cours des douze derniers mois, la situation économique générale de la France ...*

- s'est nettement améliorée
- s'est un peu améliorée
- est restée stationnaire
- s'est un peu dégradée
- s'est nettement dégradée
- ne sait pas

Question 2 *A votre avis, au cours des douze prochains mois, la situation économique générale de la France ...*

- va nettement s'améliorer
- va un peu s'améliorer
- va rester stationnaire
- va un peu se dégrader
- va nettement se dégrader
- ne sait pas

Question 3 *Pensez-vous que, dans les douze prochains mois, le nombre de chômeurs va ...*

- fortement augmenter
- un peu augmenter
- rester stationnaire
- un peu diminuer
- fortement diminue
- ne sait pas

Question 4 *Trouvez-vous que, au cours des douze derniers mois, les prix ont ...*

- fortement augmenté
- moyennement augmenté
- un peu augmenté
- stagné
- diminué
- ne sait pas

Question 5 *Par rapport aux douze derniers mois, quelle sera Ã votre avis l'évolution des prix au cours des douze prochains mois?*

- elle va être plus rapide
- elle va se poursuivre au même rythme
- elle va être moins rapide
- les prix vont rester stationnaires
- les prix vont diminuer
- ne sait pas

Question 6 *Dans la situation économique actuelle, pensez-vous que les gens aient intérêt à faire des achats importants? (meubles, machines à laver, matériels électroniques ou informatiques ...)*

- oui, le moment est plutôt favorable
- le moment n'est ni favorable ni défavorable ...
- non, le moment est plutÃ´t défavorable
- ne sait pas

Question 7 *Dans la situation économique actuelle, pensez-vous que ce soit le bon moment pour épargner?*

- oui, certainement
- oui, peut-ètre
- non, probablement pas
- non, certainement pas
- ne sait pas

Question 8 *A votre avis, au cours des douze derniers mois, le niveau de vie en France, dans l'ensemble s'est ...*

- nettement amélioré
- un peu amélioré
- restée stationnaire
- un peu dégradé
- nettement dégradé
- ne sait pas

Question 9 *A votre avis, au cours des douze prochains mois, le niveau de vie en France, dans l'ensemble va ...*

- nettement s'améliorer
- s'améliorer un peu
- rester stationnaire
- se dégrader un peu
- nettement se dégrader
- ne sait pas

Question 10 *Laquelle des affirmations suivantes vous semble décrire le mieux la situation financière actuelle de votre foyer?*

- vous arrivez à mettre pas mal d'argent de còté
- vous arrivez à mettre un peu d'argent de còté
- vous bouclez juste votre budget
- vous tirez un peu sur vos réserves
- vous ètes en train de vous endetter
- ne sait pas

Question 11 *Au cours des douze derniers mois, la situation financière de votre foyer s'est ...*

- nettement améliorée
- un peu améliorée
- restée stationnaire
- un peu dégradée
- un peu dégradée
- ne sait pas

Question 12 *Pensez-vous que, au cours des douze prochains mois, la situation financière de votre Foyer va ...*

- nettement s'améliorer
- un peu s'améliorer
- rester stationnaire
- un peu se dégrader
- nettement se dégrader
- ne sait pas

Question 13 *Pensez-vous réussir à mettre de l'argent de côté au cours des douze prochains mois?*

- oui, certainement
- oui, peut-être
- non, probablement pas
- non, certainement pas
- ne sait pas

Question 14 *Au cours des douze prochains mois, par rapport aux douze mois passés, avez-vous l'intention de dépenser, pour effectuer des achats importants ...*

- beaucoup plus
- un peu plus
- autant
- un peu moins
- beaucoup moins
- ne sait pas

D. Sweden

Question 1 *Hur ar ditt hushalls ekonomiska situation for narvarande jamfort med for 12 manader sedan? Ar den ...*

- Mycket battre
- Nagot battre
- Ungefar lika
- Nagot samre
- Mycket samre
- Vet inte

Question 2 *Hur tror du att ditt hushalls ekonomiska situation ar om 12 manader? Ar den ...*

- Mycket battre
- Nagot battre
- Ungefar lika
- Nagot samre
- Mycket samre
- Vet inte

Question 3 *Hur tycker du att den ekonomiska situationen ar i Sverige for narvarande jamfort med for 12 manader sedan? Ar den ...*

- Mycket battre
- Nagot battre
- Ungefar lika
- Nagot samre
- Mycket samre
- Vet inte

Question 4 *Hur tror du att den ekonomiska situationen ar i Sverige om 12 manader? Ar den...*

- Mycket battre
- Nagot battre
- Ungefar lika
- Nagot samre
- Mycket samre
- Vet inte

Question 5 *Jamfort med for 12 manader sedan, tycker du att priserna i allmanhet for narvarande ar...*

- Mycket hogre
- Ganska mycket hogre
- Nagot hogre
- Ungefar desamma
- Lagre

- Vet inte

Question 6 *Om du jamfor med dagens situation, tror du att priserna i allmanhet om 12 manader kommer att ...*

- Stiga snabbare
- Stiga i samma takt
- Stiga langsammare
- Vara i stort sett oforandrade
- Sjunka nagot
- Vet inte

Question 7 *Hur tror du att arbetslosheten kommer att utvecklas under de narmaste 12 manaderna? Kommer den att ...*

- Oka mycket
- Oka nagot
- Vara ungefar som nu
- Minska nagot
- Minska mycket
- Vet inte

Question 8 *Har risken for att Du sjalv ska bli arbetslos under de senaste 12 manaderna ...?*

- Oka mycket
- Oka nagot
- Vara ungefar som nu
- Minska nagot
- Minska mycket
- Vet inte

Question 9 *Tycker du att det i dagslaget ar fordelaktigt for folk i allmanhet att gora stora inkop, som exempelvis mabler, tvattmaskiner, TV osv.?*

- Ja, det ar ratt tidpunkt
- Varken ratt eller fel tidpunkt
- Nej, det ar fel tidpunkt, inkapet bar ske senare
- Vet inte

Question 10 *Hur mycket pengar tror du att ditt hushall kommer att anvanda till inkop av sadana kapitalvaror under de narmaste 12 manaderna jamfort med de senaste 12 manaderna? Blir det ...*

- Mycket mer
- Nagot mer
- Ungefar lika mycket
- Nagot mindre
- Mycket mindre
- Vet inte

Question 11 *Mot bakgrund av det allmanna ekonomiska laget, hur tycker du att det ar att spara for narvarande? Som sparande raknas aven minskning av eventuella lan. Ar det...*

- Mycket fordelaktigt
- Ganska fordelaktigt
- Varken fordelaktigt eller ofordelaktigt
- Ganska ofordelaktigt
- Mycket ofordelaktigt
- Vet inte

Question 12 *Hur troligt ar det att Ditt hushall kommer att kunna spara nagot under de narmaste 12 manaderna? Som sparande raknas aven minskning av eventuella lan. Ar det ...?*

- Mycket troligt
- Ganska troligt
- Inte sarskilt troligt
- Inte alls troligt
- Vet inte

Question 13 *Vilket av faljande pastaenden beskriver bast ditt hushalls nuvarande ekonomiska situation?*

- Vi skuldsatter oss och/ eller utnyttjar sparade medel i stor utstrackning
- Vi skuldsatter oss och/ eller utnyttjar sparade medel
- Vi gar ungefar jamnt upp
- Vi sparar nagot
- Vi sparar mycket
- Vet inte

E. United Kingdom

Question 1 *How has the financial situation of your household changed over the last 12 months?*

It has ...

- Got a lot better
- Got a little better
- Stayed the same
- Got a little worse
- Got a lot worse
- Don't Know

Question 2 *How do you expect the financial position of your household to change over the next 12 months?*

It will ...

- Get a lot better
- Get a little better
- Stay the same
- Get a little worse
- Get a lot worse
- Don't Know

Question 3 *How do you think the general economic situation in this country has changed over the past 12 months?*

It has ...

- Got a lot better
- Got a little better
- Stayed the same
- Got a little worse
- Got a lot worse
- Don't Know

Question 4 *How do you expect the general economic situation in this country to develop over the next 12 months?*

It will ...

- Get a lot better
- Get a little better
- Stay the same
- Get a little worse
- Get a lot worse
- Don't Know

Question 5 *How do you think consumer prices have developed over the last 12 months?*

They have ...

- Risen a lot
- Risen moderately
- Risen slightly
- Stayed about the same
- Fallen
- Don't Know

Question 6 *In comparison with the past 12 months, how do you expect consumer prices will develop in the next 12 months?*

They will ...

- Increase more rapidly
- Increase at the same rate
- Increase at a slower rate
- Stay about the same
- Fall
- Don't Know

Question 7 *How do you expect the number of people unemployed in this country will change over the next 12 months?*

The number will ...

- Increase sharply
- Increase slightly
- Remain the same
- Fall slightly
- Fall sharply
- Don't Know

Question 8 *In view of the general economic situation, do you think now is the right time for people to make major purchases such as furniture or electrical goods?*

- Yes, now is the right time
- It is neither the right time nor the wrong time
- No, it is the wrong time
- Don't Know

Question 9 *Compared to the last 12 months, do you expect to spend more or less money on major purchases such as furniture and electrical goods?*

I will spend ...

