

Inflation Expectations and Economic Perceptions in a Developing Country Setting¹

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Abstract

We study inflation expectations and perceptions about important economic variables at the household level using a novel dataset of 18,000 households for the 2011-2013 period for Pakistan. We find inflation expectations are systematically exaggerated and this biased-ness is entrenched for low-income, less educated, female and younger respondents. This may partly explain unusually high inflation persistence in Pakistan. We also find that recent fuel and energy prices announcements play an important role in determining perceptions of inflation, which suggests that these commodities play an anchoring role for inflationary expectations. Moreover, current and future perceptions about economic variables (such as prices, income and economic conditions) are significantly correlated with actual food and energy inflation rates. These results are consistent with the observation that energy-related prices are popular news items and affect important CPI basket commodities. Lastly, our results cast doubt on the adequacy of rational expectations hypothesis in Pakistan.

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1 Introduction

Expectations play a defining role in modern macro-economic theory for they are believed to influence current choices of firms and households, and hence current prices and in turn overall economic activity (see Woodford (2005), Gali (2008), Sims (2009) for recent literature). For instance, the permanent-income hypothesis relates flows of households' expected incomes with present day consumption. Another example of the importance of expectations for real economic outcomes is the short-run Phillips' curve or the expectations-augmented Phillips' curve,³ which signifies the impact of households' expectations for the inflation-unemployment relationship.

Expectations, specifically about inflation, can drive true inflation; prices rise, in part, because people expect them to rise (Friedman 1968, Phelps 1968, Mortensen 1970 and Lucas and Rapping 1969). Former chairman of the Federal Reserve of the United States, Bernanke's (2004) speech stated that:

“..wages and prices that are set for some period...embody the inflation expectations of the parties to the negotiations; increase in expected inflation will thus tend to promote greater actual inflation. [...] If expectations are not well tied down, inflationary impulses that are in the themselves transitory may become embedded in expectations and hence affect inflation expectations in the longer term. Therefore, an essential prerequisite for controlling inflation is controlling inflation expectations.”

If actual inflation depends on its expectation then means of lowering such expectations must also form part of a policymaker toolkit. To acquire such means of influencing expectations it is both important to monitor expectations and understand how these expectations are formed.

The importance of household expectations for economic activity and policy is thus established, especially in the context of mature economies; indeed the literature has made significant advances in understanding expectations in developed economies. In the context of developing countries, household expectations are bound to play a role for realized economic outcomes. Moreover, since developing economies commonly encounter macro-economic instability and persistent inflation, understanding household expectations is central to economic policy. However, the literature studying the factors which shape expectations in the context of developing countries is sparse and the insights from studies of expectations in developed economies may have limited relevancy for developing countries; our paper will be an attempt to address this gap. We use a novel household level data set, collected by the central bank of Pakistan- the State Bank of Pakistan (SBP), and the Institute of Business Administration (IBA), to study inflation expectations in Pakistan.

Our developing economy focus has merit because it is reasonable to expect that the financial-planning horizon of agents, the quality of information and its dissemination methods, and the presence of informal structures may have important, but yet unknown, bearing on inflation dynamics and expectations of inflation. Furthermore, from a macroeconomic perspective of how much expectations matter for policy-making, whether they are rational or not and how they respond to a policy regime remain open questions in the developing economy realm. We attempt to study 'some' of these issues in the context of Pakistan. We note the need for caution in the interpretation of our results; a developing economy comparison is unavailable and a direct comparison with a developed country, for which comparable data and studies exist, will be of limited use.

There are two reasons why Pakistan is suitable developing country setting for a study on expectations of inflation. First, policy-makers in the country take expectations seriously. Indeed, in 2010 the country's Central Bank's (henceforth referred to as State Bank) Board of Directors decided to setup a University of Michigan style 'Center for Survey Research' in collaboration with a renowned local business school, the Institute of Business Administration, to regularly collect data on information on household expectations. The following quote comes from internal minutes of 27 Nov 2010, giving reasons, and we paraphrase here, for the development of inflation expectations database.

³The classic Phillips' curve refers to negative relationship between unemployment and inflation in the short run

“Studying the future course of inflation and business conditions through the expectation’s channel may not only affect the potential path of discount rates but will also help... fulfill the strategic goal of implementing forward-looking policy making. However, the importance of expectation’s channel has only been acknowledged... at a secondary level and direct information remains unavailable. It is therefore essential... to increase efforts in collating information on expectations of inflation and business conditions.”

Subsequently, the Monetary Policy Statement of June 2013 opened with the following remarks:

“There has been discernible positive change in sentiments post May 2013 elections...importantly there has been considerable improvement in the SBP conducted surveys of consumer confidence, expected economic conditions and inflation expectations..”

Therefore, the State Bank is clearly interested in studying expectations by means of directly collecting information on households and businesses and then subsequently incorporating such information into the Bank’s decision-making vis-à-vis policy.

The second reason why Pakistan is interesting is that a cursory look at its historical inflation series (Figure 1 in Appendix A) reveals interesting patterns. First, inflation series has never reached a hyper-inflationary stage; this is despite (or perhaps because of) a series of 9 external lending arrangements during 1980-2013 period (that is a program every 3.67 years). Secondly, as demonstrated by Figure 1, actual inflation is remarkably persistent in Pakistan. An estimation of persistence is tantamount to regressing inflation on its own lags and then summing over the coefficients of the auto regressors. When the sum is close to 1, then shocks have a long-lasting effect. If on the other hand the sum is significantly below 1, shocks have a temporary effect. Figure 1 (left scale), plots historical evidence on inflation persistence in Pakistan by running simple auto-regressions on year-on-year monthly CPI inflation data using a fixed six-year rolling sample. Inflation persistence, obtained by running an auto-regression and summing over the auto-regressive coefficients up to the fourth lag, lies in 0.95-1 range for the sample period of 1985-2013. This implies that shocks affecting prices have a long-lasting impact on inflation. In other words, when inflation goes up, it stays up. The year-on-year core inflation, which excludes food and energy items from the consumer basket (available only from 1996), is even stickier.⁴ Juxtaposing the top and bottom panel shows that persistence is higher at higher levels of inflation and only a touch lower at lower levels of inflation. Moreover, after the balance-of-payments crisis in 2008 persistence has shown no respite even when inflation was brought finally under control in early 2013.

The observation that inflation is persistent and increasingly so over time deserves an explanation. The persisting impact of economic shocks on inflation could be plausibly due to a de-anchoring of long-run inflation expectations, especially following the 2008 episode. A striking observation supports this claim; the results of households’ expectations for the period of January 2011 - June 2013 shows rock solid median six-month ahead inflation expectations of the public.⁵ Therefore, a natural place to look for explanations on inflation dynamics in Pakistan is to study the determination of and changes in the formation of expectations in Pakistan, which is the chief aim of this study.