- Much more
- A little more
- About the same
- A little less
- Much less
- Don't Know

Question 10 *In view of the general economic situation, do you think that now is?*

- A very good time to save
- A fairly good time to save
- Not a good time to save
- A very bad time to save
- Don't Know

Question 11 *Over the next 12 months, how likely will you be to save any money?*

- Very likely
- Fairly likely
- Not likely
- Not at all likely
- Don't Know

Question 12 *Which of these statements best describes the current financial situation of your household?*

- We are saving a lot
- We are saving a little
- We are just managing to make ends meet on our income
- We are having to draw on our savings
- We are running into debt
- Don't Know

II Data

When conducting the survey, GfK also collects a rich set of demographics. We enlist the variables below, and report the possible values the variables obtained in the sample in parentheses.

Sex (male; female), age (continuous), household size (1; 2; 3; 4; 5 and more), city size ($0 \leqslant$ size $\leqslant 1{,}999$; $2{,}000 \leqslant$ size $\leqslant 2{,}999$; $3{,}000 \leqslant$ size $\leqslant 4{,}999$; $5{,}000 \leqslant$ size $\leqslant 9{,}999$; $10{,}000 \leqslant$ size $\leqslant 19{,}999$; $20{,}000 \leqslant$ size $\leqslant 49{,}999$; $50{,}000 \leqslant$ size $\leqslant 99{,}999$; $100{,}000 \leqslant$ size $\leqslant 199{,}999$; $200{,}000 \leqslant$ size $\leqslant 499{,}999$; $500{,}000 \leqslant$ size), marital status (single; couple; married; widowed; divorced; separated), children at home (yes; no), number of children (1; 2; 3;

4 and more), homeownership (house owner; apartment owner, renter); household head (yes; no), education (Hauptschule; Realschule; Gymnasium; University), employment (full-time; part-time; not employed); state (Schleswig-Holstein; Hamburg; Bremen; Berlin(West); Niedersachen; Nordrhein-Westfalen; Hessen; Rheinland-Pfalz; Saarland; Baden-Wuerttemberg; Bayern; Mecklenburg-Vorpommern; Sachsen-Anhalt; Brandenburg; Thueringen; Sachsen; Berlin(Ost)), monthly net income (inc) (inc$\leqslant$500; 500<inc$\leqslant$750; 750<inc$\leqslant$1,000; 1,000<inc$\leqslant$1,2500; 1,2500<inc$\leqslant$1,500; 1,500<inc$\leqslant$2,000; 2,000<inc$\leqslant$2,500; 2,500<inc$\leqslant$3,000; 3,000<inc$\leqslant$3,500; 3,500<inc$\leqslant$4,000; 4,000<inc), job (farmer; liberal profession; self-employed; civil servant; white-collar worker; blue-collar worker; student; trainee, draftee; housewife; retiree; unemployed).

Data on the consumer price index, the unemployment rate, real durable consumption expenditure, real GDP, and industrial production are from the German Statistical Office (DeStatis); data on the European and German uncertainty index are from Baker et al. (2014); data on DAX and Volatility DAX are from the Deutsche Boerse; and oil price data are from Bloomberg.

We obtain the harmonized consumer price indexes (CPI) from the Statistical Data Warehouse at the European Central Bank. The data ID for the harmonized overall CPI is ICP.M.DE.N.000000.4.INX, for the all items CPI excluding food and energy it is ICP.M.DE.N.XEF000.4.INX, for the major durables CPI it is ICP.M.DE.N.0921_2.4.INX, and for the non-durable households goods CPI it is ICP.M.DE.N.056100.4.INX.

We obtain data for bank interest rates for loans to households in Germany for consumption from the Statistical Data Warehouse at the European Central Bank. The data ID is MIR.M.DE.B.A2B.A.R.A.2250.EUR.N. The rate is the annualized agreed rate, narrowly defined effective rate, for new loans for consumption excluding revolving loans and overdrafts, convenience and extended credit card debt.

Inflation expectations data for European Union member countries is from the European Commission Directorate on Economic and Financial Affairs.

Consensus forecasts of the one-year ahead the German consumer price inflation rate in percent at an annual rate are from Consensus Economics. The company surveys over 250 financial and economic professional forecasters for different macroeconomic variables such as future growth, inflation, interest rates, and exchange rates.

The ZEW Financial Market Experts Inflation Forecast Index is from the Center of

European Economic Research (ZEW). ZEW Financial Market Survey is a monthly survey among 350 financial analysts and institutional investors in Germany. The survey asks participants about their six-month expectations concerning the economy, inflation rates, interest rates, stock markets, and exchange rates in Germany and other countries. The index is the difference between the fraction of surveyed financial experts which expect inflation to increase over the next six months minus the fraction of surveyed financial experts which expect inflation to decrease in percent.

The ECB Survey of Professional Forecasters (SPF) is a quarterly survey of expectations for the rates of inflation, real GDP growth, and unemployment in the euro area for several horizons. The participants to the Survey of Professional Forecasters are experts affiliated with financial or non-financial institutions based within the European Union.

III Press Clippings

We briefly cite a few media quotes following the announcement of the newly-elected administration in 2005 to increase VAT by 3%.

"Mehrwertsteuer ist glatter Betrug an den Waehler". Gruenen-Vorsitzende Claudia Roth haelt den Koalitionsvertrag fuer unsozial

"VAT is electoral fraud". Green party leader Claudia Roth calls coalition agreement antisocial

Berliner Morgenpost, 11/21/2005

Opposition kritisiert "Wahlbetrug". Vor allem hoehere Mehrwertsteuer stoesst auf Protest

Opposition criticizes "electoral fraud". Especially higher VAT fiercely criticized

Frankfurter Rundschau, 11/14/2005

Opposition spricht von Wahlbetrug

Opposition stresses "electoral fraud"

Die Welt, 11/13/2005

Die dreissten Steuerluegen

Unapologetic tax lies

20

Westerwelle geisselt Steuererhoehungen
 Westerwelle criticizes tax hike

Warum luegen Politiker?
 Why do politician lie?

IV   Additional Results

This section reports additional tests and robustness checks.

Figure A.1 plots the monthly time series of the German real quarterly GDP growth in percent at an annual rate. Real GDP growth increased from 1.6% in the last quarter of 2005 to 4.38

Figure A.2 plots inflation expectations for the European Union (EU), Germany, and several other EU membership countries. We observe an increase in inflation expectations immediately after the announcement of the VAT increase in Germany in November 2005 with high inflation expectations throughout 2006. Neither the European Union as a whole nor any of the individual member countries, including direct neighbor countries such as France or Austria, exhibits an increase in inflation expectations throughout 2006.

Figure A.3 plots the average treatment effect of the VAT increase on the readiness to buy durables, like Figure 9, but it also matches German and foreign households based on income expectations for the following twelve months in addition to gender, age group, education group, income group, and social status. The results are virtually identical.

Figure A.4 shows that Germany had negative residential property price inflation throughout our sample period.

Figure 4 documents that the standardized one-year lagged inflation expectations index and the realized durable inflation rate track each other closely, and have a time series correlation of 65.37%. Professionals, on the contrary, did not adjust their forecasts for inflation during 2006 (see Figures A.5, A.6, and A.7 for inflation forecasts for Germany from Concensus Economics, the ZEW Financial Market Survey, and the ECB Survey of

Professional Forecasters for the Euro Zone inflation rate). This finding is consistent with Coibion and Gorodnichenko (2015) for the US: households increased their inflation expectations substantially at the beginning of the recent financial crisis, whereas the inflation expectations of professional forecasters were well anchored and barely moved.

Figure A.8 plots German households standardized inflation expectations lagged by one year and the standardized change in durable goods inflation. Both track each other closely.

Figure A.9 plots the fraction of German households that expect zero or negative inflation over time.

Table A.2 studies the effect of households' expectations and perceptions regarding aggregate variables. Columns (1) to (4) split the sample of respondents based on their GDP growth outlook for the following year, using the median answer as cutoff. Columns (5) to (8) split the sample based on households' expectations regarding aggregate unemployment in the following twelve months. Columns (1), (2), (5), and (6) run the baseline multinomial logit specification only on households with a positive economic outlook, whereas columns (3), (4), (7), and (8) run the baseline analysis only on households with a negative economic outlook. Households that expect higher inflation are 6%-8% more likely to be willing to buy durables compared to households that expect constant or decreasing inflation. Note the positive marginal effect of inflation expectations on replying, "it's a bad time to buy durables" is solely driven by households with a negative economic outlook for the following year (columns (3) and (7) vs. columns (1) and (5)).

Table A.3 and Table A.4 show that the definition of cutoff in the multinomial logit models in which we condition on expectation does not matter. In Table A.2 and Table 3, we assign households with median values to the set of households with negative outlook. In Table A.4 and Table A.3, we assign households with median values to the set of households with positive outlook. Results are consistent across these alternative splits.

In columns (1) and (2) of Table A.5, we add dummies for past inflation instead of a categorical variable. This choice has no impact on the marginal effects of interest. In columns (3) and (4), we add a set of dummies for all the elicited answers on inflation expectations instead of our single dummy for an expected inflation increase. The average marginal effect of "prices will increase more" rises to 10.5% (column (4)). Households that expect prices to rise more in the next twelve months compared to the previous

twelve months are also on average 3% less likely to say that it is a bad time to purchase durables. A linear probability model estimates consistent marginal effects (column (5)).

Months and years dummies to control for seasonality and aggregate effects and shocks have little impact on our findings (see columns (1) to (4) of Table A.6). We might also interpret the answers to the survey questions as ordered options and estimate an ordered probit model. Even in this case, we estimate marginal effects in line with our baseline estimates (see columns (4) and (5) of Table A.6). In columns (7) and (8), we report marginal effects for a specification that only includes the inflation increase dummy, households' demographics, and expectations. Results are consistent with our baseline estimates.

Households that expect inflation to increase are also more likely to answer that it is a bad time to save (see Table A.7).

Households that expect inflation to increase have a similar propensity to spend more on cars, to renovate, household appliances, and furniture in the next 12 months compared to the previous twelve months in the quarterly survey (see Table A.8).

Households that expect deflation are 3.5% less likely to answer that it is a good time to buy durables compared to households that expect positive inflation (see Table A.9).

Table A.10 shows that larger households display a slightly higher marginal effect of inflation increases on spending attitudes compared to smaller households. Moving from decreasing or flat inflation expectations to increasing inflation expectations increases the likelihood that households consider the time favorable to buy durables by 10% for households of size 4 or 5 (columns (8) and (10)). This marginal effect is less than 9% for households of size 1 to 3 (columns (2), (4), (6)). We do not find any significant differences in the nexus of inflation expectations and willingness to spend on durables for male versus female or households with or without children (Table A.11). We find similar marginal effects for single, couple, and married households (Table A.12), which is in the order of magnitude of our baseline findings (around 8.5%). Divorced survey participants show a slightly lower marginal effect (7.8%). Renters have a slightly higher marginal effect than house- or apartment-owners (Table A.13). The full-time employed have a higher marginal effect than the part-time employed and unemployed (Table A.14).

Figure A.1: **Real GDP Growth**
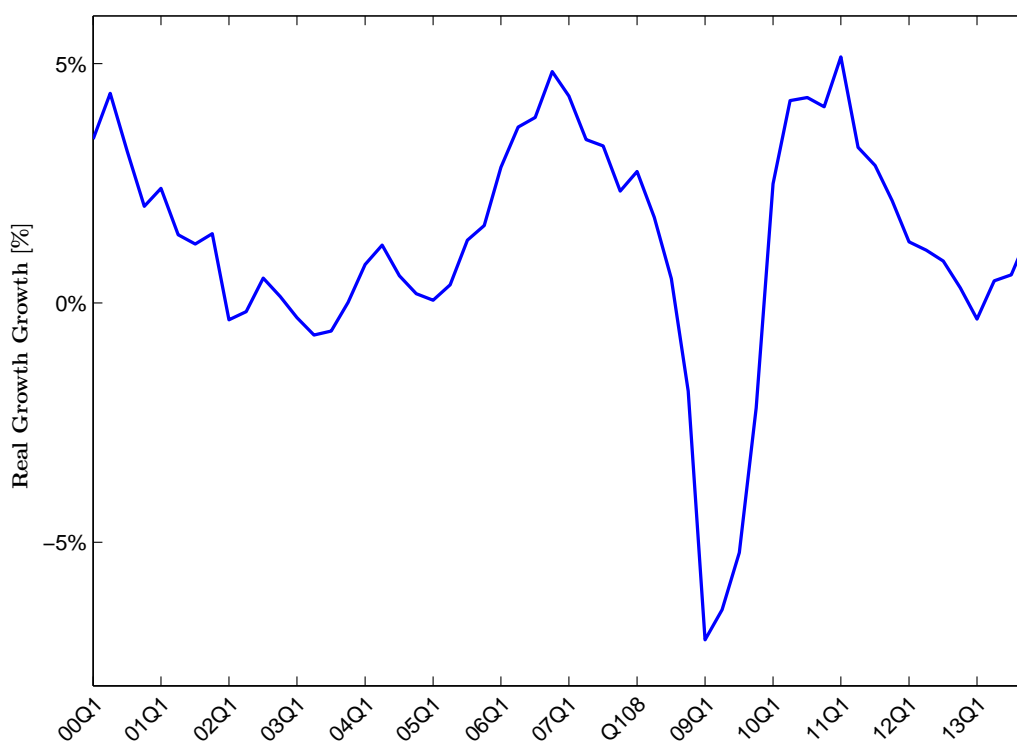
This figure plots the monthly time series of the German real quarterly GDP growth in percent at an annual rate. The sample period is first quarter 2000 to fourth quarter 2013 for a total of fourteen years.

Figure A.2: **Expected Increase in Inflation**
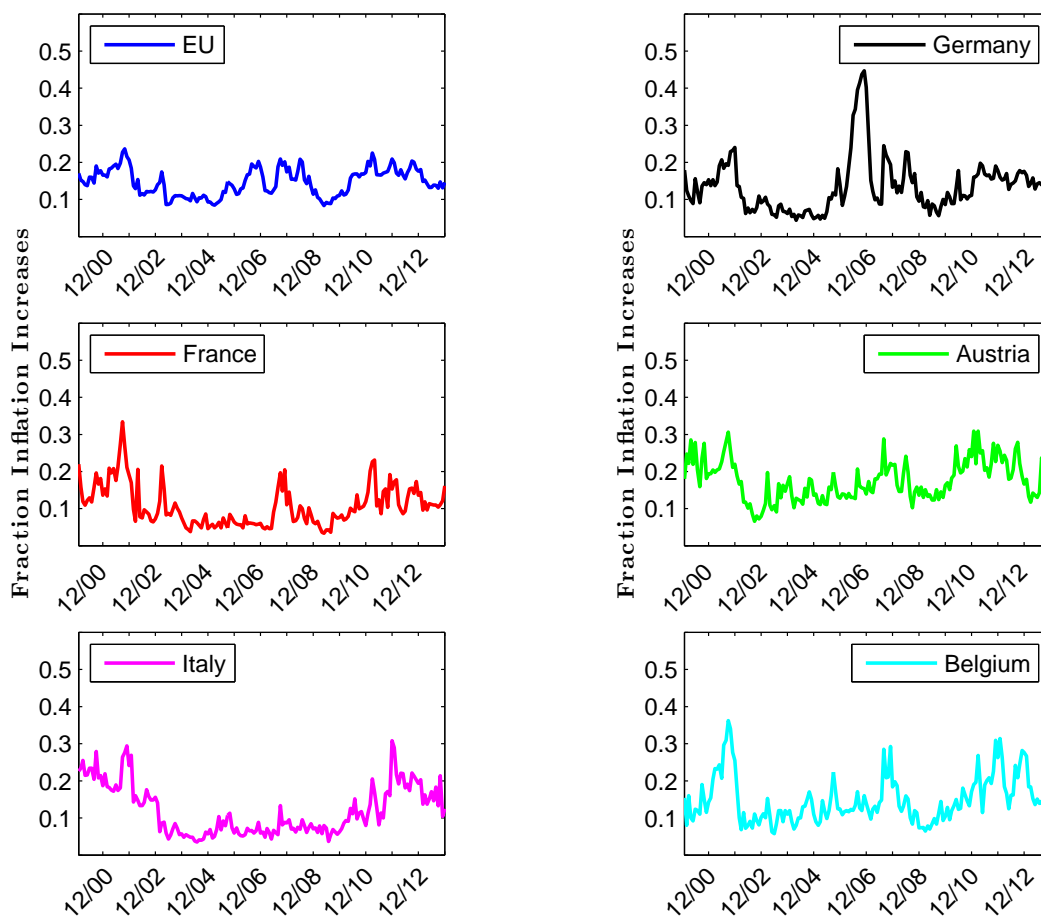
This figure plots average monthly inflation expectations over time. We use the time series data on consumer sentiment from the European Commission Directorate on Economic and Financial Affairs to construct these variables. We plot the fraction of households which expects inflation to increase. The sample period is January 2000 to December 2013 for a total of fourteen years.

Figure A.3: **Change in the Readiness to Spend on Durables for German vs. foreign households**

This figure plots β_m coefficient (solid line) of $\Delta Dur_{i,06/2005 \to m} = \alpha + \beta_m \times VATshock_i + \Delta X'_{i,06/2005 \to m} \times \gamma + \epsilon_i$ and two standard deviation error bands (dashed line). $\Delta Dur_{i,06/2005 \to m}$ is the difference in the willingness to spend on durable goods between month m and June 2005, $VATshock_i$ is an indicator which equals 1 if the household was exposed to the VAT shock, β_m captures the effect of the VAT shock on the willingness to buy durables for household i in month m, and $\Delta X'_{i,06/2005 \to m}$ is the difference in a set of observables between month m and the baseline month. We use the micro data underlying the Directorate-General for Economic and Financial Affairs of the European Commission harmonized consumer surveys to construct these variables.