Recent literature on inflation expectations can give some guidance about what to expect from such a study. Bryan and Venkatu (2001 a & b) use U.S data to show that inflation forecast errors, the difference between the reported expectation of inflation and the realized value, as well as inflation perceptions are systematically correlated with respondents’ demographics. Of particular interest are the results that low-income, less-educated, younger and female respondents hold relatively higher inflation expectations. Souleles (2004), using a long panel series of Michigan’s Index of Consumer Sentiment, finds that forecast errors are permanent but they vary with time. Moreover, these features are more pronounced for some demographic groups highlighting

⁴The conclusion that overall inflation has become stickier is robust to both a rolling fixed sample of 12 and 3 years.

⁵Household surveys from January 2011 - June 2013 consistently show that on average the price of goods worth Rupees 100 are expected to be sold at Rupees 150 six months later.

the true ‘heterogenous’ nature of expectations. Anderson (2008) adds to this argument by finding that forecast accuracy of inflation tends to improve for respondents belonging to a specific demography, i.e. there is evidence of learning for some type of people. Providing texture to these results, Madeira and Zafar (2011) find that updating of private and public information takes place at a different pace and is particularly slow for the group identified in Bryan and Venkatu (2001 a & b) as having imprecise forecasts.

Taking these results together, the implication for Pakistan is that one should expect a permanently higher level of inflation expectations and highly imprecise inflation forecasts because the country has large a fraction of population that is young and has average low incomes and high illiteracy rates. Indeed, Pakistan/U.S. ratios for percentage of population below the age of 30, read-and-write literacy rates for population beyond the age of 15 and income distribution Gini index are 1.6, 0.54 and 0.74 respectively.⁶ As a brief preview, the results of this paper suggest that: (i) inline with our anticipation, forecast errors are persistent and very large in Pakistan however at this point we cannot say if these features change with time as our data span is limited, (ii) perceptions about future prices are correlated more so with recent energy prices and to a lesser extent with food and other categories of commodities and also \$-Rupee parity, (iii) expectations are heterogenous in demographic sense à la Bryan and Venkatu (2001 a & b) - therefore an international pattern is emerging for low-income, less educated and young group, (iv) price announcements for fuel, a largely imported commodity, play an important role on the formation of expectations of inflation compared to other changes, such as electricity, (v) points (i) and (iv) are not a source of comfort for assuming the rational expectation hypothesis as a modeling choice, in the case of Pakistan; (vi) after controlling for demographics expected inflation and expected income are highly correlated; this gives credence to the Central Bank being concerned with inflation expectations in the first place; and (vii) perceptions of various economic are not random but are related to key socio-economic variables.

The rest of the paper is organized as follows. Following the literature review, Section 3 describes the data used in this paper. Section 4 presents empirical model, analysis and results followed by a concluding remarks. Throughout the paper, Figures are reported in Appendix A, while Tables are found in Appendix B.

2 Literature Review

Inflation expectations are important because agents’ behavior tends to be consistent with their beliefs (Zafar et al. 2011). Although actual expectations are unobservable but for the most part the academic community has agreed on using reported survey expectations as good proxy for expectation data (Roberts 1995). A large part of literature concerned with inflation expectations questions the rationality of these expectations - do individuals think rationally when forming their expectations of inflation (Lucas and Sargent 1981) . The rational expectations hypothesis assumes that agents are aware of the true structure and probability distribution of the economy and accordingly forecast variables of interest. Thus, a simple way to test whether forecasts fully incorporate available information is to regress the forecast errors on specific data that were available to the forecasters.

A vast range of data sets has been employed to test the rationality of expectations, leading to mixed results. Depending on the time period examined, the estimation technique employed, and the data series tested, different researchers have interpreted their evidence as either supporting rational expectations, or contradicting rationality, or pointing towards an adaptive or extrapolative expectations scheme (see Pearce 1979 for a summary of different papers testing the expectations formation hypotheses). Forsells and Kenny (2002) examine rationality and efficiency of inflation expectations using survey data from European region. Their results suggest an intermediate form of rationality; surveyed expectations are an unbiased predictor of future price developments and they incorporate a broad set of macroeconomic information. Figlewski and Wachtel (1981) use the Livingston Survey to test the rational, adaptive and regressive models of inflationary

⁶Sources are Pakistan Planning Commission, U.S. Census Bureau and World Development Indicators. The years are 2010 and 2011 for Pakistan and U.S., respectively.

expectations formation; they find that the adaptive expectation model best describes inflation expectations. Turnovsky and Wachter (1972) test the expectations hypothesis using wage and price expectations data and their findings cast some doubt on the simple adaptive models of expectations. Gramlich (1983) also finds that data does not support rationality; Mankiw et al. 2003 and Souleles 2004 corroborate that Inflation expectations are not fully rational, while Berk 1999 demonstrates that households' inflation expectations may show weak-form of rationality.

Not only is the existing literature mixed on the rationality of expectations, survey data as well as the professional forecasts of future inflation rate also show disagreements across various groups of the agents (Mankiw et al. 2003, Souleles 2004, Branch 2004, Carroll 2003a, Capistran, Carlos and Timmermann, Allan 2009). Bryan and Venkatu (2001a and 2001b) use State Bank of Cleveland data to show that survey-based estimates of inflation sentiment are systematically influenced by the demographic characteristics of the respondent; income, education, age, race, and gender are all strongly correlated with respondents' perceptions of inflation and their forecast of future inflation. Bryan & Venkatu, (2001b) find that women, non-whites, high school dropouts and lower income groups expect higher inflation compared to others. Similarly, Madeira and Zafar (2012) find higher degree of heterogeneity in inflation expectations of women, less educated and ethnic groups. Lombardelli and Saleheen's (2003) analysis of the Bank of England Inflation attitudes survey finds that people's expectation of future inflation is driven by their occupation and age. In particular, older people expect higher inflation because they have experienced greater levels of inflation when averaged over their adult lives. Moreover, people base their expectations of future inflation on what has happened over a number of years rather than just the previous year. Souleles (2004) also finds more educated and higher income groups having smaller errors relative to less educated and lower income groups. Similarly females, minorities, young, and non-whites had less accurate forecasts compared to their opposite groups. Souleles 2004 also finds that the bias in inflation expectations of households varies with inflation regime and business cycle.

Households are exposed to the same information on historic prices; why then are there disparities in their reported expectations about future prices? Households' views are influenced by forecasts of professionals through news, to which household are not attentive all the time; inattentiveness on the part of households generates heterogenous inflation expectations as some households update their information set at higher frequency than the others (Carroll 2003a, Mankiw et. al. 2002). Along similar lines, Feige and Pearce (1976) argue that the information access and processing is costly, so the households turn to basic utility optimization while forming their expectations by combining cheaper new information and past experience. because of the differences in private information of individuals and slower expectations updating within these groups.