Figure A.4: **Residential Property Price Inflation Rate**
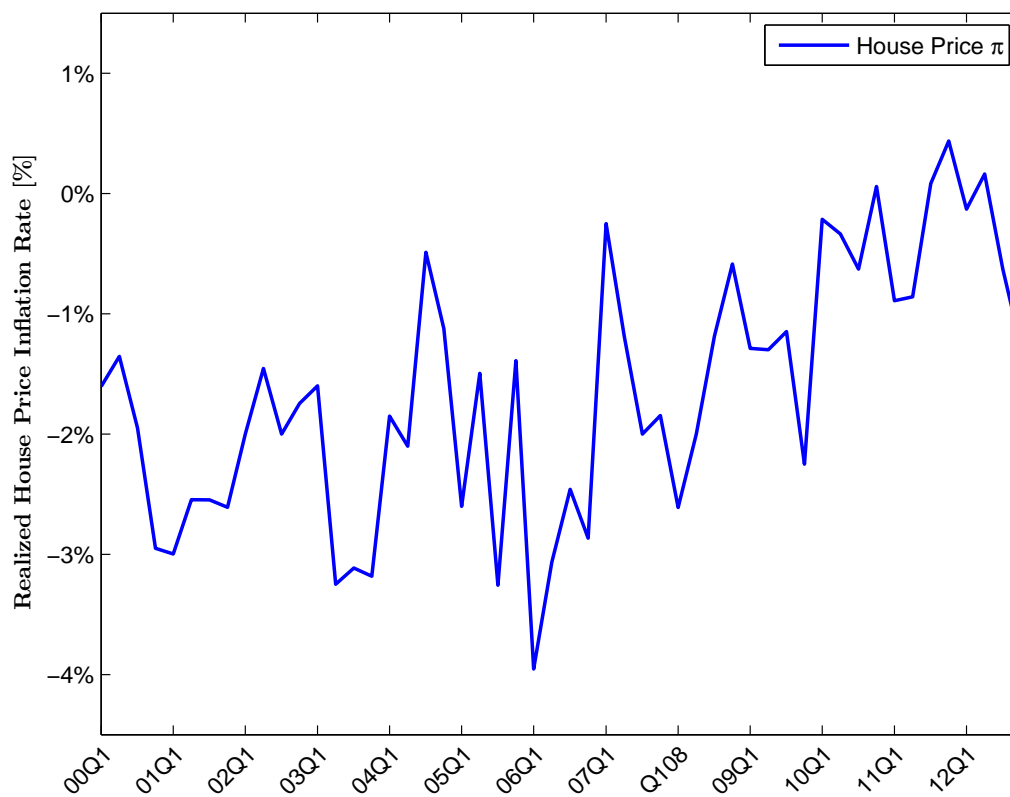
This figure plots the monthly time series of the German residential property price inflation rate in percent at an annual rate. The sample period is January 2000 to December 2013 for a total of fourteen years.

Figure A.5: **Consensus Economics One-Year Ahead Inflation Forecast**
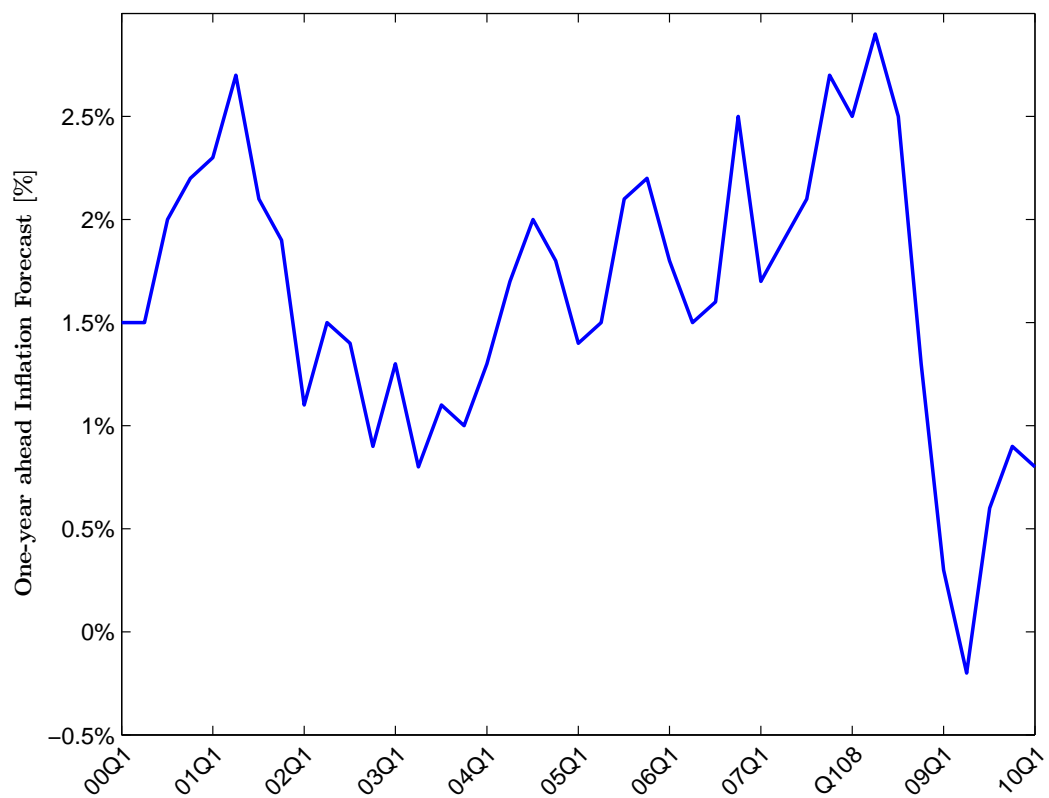
This figure plots the quarterly consensus forecasts of the one-year ahead German consumer price inflation rate in percent at an annual rate as surveyed by Consensus Economics. The sample period is first quarter 2000 to forth quarter 2013 for a total of fourteen years.

Figure A.6: **ZEW Financial Market Experts Inflation Forecast Index**
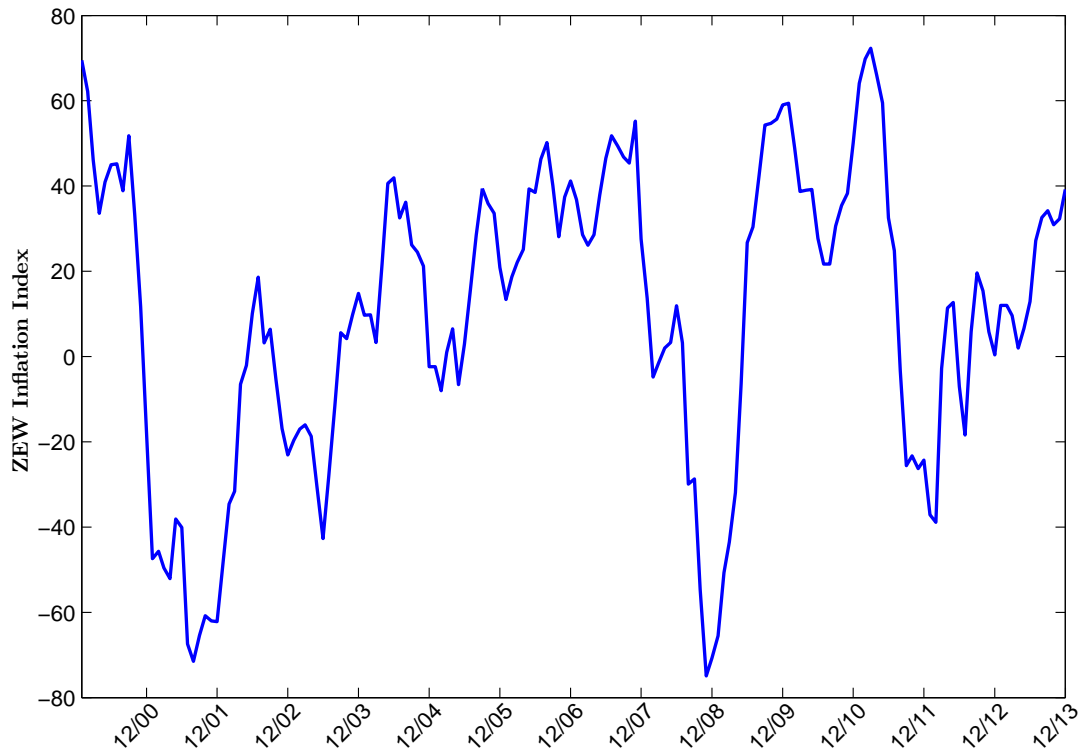
This figure plots the monthly time series of the ZEW inflation index for the German CPI inflation rate. The index is the difference between the fraction of surveyed financial experts who expect inflation to increase over the next six month minus the fraction of surveyed financial experts who expect inflation to decrease in percent. The sample period is January 2000 to December 2013 for a total of fourteen years.

Figure A.7: **Survey of Professional Forecasters One-Year ahead Inflation Forecast (Eurozone)**
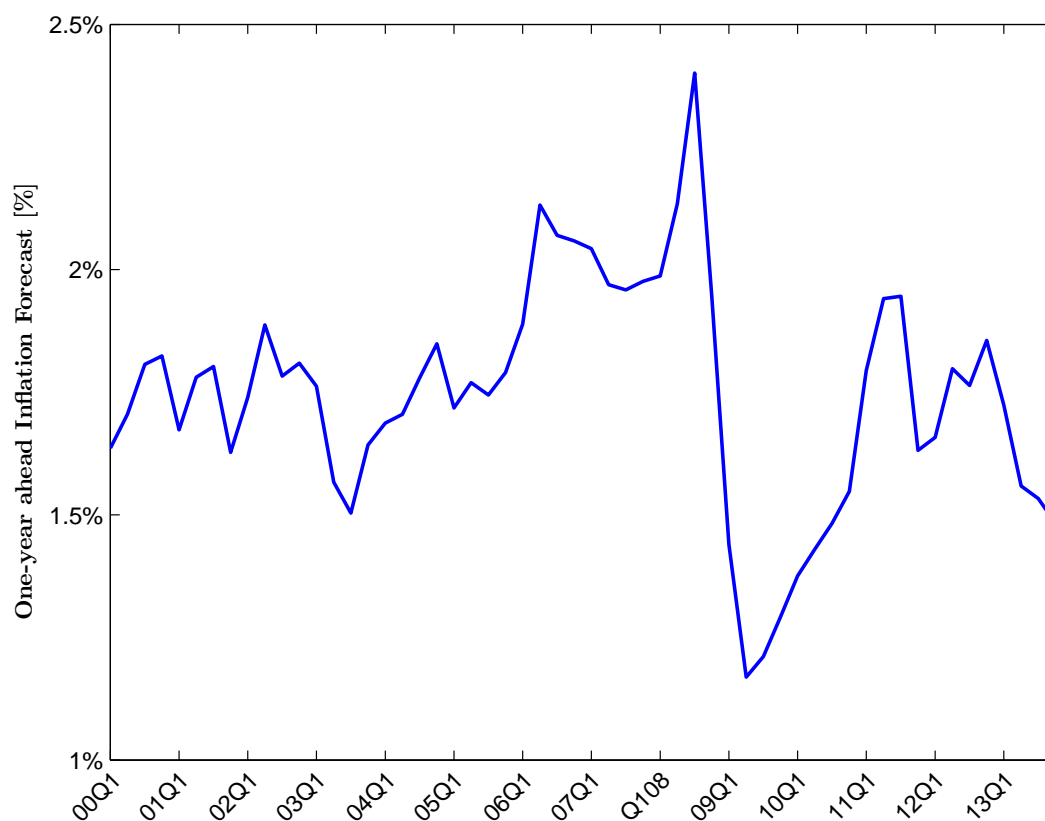
This figure plots the quarterly time series of the average one-year ahead forecasts by professional forecasters for the harmonized consumer price inflation in the Eurozone in percent at an annual rate. The sample period is first quarter 2000 to forth quarter 2013 for a total of fourteen years.

Figure A.8: **Standardized Lagged Inflation Expectations and Change CPI Inflation rate**
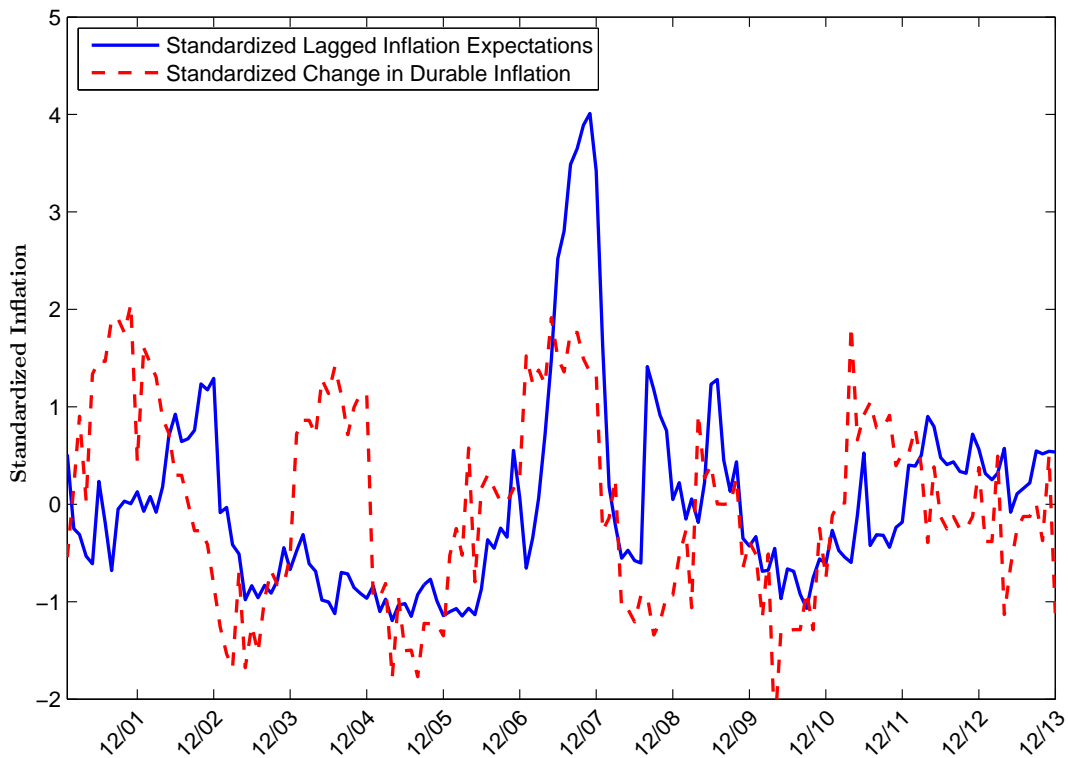
This figure plots the monthly time series of the one-year lagged standardized average monthly inflation expectation and the twelve months change in the harmonized major durables consumer price inflation rate in percent at an annual rate. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct inflation expectations. GfK asks a representative sample of 2,000 households how consumer prices will evolve in the next twelve months compared to the previous twelve months. We create a dummy variable which equals 1 when a household expects inflation to increase. The sample period is January 2001 to December 2013 for a total of thirteen years.

Figure A.9: **Expected Decrease in Inflation**
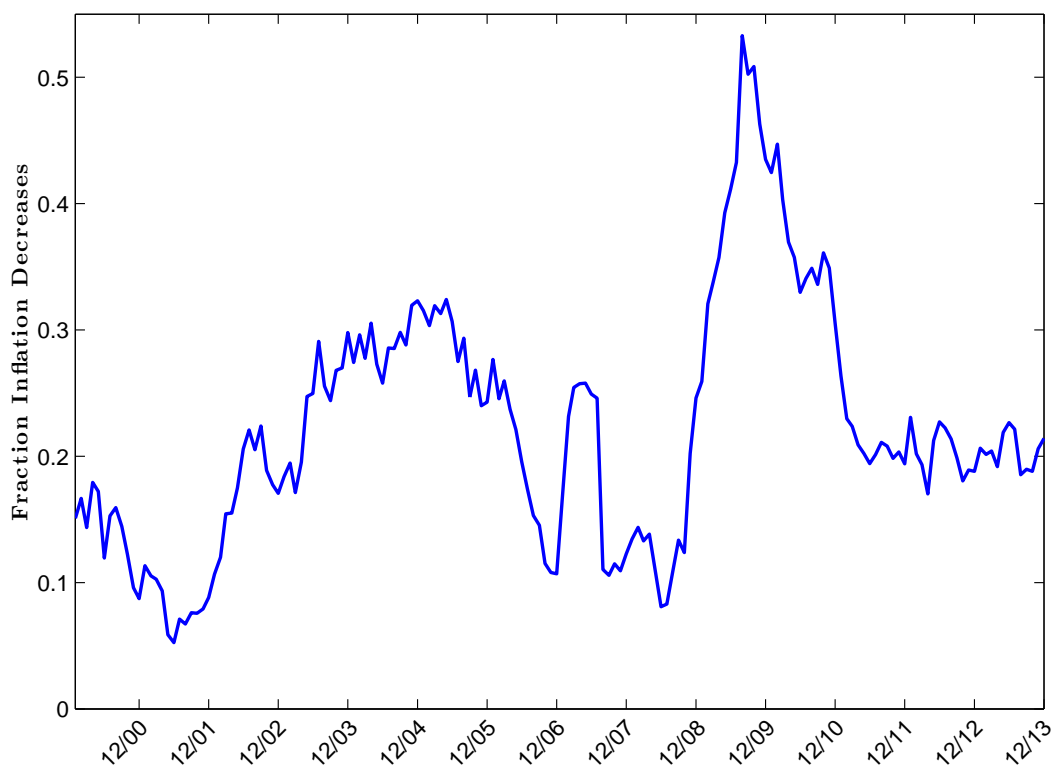
This figure plots average monthly inflation expectation over time. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct this variables. GfK asks a representative sample of 2,000 households how consumer prices will evolve in the next twelve months compared to the previous twelve months. We create a dummy variable which equals 1 when a household expects zero or negative inflation. The sample period is January 2000 to December 2013 for a total of fourteen years.