Souleles 2004 argues that shocks affect demographic groups differentially, for instance young people have more cyclical forecast errors compared to aged people, because business cycle shocks affect young people disproportionately more. Madeira and Zafar (2012) corroborate Souleles 2004 by asserting that during periods of high inflation, inflation expectations of the young are higher than their aged peers. Women, young, less educated and minorities make more inefficient forecasts, give more importance to their past life experience, are rigid to change their peculiar beliefs (private information), and are sluggish in updating expectations according to recent developments. In another study by Armantier et. al. 2012, authors reinforce the point through an information experiment; the people on high end of inflation expectations were ignorant of objective facts, and when provided with relevant information how they updated their expectations and converged towards mean. This study found that it's not only the information but also the information processing rules which caused groups to have inefficient, higher and heterogenous inflation expectations.

Lastly, there is a strand of literature which links expectations to actual, future economic behaviour. Carroll et. al. (1994) and Souleles (2004) find the influence of household expectations on their consumption. Consumption follows consumers' sentiments and consumption growth is negatively correlated with current uncertainty and positively related with lagged uncertainty.

3 Data Description

The IBA-SBP Consumer Confidence Survey (CCS) was launched in Jan 2012 by SBP in collaboration with IBA Karachi. Each campaign covers about 1800 households contacted through fixed line telephone across Pakistan and is conducted regularly every two months. The single stage stratification of geographical regions provides outreach to all demographic segments of the population and each region's representation is taken care by means of population proportionate sample allocation. The questionnaire mostly adopts University of Michigan Consumer Sentiments Survey, which solicit qualitative responses on a Likert scale having five responses plus 'Don't Know' option. There is one exception. One question solicits a 'quantitative' response regarding expected price level- an important focus of this study. The target respondent is a personality who is financially responsible member of the household. The sample of the survey also includes a 33% rotating panel, which gives us an opportunity to study impact of various factors on households' expectations over six months.

The Consumer Confidence Survey (CCS) data used in this study covers the period of Jan 2012-Nov 2013. Therefore, we cover 11 waves. This represents responses from approximately 18,000 households' interviews of which about 9,900 are from households interviewed at least twice at six-months interval in the rotating panel of the survey.

In addition to the CCS dataset, we use datasets from four other sources. First, we use data for the relevant period compiled by Pakistan Bureau of Statistics (PBS)-the federal agency for data collection, on: (i) Consumer Price Index (CPI) compiled from national surveys of shops in designated markets of major urban hubs; and (ii) 2010/2011 Households Integrated Economic Surveys (HIES); a twin survey composed of Pakistan Standard of Living Measurement and Household Income and Expenditure surveys. HIES reaches an extensive number of households- to give an example for a district level survey about 80,000 households are targeted, across the country and is considered a reliable source for collecting primary socioeconomic information across Pakistan. Second, price announcement data and dates on government-regulated commodities prices has been obtained from the relevant state agencies. Third, the administrated prices index, which is collection of all commodities within the CPI having their prices fixed by the government, was developed in-house using the prices from CPI and relative weights of these commodities in consumers' budgets.⁷ Finally, data on monthly exchange rate (for months corresponding with CCS) is taken from International Financial Statistics (IFS) of International Monetary Fund (IMF). Having described the dataset sources, we now compare the extent to which views expressed in CCS can be considered as a representative of Pakistan, followed by important highlights facts of this data.

3.1 A Comparison of Consumer Confidence Survey with HIES

We use 2010/11 HIES to verify the extent to which our CCS is a representative of the target population. In Tables 1-5 we compare CCS with: (i) general HIES surveys along many socioeconomic dimensions of households; and (ii) HIES for households having a land line phone connection- a field identifiable in that survey. In 2010/11, about 6% of households reported having landline phone connection.

In terms of distributions of gender (Table 4) and age (Table 3) we find that respondents of CCS are very close to the average households statics reported in HIES in general and also those having a land line. The average respondent heading the household is between the age bracket of 45-52, and a lion majority (90%) are males. Similarly, the average size of a household reported in both surveys is in the range of 6-7.

There are however differences in terms of education and income group levels. Table 1 shows that respondents of the CCS survey tended to be more educated than the average household head in HIES. The main difference is coming from the fact that HIES reports a very high number of illiterate subjects. However, the households having a land line phone connection in HIES (last column) is similar education levels to CCS. Turning to

⁷We thank the PBS for their generosity.

income levels, Table 2 shows that household heads in HIES tend to be poorer than those interviewed for CCS. Indeed, 74.7% of households reports having a monthly income in the bracket of 10-20k (100-200 USD) or below, whereas CCS reports 37.9% in this category. The main difference is coming from the fact that 30.89% of subjects in HIES report incomes levels below 10k (USD 100). However, when we consider those households having a land line connection in HIES, the income distribution are similar to CCS.

The fact the households interviewed in CCS are relatively better off than those reported in HIES is not unexpected because having a phone connection is an indirect proxy for the income bracket a household belongs to. Moreover, for the following reasons this difference should not be a challenge. (i) The CPI that we map to CCS also originates from urban centers, where land lines are more common. In other words, we will be studying households expectations in localities where from other price data is also collected. (ii) It is reasonable to anticipate that perceptions of households having some *real purchasing-power* find themselves in a better bargaining position, and therefore would matter relatively more for the determination of expectations in general.

To conclude, considering that CCS sample allocation is proportionate to the regional population distributions, the similarity of age and gender distributions with HIES; and the similarity with income and education levels for those households having a land line in HIES, CCS is a good representative of the target population in Pakistan.

3.2 Consumer Confidence Survey: Summary Statistics

Overall summary statistics of observations in CCS are reported Tables 6-8. Since some information overlaps from the previous sub-Section, we will minimize the discussion below. As discussed earlier, CCS survey is conducted manually by dialing a random selection of telephone numbers from the national telephone directory with appropriate levels of stratification. A brief summary of activity by campaign (or wave) is discussed in Tables 9-15. Lets briefly consider both aspects in turn.

At a more aggregate level, a large majority of our respondents are males, either directly responsible for financial matters or a closely related to the key decision maker (Table 6), and they lie in the age bracket of 30-50 years of age (Tables 7) with a median age of 47 (Table 8)⁸. A large majority (82%, cumulative sum in Table 8 from Matric onwards.) have received at least high-school education. The average size of households is as described previously (Table 8 third column).

By-wave comparisons corroborate the statistics above, but also reveal other interesting facts. First, our respondents report monthly household income of 10k-50k (USD 100-500) and this facts is remarkably consistent across all waves (Table 9). Second, the by-wave consistent level of education lie between Matric (high school) and Bachelors (an undergraduate degree)- see highlighted in Table 10. Third, the lion-share of source of income of our households are salaries (about 50%), while trade (or distribution) and agriculture account for 34.26 % of households' income (See Table 11). Finally, we consider by-wave distribution of respondents' ages in Table 12. The median of the respondents, is 37 in Table 12. This is different from the statistic reported in Table 2 because it is computed using raw data without removing outliers from data entry errors. Such errors are clearly present in the data. For example, it is not possible for respondents to have the age of only 3 in wave 8, or 212 in wave 2. Once we remove these errors, we get that median age of the respondent is 47 years.