Figure A.10: **Interest Rates for Consumption Loans**
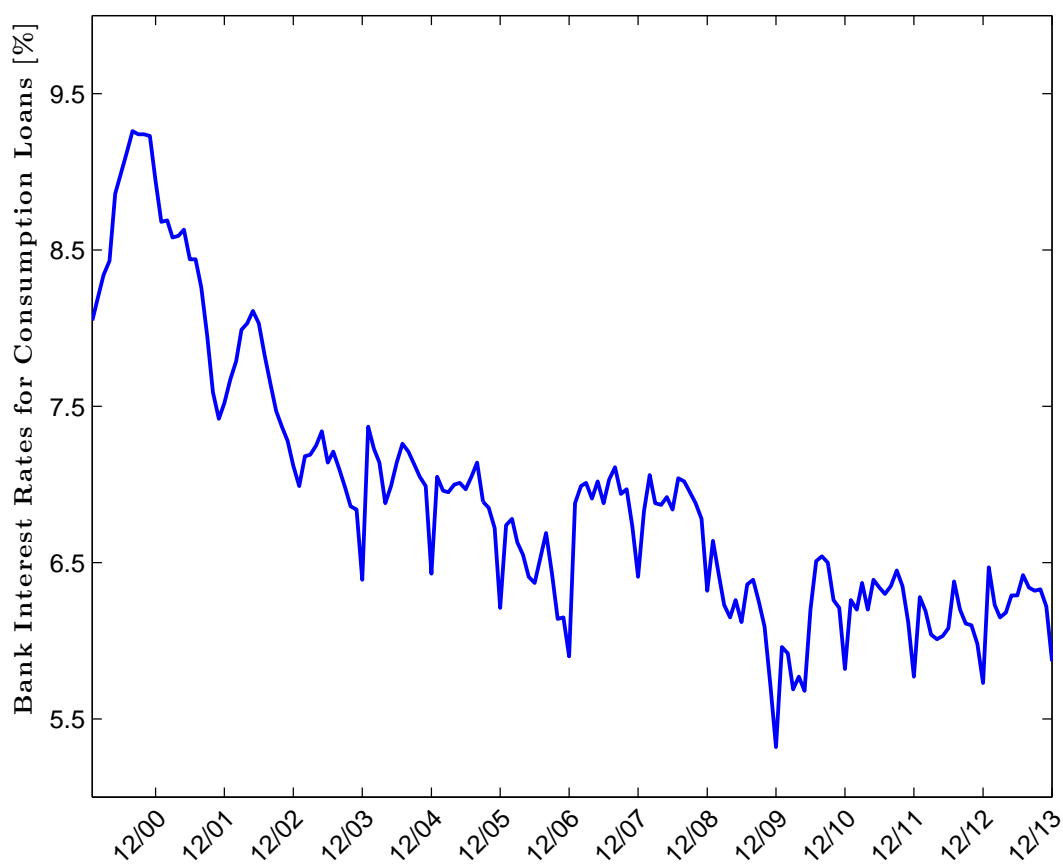
This figure plots the monthly time series of the bank interest rates for consumption loans to German households in percent at an annual rate. The sample period is first quarter 2000 to forth quarter 2013 for a total of fourteen years.

Table A.1: **Inflation Expectations and Readiness to Spend: Demographics and Expectations**

This table reports the average marginal effects of a multinomial logit regression. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics, household expectations, and contemporaneous macroeconomic variables. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct the survey variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years.

	Bad time (1)	Good time (2)	Bad time (3)	Good time (4)	Bad time (5)	Good time (6)
Inflation increase	0.0242***	0.0755***	−0.0078	0.0888***	0.0051	0.0875***
	(0.0094)	(0.0156)	(0.0083)	(0.0160)	(0.0073)	(0.0116)
Past Inflation	0.0570***	−0.0300***	0.0376***	−0.0200***	0.0331***	−0.0114***
	(0.0045)	(0.0030)	(0.0033)	(0.0035)	(0.0020)	(0.0023)
Sex	−0.0285***	−0.0074***	−0.0146***	−0.0144***	−0.0098***	−0.0155***
	(0.0025)	(0.0019)	(0.0024)	(0.0020)	(0.0023)	(0.0019)
Age	0.0018***	−0.0008**	−0.0023***	0.0015***	−0.0017***	0.0013***
	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0003)	(0.0003)
Age^2	−0.0000***	0.0000	0.0000***	−0.0000***	0.0000***	−0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Education	−0.0301***	0.0261***	−0.0198***	0.0199***	−0.0174***	0.0192***
	(0.0016)	(0.0010)	(0.0016)	(0.0012)	(0.0017)	(0.0012)
Hh size	−0.0118***	0.0066***	−0.0034***	0.0024**	−0.0047***	0.0027**
	(0.0012)	(0.0013)	(0.0011)	(0.0012)	(0.0012)	(0.0012)
City size	0.0004	0.0006	0.0008	0.0001	0.0001	0.0004
	(0.0007)	(0.0005)	(0.0007)	(0.0006)	(0.0007)	(0.0006)
Marital Status	0.0091***	−0.0026**	0.0037***	−0.0001	0.0009	0.0003
	(0.0016)	(0.0013)	(0.0013)	(0.0012)	(0.0012)	(0.0011)
Kids home	0.0078	0.0027	0.0061	0.005	0.0042	0.0053
	(0.0048)	(0.0045)	(0.0046)	(0.0050)	(0.0043)	(0.0049)
\# kids	0.0192***	−0.0094***	0.0102***	−0.0038	0.0103***	−0.0041
	(0.0028)	(0.0026)	(0.0027)	(0.0026)	(0.0026)	(0.0026)
Housing	0.0216***	−0.0073***	0.0125***	−0.0029**	0.0133***	−0.0031***
	(0.0013)	(0.0012)	(0.0013)	(0.0012)	(0.0011)	(0.0012)
Job	0.0215***	−0.0066***	0.0046***	0.0023	0.0047***	0.0018
	(0.0017)	(0.0020)	(0.0014)	(0.0020)	(0.0013)	(0.0019)
State	0.0018***	−0.0017***	−0.0002	−0.0008**	−0.0004	−0.0008**
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0003)
Income	−0.0147***	0.0084***	−0.0079***	0.0047***	−0.0070***	0.0044***
	(0.0006)	(0.0007)	(0.0007)	(0.0007)	(0.0006)	(0.0007)
Past financial situation			−0.0613***	0.0334***	−0.0526***	0.0324***
			(0.0027)	(0.0021)	(0.0017)	(0.0019)
Financial outlook			−0.0236***	0.0215***	−0.0192***	0.0206***
			(0.0025)	(0.0030)	(0.0019)	(0.0027)
Current financial situation			0.0000	−0.0008	0.0103**	−0.0078*
			(0.0049)	(0.0037)	(0.0051)	(0.0041)
Exp GDP growth			−0.0293***	0.0300***	−0.0277***	0.0298***
			(0.0023)	(0.0025)	(0.0019)	(0.0022)
Exp unemployment rate			0.0315***	−0.0024	0.0270***	−0.0103***
			(0.0028)	(0.0040)	(0.0014)	(0.0021)
Saving propensity			−0.0498***	0.0386***	−0.0549***	0.0416***
			(0.0041)	(0.0028)	(0.0035)	(0.0025)
Good time to save			0.0067***	−0.0279***	0.0004	−0.0265***
			(0.0023)	(0.0036)	(0.0018)	(0.0033)
CPI Inflation					1.4513	−4.9889**
					(1.4110)	(2.1874)
Unemployment rate					−0.0076*	0.0165**
					(0.0043)	(0.0075)
European uncertainty					0.0000	−0.0003*
					(0.0001)	(0.0002)
German uncertainty					−0.0002*	0.0004***
					(0.0001)	(0.0001)
Policy rate					0.0134*	−0.0033
					(0.0079)	(0.0124)
Dax					−0.0000***	0.0000
					(0.0000)	(0.0000)
Vdax					−0.0002	0.0000
					(0.0006)	(0.0009)
IP growth					−0.0594	−0.0207
					(0.0812)	(0.1170)
Oil price					−0.0008***	0.0009*
					(0.0003)	(0.0005)
Δ Oil price					0.0327*	−0.0313
					(0.0172)	(0.0265)
Pseudo R^2	0.0292		0.0654		0.0762	
Nobs	244,497		219,799		219,799	

Standard errors in parentheses
*$p < 0.10$, $**p < 0.05$, $***p < 0.01$

Table A.2: Inflation Expectations and Readiness to Spend: Individual Expectations

This table reports the average marginal effects of a multinomial logit regression for different subsets of households. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time or it is neither a good time nor a bad time. Standard errors are clustered at the quarter–year level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) to (4) split the sample based on the median GDP growth expectations over the next twelve months. Columns (5) to (8) split the sample based on the median unemployment expectations over the next twelve months.

	Higher growth outlook		Lower growth outlook		Lower unemployment outlook		Higher unemployment outlook	
	Bad time	Good time	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflation increase	−0.0058	0.0841***	0.0289***	0.0729***	0.0002	0.0686***	0.0267***	0.0763***
	(0.0115)	(0.0191)	(0.0090)	(0.0142)	(0.0115)	(0.0249)	(0.0088)	(0.0135)
Past Inflation	0.0477***	−0.0355***	0.0657***	−0.0320***	0.0342***	−0.0271***	0.0676***	−0.0340***
	(0.0049)	(0.0038)	(0.0047)	(0.0028)	(0.0043)	(0.0047)	(0.0048)	(0.0031)
Pseudo R^2	0.0115		0.0171		0.0065		0.0180	
Nobs	70,000		251,496		58,186		263,310	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.3: Inflation Expectations and Readiness to Spend: Idiosyncratic Expectations (different cutoff)

This table reports the average marginal effects of a multinomial logit regression for different subsets of households. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. We assign median observations to the positive expectation sample. Columns (1) to (4) split the sample based on the median perception of households' financial situation over the last twelve months. Column (5) to (8) split the sample based on the median expectation of households' financial situation over the next twelve months.

	Positive financial perception		Negative financial perception		Positive financial expectation		Negative financial expectation	
	Bad time	Good time	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflation increase	0.0066	0.0880***	0.0328**	0.0498***	−0.0013	0.0841***	0.0138	0.0624***
	(0.0073)	(0.0156)	(0.0144)	(0.0145)	(0.0075)	(0.0141)	(0.0184)	(0.0193)
Past Inflation	0.0360***	−0.0256***	0.0737***	−0.0362***	0.0504***	−0.0301***	0.0767***	−0.0401***
	(0.0029)	(0.0029)	(0.0049)	(0.0034)	(0.0044)	(0.0028)	(0.0052)	(0.0042)
Pseudo R^2	0.0087		0.0162		0.0121		0.0179	
Nobs	237,784		83,712		274,444		47,052	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.4: Inflation Expectations and Readiness to Spend: Individual Expectations (different cutoff)

This table reports the average marginal effects of a multinomial logit regression for different subsets of households. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. We assign median observations to the positive expectation sample. Columns (1) to (4) split the sample based on the median GDP growth expectations over the next twelve months. Columns (5) to (8) split the sample based on the median unemployment expectations over the next twelve months.

	Higher growth outlook		Lower growth outlook		Lower unemployment outlook		Higher unemployment outlook	
	Bad time	Good time	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflation increase	−0.0068	0.0953***	0.02	0.0609***	−0.0046	0.0879***	0.0283***	0.0671***
	(0.0088)	(0.0161)	(0.0122)	(0.0138)	(0.0096)	(0.0204)	(0.0091)	(0.0114)
Past Inflation	0.0453***	−0.0250***	0.0721***	−0.0414***	0.0426***	−0.0221***	0.0739***	−0.0435***
	(0.0047)	(0.0030)	(0.0048)	(0.0035)	(0.0042)	(0.0030)	(0.0050)	(0.0035)
Pseudo R^2	0.0108		0.0178		0.0098		0.0198	
Nobs	211,499		109,997		169,273		152,223	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.5: **Inflation Expectations and Readiness to Spend: Inflation dummies and OLS**

This table reports the average marginal effects of a multinomial logit regression for different time periods. Households' readiness to purchase durables is the dependent variable. Inflation expectation is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics and household expectations. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) add dummy variables for past inflation, columns (3) and (4) add dummy variables for inflation expectations, and column (5) estimates an OLS specification.

	Past inflation dummies		Inflation expectation dummies		OLS
	Bad time	Good time	Bad time	Good time	
	(1)	(2)	(3)	(4)	(5)
Inflation increase	−0.0072	0.0874∗∗∗			0.0988∗∗∗
	(0.0081)	(0.0161)			(0.0272)
Prices will increase less			−0.0167∗∗∗	0.0234∗∗∗	
			(0.0047)	(0.0061)	
Prices will increase the same			−0.0295∗∗∗	0.0202∗∗∗	
			(0.0060)	(0.0073)	
Prices will increase more			−0.0292∗∗∗	0.1048∗∗∗	
			(0.0109)	(0.0193)	
Past Inflation			0.0419∗∗∗	−0.0237∗∗∗	−0.0598∗∗∗
			(0.0034)	(0.0034)	(0.0061)
Prices stayed constant	−0.0164	−0.1497∗∗∗			
	(0.0140)	(0.0115)			
Prices increased slightly	−0.0039	−0.1574∗∗∗			
	(0.0164)	(0.0129)			
Prices increased somewhat	0.0164	−0.1585∗∗∗			
	(0.0172)	(0.0136)			
Prices increased substantially	0.0919∗∗∗	−0.1953∗∗∗			
	(0.0184)	(0.0143)			
Demographics	X	X	X	X	X
Individual expectations	X	X	X	X	X
Pseudo R^2		0.0676		0.0657	0.1056
Nobs		219,799		215,579	219,799

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.6: **Inflation Expectations and Readiness to Spend: month & year dummies and ordered probit**

This table reports the average marginal effects of multinomial logit and ordered probit regressions for different time periods. Households' readiness to purchase durables is the dependent variable. Inflation expectation is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics and household expectations. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) restrict the sample to 2006 to study the effect of the unexpected VAT increase in 2007, columns (3) and (4) exclude 2006, and columns (5) and (6) restrict the sample to 2010 to 2012 to study the effect of the European sovereign debt crisis.

	Month dummies		Year dummies		Ordered probit		No past inflation	
	Bad time	Good time	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflation increase	−0.0074	0.0878***	0.0139***	0.0719***	−0.0504***	0.0479***	0.0048	0.0827***
	(0.0081)	(0.0151)	(0.0051)	(0.0070)	(0.0137)	(0.0139)	(0.0095)	(0.0167)
Past Inflation	0.0376***	−0.0200***	0.0309***	−0.0096***	0.0307***	−0.0291***		
	(0.0033)	(0.0035)	(0.0015)	(0.0026)	(0.0033)	(0.0029)		
Demographics	X	X	X	X	X	X	X	X
Individual expectations	X	X	X	X	X	X	X	X
Pseudo R^2	0.0657		0.0819		0.0564		0.0603	
Nobs	219,799		219,799		219,799		221,392	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.7: **Inflation Expectations and Readiness to Save**

This table reports the average marginal effects of a multinomial logit regression. Households' readiness to save is the dependent variable. Inflation expectation is a dummy variable which equals 1 when a households replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is probably a good time, it is not really a good time, or it is not at all a good time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years.

	Not at all (1)	Not really (2)	Good time (3)
Inflation increase	0.0160∗∗∗	0.0082∗∗	0.0006
	(0.0016)	(0.0036)	(0.0082)
Past Inflation	0.0019∗∗	−0.0134∗∗∗	0.0332∗∗∗
	(0.0007)	(0.0023)	(0.0045)
Demographics	X	X	X
Individual expectations	X	X	X
Pseudo R^2		0.0203	
Nobs		234,522	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.8: **Inflation Expectations and Readiness to Spend: Durable Sub-categories**

This table reports the average marginal effects of a multinomial logit regression for different city sizes. Households spending more on different durables in the next twelve months compared to the previous twelve months is the dependent variable. Inflation increase is a dummy variable which equals 1 when a households replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics and household expectations. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a quarterly basis whether households want to spend more on certain goods in the next twelve months compared to the previous twelve months. Households can reply that they want to spend more, the same, or less. Standard errors are clustered at the quarter level. The sample period is first quarter 2000 to fourth quarter 2013 for a total of fourteen years. Columns (1) and (2) study the propensity to buy cars, columns (3) and (4) study the propensity to renovate, columns (5) and (6) study the propensity to buy household appliances, and columns (7) and (8) study the propensity to purchase furniture.

	Car		Renovate		Appliances		Furniture	
	Bad time	Good time	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflation Increase	−0.0012	0.0265***	−0.0177***	0.0234***	−0.0134**	0.0185***	−0.0245***	0.0179***
	(0.0061)	(0.0031)	(0.0061)	(0.0044)	(0.0058)	(0.0024)	(0.0061)	(0.0033)
Past Inflation	0.0055*	0.0040**	0.0116***	0.0088***	0.0232***	−0.0012	0.0227***	0.0026*
	(0.0033)	(0.0016)	(0.0032)	(0.0021)	(0.0027)	(0.0008)	(0.0028)	(0.0015)
Demographics	X	X	X	X	X	X	X	X
Individual expectations	X	X	X	X	X	X	X	X
Pseudo R^2	0.0393		0.0225		0.0377		0.0378	
Nobs	59,011		57,655		71,699		69,013	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.9: **Deflation Expectations and Readiness to Spend**

This table reports the average marginal effects of a multinomial logit regression. Households' readiness to purchase durables is the dependent variable. Deflation is a dummy variable which equals 1 when a household replies that inflation will be zero or negative. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years.