Having described the sources, the appropriateness and highlights of our data we now turn to the empirical analysis.

⁸The number respondents revealing the age is low and it halves the data available to us when we use this variable in our analysis

4 Empirical Analysis and Results

This section explores the expectation data in three steps: First, we test how expected prices vary with the realized level and changes in past and future prices. We also test if the reported expectations are internally consistent or efficient. This is done by using the Souleles (2004) methodology, which tests if the same household reports consistently when re-interviewed over multiple rounds. A word of caution about observations numbers in the following analysis. The last two waves are dropped in regressions because the corresponding future ‘realized’ inflation rates and perceptions data of economic variable are not available -that is understandable as we don’t have the future data for the latest waves. Also, we loose observations when we control for age, a category having low response rate. Finally, there is missing data. Next, we examine the heterogeneity in reported expectations across demographic groups. Lastly, the data is used to study how expectations respond to economic shocks.

4.1 Inflation Expectations, Perceptions and True Inflation: Past and Future

4.1.1 Inflation Expectations and their Link with True Inflation

Figure 2 shows the 6-month actual inflation rate across the regions in the sample; the inflation ranges from a little below zero to about 8 percent. The corresponding expected inflation as reported by survey respondents is shown in the lower panel of Figure 2. The survey asks respondents what they expect the price of a good that costs Rs. 100 today to be 6 months from now, which is used to get the expected 6-month inflation. Respondents seem to believe the prices of goods costing Rs. 100 will rise to Rs 150-250 6 months later. Figure 3 shows the average expected inflation and the actual realized inflation for each wave for a few specific regions. For the last two waves future inflation is not available to us, therefore these drop out of the analysis. While the gross overestimation of future prices is apparent in Figures 2-3, there is little evidence, at least visually, of any strong correspondence between actual changes in prices and the expected changes as reported by respondents. Later in this section we do more thorough empirical tests of the correlation between actual and expected prices using expected and lagged inflation; we also use a broader set of expectations solicited from respondents.

The graphical evidence presented above illustrates that highly inflated and noisy measures of the expected inflation are reported; this is not entirely surprising since the setting is a developing country with chronic inflationary pressures especially on the vulnerable sections of the population. Reported price expectation could be revealing information about the respondents’ situation, which may cause a pessimistic or optimistic view about the future. In Figure 4a we show the distribution of the respondents’ expectation of 6-month forward prices by how they categorized their expectation of the household financial condition in 6 months. Figure 4b shows the same distribution by how the respondent characterized their expectation of the general economic condition. The variable `Prices_FvsN` is the rank given by the respondents to how they expect prices to be 6 months forward compared to now. The categories for price expectation ranges from -2 to 2, where negative values imply they expect prices to increase and positive imply vice versa, while 0 implies they expect prices to stay the same. As suspected the price expectations follow the respondent’s view about their household’s prospective financial position in the future as well as about their view of the general economic condition in the future. As we move from individuals reporting a negative to a more positive expectation of their household’s future financial position, the distribution of the reported price expectations shifts to the right. In other words, the households who expect an improvement in their financial position or the general economic environment, also expect lower inflation. Lower expected inflation is also correlated with better perceptions about suitability for durable purchases and unemployment.

Price expectations seem to follow expected idiosyncratic or aggregate shocks to the economic conditions faced by households. Next we ask: to what extent do expectations respond to true price changes? Following

the basic literature on inflation expectations, we run the following regression using general inflation from last 1 month, 3 months and 6 months, controlling for respondent characteristics, wave and region fixed effects.

$$exp_{irt} = \alpha_{irt} + \beta_0 inf_{rt} + X_{irt} + \omega_t + \eta_r$$

The dependent variable, pred.6m, is the expected 6-month inflation as reported by surveyed individual i in region r at time t .⁹ inf_{rt} is the relevant true inflation for each month and region; X_{irt} are controls for gender, education and age, ω and η are wave and region fixed effects, respectively. To derive inf_t , we calculate the actual change in the monthly CPI for energy, food and NFNE (nonfood and non-energy) goods, for each wave, over the past 1, 3 and 6 month periods corresponding to the month when the wave was done. We can also get the forward 1, 3 and 6 month inflation from the wave month. Hence for each wave we have the corresponding true forward and past inflation rates. We use these independently and together in the above regression. We use alternate types of expectations as the dependent variable - including price expectation by category (energy, food, NFNE) and expectation about general economic and household financial position. The above regression aims at understanding that after controlling for biases in perceptions from differences in demographic characteristics, to what extent are perceptions affected and correlated with the actual realized changes in prices. A higher rate of inflation in the past can result in households reporting worse expectation if they expect persistence in inflation, or reporting better expectation if a recovery is expected.

Results are presented in Tables 13.¹⁰ In general, past inflation has weak coefficients when used in regressions of price expectations (see column 1, Table 13). Therefore, past overall inflation does not explain price perceptions. When inflation by categories is added to the RHS (see regressions 2-5, Table 13), the coefficient on *energy inflation* is significant and positive. As the inflation horizon goes down (from 6 month to 1 month) this coefficient is larger and more significant. *People base their perceptions about future prices on most recent changes in energy prices, much more than on changes in food and other prices.* This is an important discovery for modeling choice of inflation expectation in Pakistan. It is consistent with the growing evidence from developed economies about the effects of energy price shocks on consumer behavior; Edeldtein and Kilian (2009) show unanticipated energy price changes causes consumer spending to fall in the US, highlighting an adjustment of perceptions about the future course of energy and other prices as being a mechanism through which this change comes about. Lastly, we also note that predicted 6-month inflation and the realized inflation 6 months later are not significantly correlated (see column 6, Table 13).

4.1.2 Perceptions of Key Economic Variables and their Link with True Inflation

In Table 14-21, we estimate a battery of ordered logit models with categorical perceptions about: (i) prices along with its variants: food, energy and Non-Food-Non-Energy, (ii) households own financial position, (iii) general economic position, (iv) purchasing a durable goods and more specifically a car and a house, (v) government economic policy and (vi) unemployment. These variables serve as the dependent variables and are respectively denoted by Price_, Food_, ene_, NFNE_, HHFinPos_, GenEcon_, BuyDur_, BuyCar_, House_, GovtEconPol_ and Unemp_ in Tables 14-21. These categorical expectations are constructed as follows: the survey asks respondents to rate on a 5 point scale of what they expect the following list of variables to be in the next six months compared to now (denoted by _fwd in the Tables) and now compared to the last six months (denoted by _pres in the Tables): household financial position, general economic conditions, prices by category of goods, durable goods, economic policy and unemployment. The responses are as follows -2 (much worse), -1 (worse), 0 (neutral), 1 (better) and 2 (much better). When asked about prices, the negative responses correspond to an expectation that prices will be much higher. Thus in the price perception regressions, a positive coefficient should be interpreted as a greater likelihood of expecting the

⁹The survey asks respondents what they expect the price of a good that costs Rs. 100 today to be 6 months from now.

¹⁰For the last two waves future inflation is not available to us, therefore observations from these drop out of the analysis. We also loose dat when we control for age and due to missing other data.

price to be lower.¹¹ The ‘explanatory’ variables for these models are backward and forward one, three and six months ‘actual’ inflation of various categories (referred to by food, ene (for energy) and NFNE in `_back` and `_fwd` varieties in Tables 14-21). These are mapped to the relevant wave for each household interviewed and for each question of our interest.

The results are presented as follows. First, we discuss in Tables 14-17 the explanatory power of past inflation and its variants to explain each of our dependent variables. Second, in Tables 18-21 we consider the repercussions realized-future inflation rates and its variants have on our interests. All regressions account for individual characteristics, which also implies that we loose observations.

Past Inflation

Starting off with households’ perception of their current financial position, we find that NFNE prices going as far back as six months (column 3, Table 14) matters for such perceptions. When its comes to household perceptions about their financial position six-months down the road, food and NFNE inflation for the last three months (column 5, Table 14) matter more, and NFNE of the past six months is also important. Turning to overall price expectation in Table 14, the coefficients have the correct sign and previous food inflation - both one and three months old values, matters significantly for people’s perceptions about general prices. High prices in the past lead to households perceiving their financial position as worsening.

We now delve deeper into explanations for current perceptions about various categories of prices. We find that households’ perceptions about current food, energy and NFNE prices, that is columns 1, 7 and 13 respectively in Table 15, are consistently shaped by the latest food inflation; higher 1 month food inflation leads them to perceive current prices to be higher relative to the past. This is a consistent finding, though we note that relatively recent food price changes (1-month) matter more than longer term (6-month) changes. Past energy and NFNE inflations have the opposite sign when it matters -for example when NFNE inflation is high, people expect prices to fall (for example column 7 and 13, Table 15), indicating that people expect recovery in these prices, whereas food prices are perceived to be more persistent. Previous energy prices also matter for perceptions of future energy prices. Other regressions for determining future perceptions using past inflation do not offer meaningful insights.

The perceptions of current as well as future general-economic-conditions are strongly correlated with six-months historical inflation rates of food and NFNE inflation (see column 3, Table 16). Indeed, past food and NFNE inflation experiences strongly determine perceptions of households about how the economy is going to fare over the next months; surprisingly energy inflation does not matter here.

Current and forwarding looking perception for purchasing durable goods in general are not related to past inflations categories in an interesting way (Table 16, columns 7-11). However, intentions to purchase a house in the future is ‘very’ strongly negatively influenced by historical experience of high NFNE inflation (Table 17, columns 5 and 6).

Finally, perceptions on government policy is not affected by backward-looking inflation in a significant way. However, historical NFNE is taken as an indication of worsening the unemployment outlook.

These results indicate economic perceptions are a function of price changes faced by the public; recent food and NFNE prices factor into perceptions more so than past energy prices. This could mean people conceive energy price changes to be rather short lived, and hence does not induce them to significantly change their perception of the economy. Let us now turn to compare how our perception variables perform when we explain them with realized-future inflation numbers. The idea is to test the extent to which perceptions are forward-looking from the point of view of inflation.

Future Inflation

The power of realized-future inflation to explain current perception for household financial position does not

¹¹For government economic policy only the perception about its state at present is asked. For unemployment, suitability for automobile and house purchase only future expectation are solicited

reveal interesting results. However, future inflation over a six month horizon (column 6, Table 18), is very strongly negatively correlated with perceptions about households' future financial position.

Realized-future food and energy inflation turn out to be correlated with reported price expectations (columns 7-9, Table 18). Turning to sub-categories of commodities, future food and energy inflation, especially one and six months future inflation for food and 3 months future inflation for energy, are correlated with households current and future perception of how various categories of prices will behave. In these regressions food inflation has a bigger coefficient and therefore dominates, Table 19.

Interestingly, perceptions about current and future general economic conditions are strongly positively correlated with future NFNE inflation rates over the 1 and 3 months horizon and very strongly negatively correlated with energy and food inflation over the six month horizon (Table 20).

In Table 21 we show that current and future perceptions for purchasing durable goods in general and its different categories are again negatively related with future food and energy inflation rates exceeding 3 months.

Finally, perceptions of government economic policy appear to be strongly negatively related to future 6-months NFNE and food inflations rates. For perceptions on how unemployment is going fare in six months time, it is again future food rates that matter the most (Table 21). These result suggest the obvious that bad news about future inflation entails negative 'perceptions' today about the future.

We can draw three important conclusions from our discussion: (i) with the exception of past energy inflation, other categories of past inflation does not really seem to explain people's expectations about future prices; (ii) current or future perceptions of various variables are linked to past and future inflation rates at various intervals and in particular to that of food inflation followed by energy inflation rates; and (iii) previous two points combined provide some initial evidence on the importance of recognizing expectations of prices and perceptions in general for a developing country setting, a topic somewhat neglected by economic literature but not the politicians.

In the following sections, we explore the origins of these perceptions with the available data and employing different empirical methodologies. We delve deeper into testing the efficiency of perceptions by using the rotating panel within the survey individuals, and testing if respondents' views are consistent when interviewed more than once. We also consider the effects of demographic characteristics (gender, education and income), of past price changes by categories of goods, and of national and local price announcements and shocks.

4.2 Efficiency of Perceptions

Having established the importance of perception and expectations the next follow-up question is: Do people make form consistent expectations? If they do, then their forecasts are efficient.

To do so, we make use of the rotating panel within the data to run rationality tests following the Souleles (2009) methodology. The survey asks the household for their expectation of each economic variable in the next 6 months relative to the present, as well as their perception of the economic variable at present relative to 6 months ago (e.g. denote $V(E)_{i,t}$ is respondent i 's expectation of economic variable V 6 months later relative to the present, as related in round t ; and denote $V(R)_{i,t}$ is the respondent's perception of the variable V at present relative to 6 months ago. We have solicited responses for expected and realized states of the following list of economic variables.¹² The responses are categorical: -2 (much worse), -1 (worse), 0 (neutral), 1 (better) and 2 (much better). For prices the categories are: -2 (rise a lot), -1 (rise), 0 (stay the same), 1 (fall) and 2 (fall a lot).