	Bad time	Good time
	(1)	(2)
Deflation	0.0265***	−0.0355***
	(0.0059)	(0.0096)
Past Inflation	0.0414***	−0.0225***
	(0.0034)	(0.0035)
Demographics	X	X
Individual expectations	X	X
Pseudo R^2	0.0628	
Nobs	219,799	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.10: **Inflation Expectations and Readiness to Spend: Household Size**

This table reports the average marginal effects of a multinomial logit regression for different households sizes. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics and household expectations. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) restrict the sample to respondents living in a household of size 1, columns (3) and (4) to respondents living in a household of size 2, columns (5) and (6) to respondents living in a household of size 3, columns (7) and (8) to respondents living in a household of size 4, and columns (9) and (10) to respondents living in a household of size 5.

	Household size: 1		Household size: 2		Household size: 3		Household size: 4		Household size: 5	
	Bad time	Good time	Bad time	Good time	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Inflation increase	−0.0064	0.0820***	−0.0098	0.0881***	−0.0107	0.0874***	−0.0051	0.0998***	0.0009	0.0946***
	(0.0090)	(0.0157)	(0.0096)	(0.0164)	(0.0096)	(0.0167)	(0.0090)	(0.0171)	(0.0144)	(0.0210)
Past Inflation	0.0426***	−0.0198***	0.0366***	−0.0205***	0.0369***	−0.0209***	0.0350***	−0.0179***	0.0351***	−0.0221***
	(0.0036)	(0.0036)	(0.0033)	(0.0036)	(0.0040)	(0.0045)	(0.0034)	(0.0039)	(0.0056)	(0.0045)
Demographics	X	X	X	X	X	X	X	X	X	X
Individual expectations	X	X	X	X	X	X	X	X	X	X
Pseudo R^2	0.0662		0.0657		0.0658		0.0691		0.0632	
Nobs	50,027		82,026		41,909		34,103		11,734	

Standard errors in parentheses

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

Table A.11: **Inflation Expectations and Readiness to Spend: Sex and Kids**

This table reports the average marginal effects of a multinomial logit regression separately for male and female and households with and without children. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics and household expectations. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) restrict the sample to female respondents, columns (3) and (4) to male respondents, columns (5) and (6) to respondents with children, and columns (7) and (8) to respondents without children.

	Female		Male		Children		No Children	
	Bad time	Good time	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflation increase	−0.0137	0.0910***	−0.0013	0.0861***	−0.008	0.0893***	−0.0076	0.0879***
	(0.0094)	(0.0161)	(0.0077)	(0.0162)	(0.0094)	(0.0174)	(0.0083)	(0.0157)
Past Inflation	0.0381***	−0.0185***	0.0370***	−0.0217***	0.0362***	−0.0193***	0.0378***	−0.0200***
	(0.0031)	(0.0038)	(0.0036)	(0.0034)	(0.0040)	(0.0038)	(0.0032)	(0.0036)
Demographics	X	X	X	X	X	X	X	X
Individual expectations	X	X	X	X	X	X	X	X
Pseudo R²	0.0636		0.067		0.0686		0.0644	
Nobs	115,715		104,084		58,705		163,186	

Standard errors in parentheses

*$p < 0.10, **p < 0.05, ***p < 0.01$

Table A.12: Inflation Expectations and Readiness to Spend: Marital Status

This table reports the average marginal effects of a multinomial logit regression by marital status. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics and household expectations. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) restrict the sample to single respondents, columns (3) and (4) to respondents in a relationship, columns (5) and (6) to married respondents, and columns (7) and (8) to divorced respondents.

	Single		Couple		Married		Divorced	
	Bad time	Good time	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflation increase	−0.0147	0.0905***	−0.0171	0.0824***	−0.0021	0.0925***	−0.0122	0.0777***
	(0.0093)	(0.0177)	(0.0113)	(0.0179)	(0.0085)	(0.0157)	(0.0111)	(0.0157)
Past Inflation	0.0385***	−0.0218***	0.0356***	−0.0173***	0.0354***	−0.0210***	0.0442***	−0.0177***
	(0.0040)	(0.0042)	(0.0046)	(0.0047)	(0.0030)	(0.0037)	(0.0041)	(0.0034)
Demographics	X	X	X	X	X	X	X	X
Individual expectations	X	X	X	X	X	X	X	X
Pseudo R^2	0.0575		0.0695		0.0678		0.0677	
Nobs	46,701		25,008		111,760		36,330	

Standard errors in parentheses
*$p < 0.10, **p < 0.05, ***p < 0.01$

Table A.13: **Inflation Expectations and Readiness to Spend: Homeownership**

This table reports the average marginal effects of a multinomial logit regression by home ownership. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics and household expectations. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it is neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) restrict the sample to home owners, columns (3) and (4) to apartment owners, and columns (5) and (6) to renters.

	House owner		Apartment owner		Renter	
	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)
Inflation increase	−0.0038	0.0834***	−0.0115	0.0766***	−0.0105	0.0938***
	(0.0080)	(0.0173)	(0.0120)	(0.0191)	(0.0096)	(0.0156)
Past Inflation	0.0342***	−0.0216***	0.0306***	−0.0228***	0.0410***	−0.0186***
	(0.0032)	(0.0034)	(0.0042)	(0.0048)	(0.0035)	(0.0039)
Demographics	X	X	X	X	X	X
Individual expectations	X	X	X	X	X	X
Pseudo R^2	0.0616		0.0607		0.0665	
Nobs	90,021		13,641		116,137	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.14: **Inflation Expectations and Readiness to Spend: Employment**

This table reports the average marginal effects of a multinomial logit regression by employment status. Households' readiness to purchase durables is the dependent variable. Inflation increase is a dummy variable which equals 1 when a household replies that inflation will increase. Past inflation measures the household perception of the increase in consumer prices during the last twelve months. We also control for household demographics and household expectations. We use the confidential micro data underlying the GfK Consumer Climate MAXX survey to construct these variables. GfK asks a representative sample of 2,000 households on a monthly basis whether it is a good time to purchase durables given the current economic conditions. Households can reply that it is a good time, it is a bad time, or it's neither a good time nor a bad time. Standard errors are clustered at the quarter level. The sample period is January 2000 to December 2013 for a total of fourteen years. Columns (1) and (2) restrict the sample to full-time employed respondents, columns (3) and (4) to part-time employed respondents, and columns (5) and (6) to un-employed respondents.

	Full-time Employment		Part-time Employment		Not Employed	
	Bad time	Good time	Bad time	Good time	Bad time	Good time
	(1)	(2)	(3)	(4)	(5)	(6)
Inflation increase	−0.0051	0.0923***	−0.0072	0.0845***	−0.0103	0.0852***
	(0.0080)	(0.0169)	(0.0100)	(0.0186)	(0.0098)	(0.0149)
Past Inflation	0.0345***	−0.0202***	0.0355***	−0.0209***	0.0413***	−0.0203***
	(0.0034)	(0.0038)	(0.0034)	(0.0042)	(0.0035)	(0.0035)
Demographics	X	X	X	X	X	X
Individual expectations	X	X	X	X	X	X
Pseudo R^2	0.0655		0.0623		0.0617	
Nobs	96,555		30,238		93,006	

Standard errors in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.15: **German Tax-to-GDP Ratio Over Time**

This table reports the total tax- and VAT-tax-to-GDP ratios in columns (1) and (2) and nominal GDP for Germany for a sample form 2000 to 2014 from the OECD revenue statistics. Columns (3) and (4) calculate the implied total taxes and VAT taxes. Column (5) calculates the hypothetical total tax under the assumption that the VAT-to-GDP ratio for the years 2007 to 2013 equals the average VAT-to-GDP ratio for the years 2000 to 2006. Column (6) calculates the hypothetical total tax-to-GDP ratio using the total taxes from column (5).

Year	Tax to GDP (1)	VAT to GDP (2)	GDP (3)	Total Tax (4)	VAT (5)	Total Tax w/o VAT increase (6)	Tax to GDP w/o VAT increase (7)
2000	36.30%	6.70%	2,113,500	767,201	141605	767,201	36.30%
2001	35.10%	6.40%	2,176,810	764,060	139316	764,060	35.10%
2002	34.40%	6.20%	2,206,280	758,960	136789	758,960	34.40%
2003	34.70%	6.20%	2,217,050	769,316	137457	769,316	34.70%
2004	33.90%	6.10%	2,267,580	768,710	138322	768,710	33.90%
2005	33.90%	6.10%	2,297,820	778,961	140167	778,961	33.90%
2006	34.50%	6.20%	2,390,200	824,619	148192	824,619	34.50%
2007	34.90%	6.80%	2,510,110	876,028	170688	862,761	34.37%
2008	35.30%	6.90%	2,558,020	902,981	176503	886,902	34.67%
2009	36.10%	7.20%	2,456,660	886,854	176880	864,042	35.17%
2010	35.00%	7.00%	2,576,220	901,677	180335	882,907	34.27%
2011	35.70%	7.00%	2,699,100	963,579	188937	943,914	34.97%
2012	36.50%	7.10%	2,749,900	1,003,714	195243	980,929	35.67%
2013	36.70%	7.00%	2,809,480	1,031,079	196664	1,010,610	35.97%