¹²Recall that for government economic policy only the perception about its state at present is asked. For unemployment, interest rates and suitability for automobile and house purchase only future expectation are solicited. The expected and realized state of the households income is asked for a 1 year period (forward and back)

1. HHFinPos: Household financial position
2. GenEcon: General economic conditions
3. Prices: Prices of daily use items
4. FoodPr: Food prices
5. EnePr: Energy prices
6. NFNEPr: Non-Food and non-energy prices
7. HHInc: HH income ¹³
8. BuyDur: Time to purchase durable household items
9. BuyAuto: Time to purchase automobile (car/motorcycle)
10. Housing: Time for purchase or construction of new house
11. GovtEconPol: Economic policy of the government
12. Unemp: Unemployment
13. Interest: Interest rates

Figure 5 shows the average realized and expected responses for different economic variables. The line for expected values is always above the line for the realized values. In any given wave, respondents perceive the expected change in economic variables to be better in the future compared to the change in the same variable over the past 6 months. In other words, respondents are systematically biased negatively towards realized states of the economy, and positively towards expected changes in the future. The charts in Figure 5 also show the trends in reports about realized and expected states are co-cyclical. To test if $V(R)$ is led by $V(E)$, we run the the following regression The forecast error for economic variable V , $\epsilon_{i,t+1}^V$ is given by $V(R)_{i,t+1} - V(E)_{i,t}$.

$$V(R)_{i,t+2} = \beta_0 V(E)_{i,t} + \beta_1 Z_{i,t} + \omega_{rt} + \eta_{i,t+2}$$

$$\epsilon_{i,t}^V = \beta_0 wave_t + \beta_1 area_i + \beta_2 Z_{i,t} + \eta_{i,t+1}$$

We run this regression for household income, general economic conditions, food, energy and NFNE prices, and suitability for purchasing durables. β_0 captures the correlation of the expectation for economic variable V reported in round t and the perceived realization of V by the same household in round $t + 2$, or exactly 6 months after the expectation was solicited. Since the forecast horizon for the household expectations is 6 months, if expectations are efficient, a household reporting some exceptions about V 6 months into the future at wave t will report a corresponding perception of V 's realization over past 6 months when interviewed 6 months after t . Z_{it} is the vector of demographics; if the forecasts are efficient, they will be unrelated with any information available to the household at time t , and hence the coefficient β_1 will be zero. The results reported in Table 22 confirm that forecasts are generally efficient; the vector of household demographics is insignificant in the above regression for all economic variables, expect general economic condition and food prices. For these variables the gender dummy is significant; particularly, the coefficient for female dummy is negative for general economic condition and positive for food prices. Females are biased towards the future in their perception of economic conditions, in their words, they underestimate current economic conditions,

¹³Expectation horizon is 1 year

and over estimate future economic condition, after controlling for time and area. The opposite is true for food prices; females are optimistic in their view of current food prices versus future prices - when asked about food prices in the future, they expect them to be worse, but when asked about present food prices they expect them to be better compared to the past.

4.3 Perceptions and Demographics

Figures 6, 7, and 8- show the expected change in price of a good costing Rs. 100 as reported by respondents by gender, income and education. Females report consistently higher expected inflation; similarly, the respondents with lower household income expect prices to rise more. The expectations are not much different across education groups.

To complement the trends above we test econometrically whether some sections of the population interpret future prices systematically differently from others. The general regression we run is of the form

$$y_{irt} = \alpha_{irt} + \beta_0 X_{irt} + \omega_{rt}$$

where X_{irt} are categorical variables for income group, education group, age group (under 25 years, between 25-50 years and over 50 years) and gender. As before, y_{irt} is the response of individual i in region r during wave t , and we include a wave-region fixed effect in this regression. The wave-region fixed effects absorbs the effect of actual price changes, which we have explored in the previous section. In the construction of the demographic dummy variables we omit the following categories: male, illiterate, youngest age group (under 25 years) and lowest income group (less than Rs. 10,000 household income). Results are in Table 23. In results data shows that after controlling for age, education and income, females have better outlook for the household economic condition, but worse outlook for general national economic condition, compared to males. They also expect prices to be higher, compared to males and have pessimistic views about purchasing durables. More educated people have better expectations for personal household income, but are more skeptical of general economic conditions and government policy and expect it to be worse, compared to illiterate people. With education, respondents also become more pessimistic about prices; compared to illiterate respondents, they perceive food, energy as well as non-food-non-energy prices to be on the rise (as seen by their response about change in prices over past 6 months), and expect them to be higher going forward. Similar to Lombardelli and Saleheen (2003), the senior age groups expect higher prices compared to the youngest section of the population, and have overall worse expectations about the economic environment in general. With respect to the income, respondents in higher socio-economic households are more optimistic; compared to the lowest income group in our sample (HH income less than Rs. 10,000), the higher income group members perceive prices to have fallen over the last 6 months and also expect prices to fall in the future.

We also run the following regression for expected inflation:

$$y_{irt} = \alpha_{irt} + \beta_0 X_{irt} + \beta_1 X_{irt} \cdot inf_{rt} + \omega_{rt}$$

The aim of this regression is to understand the differential sensitivity to past inflation and differential accuracy of future inflation across the demographic groups. Firstly, inflation expectation (response to what do you expect the price of a Rs. 100 item to be 6 months from now) is regressed on the demographic dummies, the true 6-month inflation rate and its the interaction with the demographic dummies. The interaction effect should be interpreted as follows - if true inflation in a region increases by 1 percentage point, a respondent in a certain demographic category increases his inflation expectation by β_1 percentage points relative to the

omitted category. The coefficient on the interaction term gives us a sense of the forecast error across the demographic groups. Results ¹⁴ show that respondents in higher education groups are significantly more likely to report a higher expectation when the actual inflation is also higher. Similarly, adding past inflation and its interactions on the RHS can enable us to see how the response to previous inflation varies across demographic groups. We don't see much variation in this dimension.

4.4 Perceptions and Price Shocks

How to price announcements affect reported expectations? Figure 9 (top panel) shows the average values of the response to the question about expected prices across individuals interviewed on any particular date; the bars signify dates when a price notification was made by the relevant authorities. We would like to see how reported expectations respond to these announcements. In the bottom panels of Figure 9, we have plotted the notified price of petrol and CNG, respectively, as well as the average reported expectation. Recall, lower values of the price expectation implies people expect prices to rise a lot. We see that people's reported expectation responds to price announcements in the exact direction expected. When lower petrol prices are announced (May), the expectations are better (people expected a smaller price rise in the future) relative to when high petrol prices are announced (July). This result is confirmed in the regression analysis below with results reported in Tables 24 and 25.

We expect that a price announcement is likely to cause respondents to react to the announcement and adjust their expectation if interviewed right after the announcement. In this case, both the time of announcement as well as the announced price matters. We'd like to see if (after controlling for demographics) do people report significantly different expectation if interviewed immediately after a price announcement. For each respondent, we get the last announcement, and create dummies equal to 1 if the last announcement is 1, 2 or 3 days ago. These are variables *shock1*, *shock2* and *shock3* respectively. The dependent variable, *pred_6m*, is the expected 6-month inflation as reported by surveyed individual *i* in region *r* at time *t*. In the regressions we control for shock dummies as well as its interaction with the price announced. We do not see any effect on people's perception of future prices, Table 24. However we see that people report significantly lower previous prices if interviewed immediately after an announcement.

In Table 25 we run ordered logit regressions with the categorical responses about previous and future price categories as dependent variables. We see that the shocks have a significant effect on peoples' perception of current prices versus past prices. The coefficient on shock dummy is significant and negative for perception of past food, energy and NFNE prices. This implies the respondents who were interviewed immediately after an announcement seemed to think prices today are significantly higher than they were 6 months ago. Essentially, our main finding is that these price announcements do play a role in shaping perception about past inflation. Electricity price changes do not appear to matter and we only get an effect with the fuel price announcements.

5 Concluding Remarks

The paper lends an eye into the formation of economic expectations in the context of developing economy-Pakistan. We show that announcements about fuel prices, past energy price inflation, as well as demographics like gender, education and income group play a role in people's expectation formation. Expectations are unaffected by past general and food inflation, which is contrary to the perception that food prices have a more than proportional affect in households' expectation about future general prices. Perceptions are generally efficient, food price expectations and expectation of general economic condition which tend to be inefficient.

¹⁴Not shown, but available on request

While we are unable to gauge long-term trends in expectations formation or identify patterns of learning or persistence in households reporting of expectation due to the short time span of the survey, the analysis above does affirm the need for further investigation of household expectations and the role they play in actual economic activity. The paper also substantiates the existence of similarities as well as differences in economic expectations of households between developing and developed economies. Evidence for Pakistan is in line with that from other developed economies in that demographics influence expectation formation; on the other hand the evidence for rationality and efficiency in Pakistan's context is not as solid as that from studies using data from more developed countries.

References

- [1] J. Aivalotis, D. Spaulding, G. Stockmayer, The bay area jobs-housing mismatch, Applied Demography - University of California at Berkeley working paper (2001).
- [2] Bernanke, B. (2004) 'The Economic Outlook and Monetary Policy,' speech at the Bond Market Association Annual Meeting, New York, New York.
- [3] J.K. Brueckner, F-C. Lai, Urban growth controls with resident landowners, *Regional Science and Urban Economics* 26 (1996) 125-144.
- [4] J.K. Brueckner, Modeling urban growth controls, in: A. Panagariya, P. Portney, R.M. Schwab (Eds.), *Environmental and Public Economics: Essays in Honor of Wallace E. Oates*, Edward Elgar Publishers, 1999, pp. 151-168.
- [5] J. Aivalotis, D. Spaulding, G. Stockmayer, The bay area jobs-housing mismatch, Applied Demography - University of California at Berkeley working paper (2001).
- [6] J.K. Brueckner, F-C. Lai, Urban growth controls with resident landowners, *Regional Science and Urban Economics* 26 (1996) 125-144.
- [7] J.K. Brueckner, Modeling urban growth controls, in: A. Panagariya, P. Portney, R.M. Schwab (Eds.), *Environmental and Public Economics: Essays in Honor of Wallace E. Oates*, Edward Elgar Publishers, 1999, pp. 151-168.
- [8] Bryan F. Michael and Venkatu, Guhan (2001a). The Demographics of Inflation Opinion Surveys. Federal Reserve Bank of Cleveland Economic Commentary Series, October 2001
- [9] Bryan F. Michael and Venkatu, Guhan (2001b). The Curiously Different Inflation Perspectives of Men and Women. Federal Reserve Bank of Cleveland Economic Commentary Series, November 2001
- [10] Carroll D. Christopher; Fuhrer, C., Jeffrey and Wilcox, David W. (1994). Does Consumer Sentiment Forecast Household Spending? If So, Why? *The American Economic Review*, Vol. 84, No. 5 (Dec., 1994), pp. 1397-1408
- [11] Carroll, C. (2003b). The Epidemiology of Macroeconomic Expectations. In L. Blume, & S. Durlauf, *The Economy as an Evolving Complex System, III*. Oxford University Press, 2006.
- [12] Mankiw, N. G.; Reis, R.; and Wolfers, J. (2003). Disagreement about Inflation Expectations. In M. Gertler, & K. Rogoff, *NBER Macroeconomics Annual 2004*, Vol. 18 (pp. 209-270). National Bureau of Economic Research, Inc
- [13] Carroll, D. Christopher, (2003a). Macroeconomic Expectations of Households and Professional Forecasters. *Quarterly Journal of Economics*, Volume 118, Number 1, February 2003
- [14] Moreno, Ramon and Villar, Agustin (2010) . Inflation Expectations, Persistence and Monetary Policy. *BIS Papers* 49, January 2010

- [15] Berk, Jan, Mark (1999). Measuring Inflation Expectations: a Survey Data Approach. *Applied Economics*, 1999, 31, 1467-1480.
- [16] Baum F. Christopher and Caglayan, Mustafa (1999). Persistence in International Inflation Rates. *Southern Economic Journal*, Vol. 64, No. 4, April 1999.
- [17] Roberts M. John (1995). New Keynesian Economics and the Phillips Curve. *Journal of Money, Credit and Banking*, Vol. 27, No. 4, November 1995.
- [18] Forsell M. and Kenny G. (2002). The Rationality of Consumers' Inflation Expectations: Survey-Based Evidence for the Euro Area. Working Papers Series, European Central Bank, WP NO. 163, August 2002.
- [19] Figlewski , S. and Wachtel, P. (1981). The Formation of Inflationary Expectations. *The Review of Economics and Statistics*, Vol. 63, No. 1 (Feb., 1981), pp. 1-10
- [20] Gali, Jordi. *Monetary Policy, Inflation, and the Business Cycle*. Princeton University Press, New Jersey, 2008.
- [21] Capistran, Carlos and Timmermann, Allan (2009). Disagreement and Biases in Inflation Expectations. *Journal of Money, Credit and Banking*, Vol. 41, No. 2-3 (March-April 2009).
- [22] Souleles, Nicholas S. (2004). Expectations, Heterogeneous Forecast Errors, and Consumption: Micro Evidence from the Michigan Consumer Sentiment Surveys. *Journal of Money, Credit, and Banking*, Vol. 36, No. 1, February 2004, pp-39-72.
- [23] Roberts, M. John (1998). Inflation Expectations and the Transmission of Monetary Policy. Finance and Economic Discussion Series, Federal Reserve Board, October 1998.
- [24] Sims, A. Christopher (2009). Inflation Expectations, Uncertainty and Monetary Policy. Bank for International Settlements Working Papers, No. 275, March 2009.
- [25] Branch, A. Williams (2004). The Theory of Rationally Heterogeneous Expectations: Evidence from Survey Data on Inflation Expectations. *The Economic Journal*, Vol. 114, No. 497, July 2004, pp. 592-621.
- [26] Turnovsky, S. J. and Wachter, M. L. (1972). A Test of the "Expectations Hypothesis" Using Directly Observed Wage and Price Expectations. *The Review of Economics and Statistics*, Vol. 54, No. 1: 47-54
- [27] Madeira, Carlos; and Zafar, Basit (2012). Heterogeneous Inflation Expectations, Learning, and Market Outcomes. Federal Reserve Bank of New York Staff Reports, no. 536 January 2012.
- [28] Armantier, Olivier; Nelson, Scott; Topa, Giorgio; Klaauw Wilbert van der; and Zafar, Basit (2012). Federal Reserve Bank of New York Staff Reports, no. 543 January 2012; revised January 2013.
- [29] Feige, L. Edgar and Pearce K. Douglas (1976). Economically Rational Expectations: Are Innovations in the Rate of Inflation Independent of Innovations in Measures of Monetary and Fiscal Policy? *Journal of Political Economy*, Vol. 84, No. 3, June 1976, pp. 499-522.
- [30] Mishkin, S. Frederic (2007). Inflation Dynamics. National Bureau of Economic Research Working Paper, No. 13147, June 2007.
- [31] Woodford, Michael. (2004). Central Bank Communication and Policy Effectiveness. Proceedings, Federal Reserve Bank of Kansas City, August, 399-474.

Appendix A

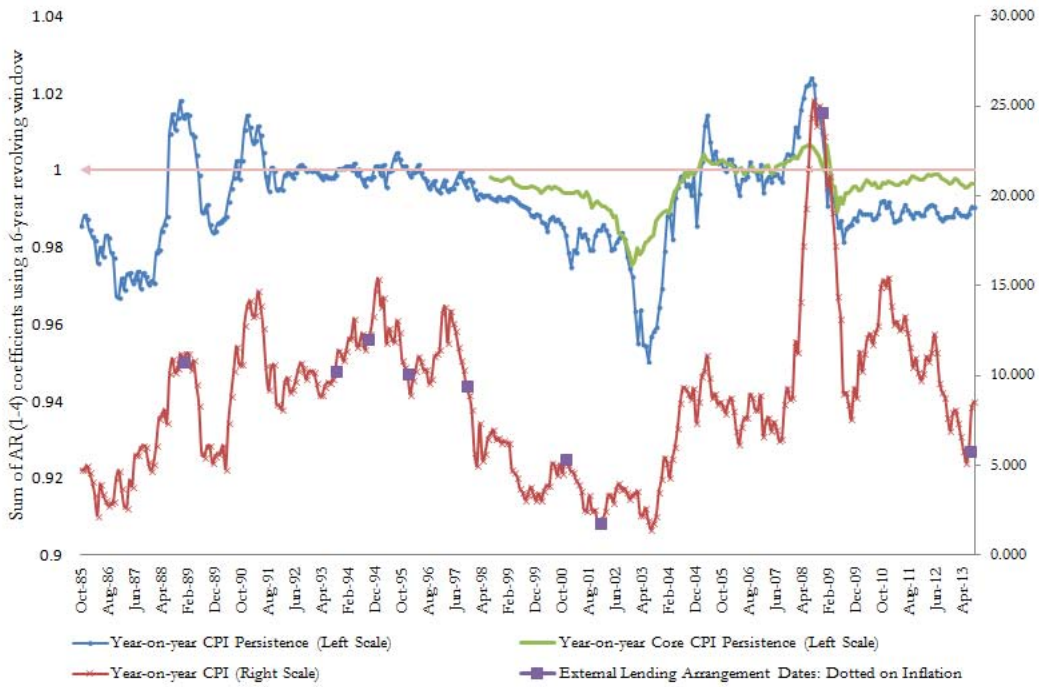


Figure 1: Inflation and its Persistence

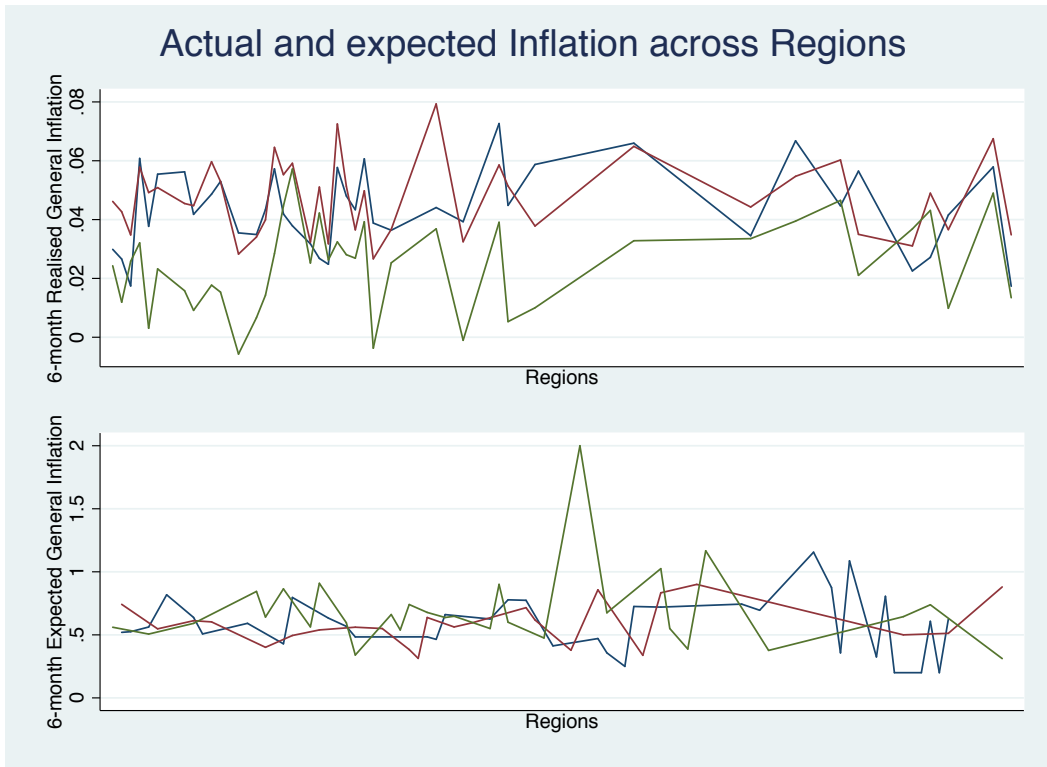


Figure 2: 6-month inflation across Regions: Actual (upper panel) and Expected (lower panel)

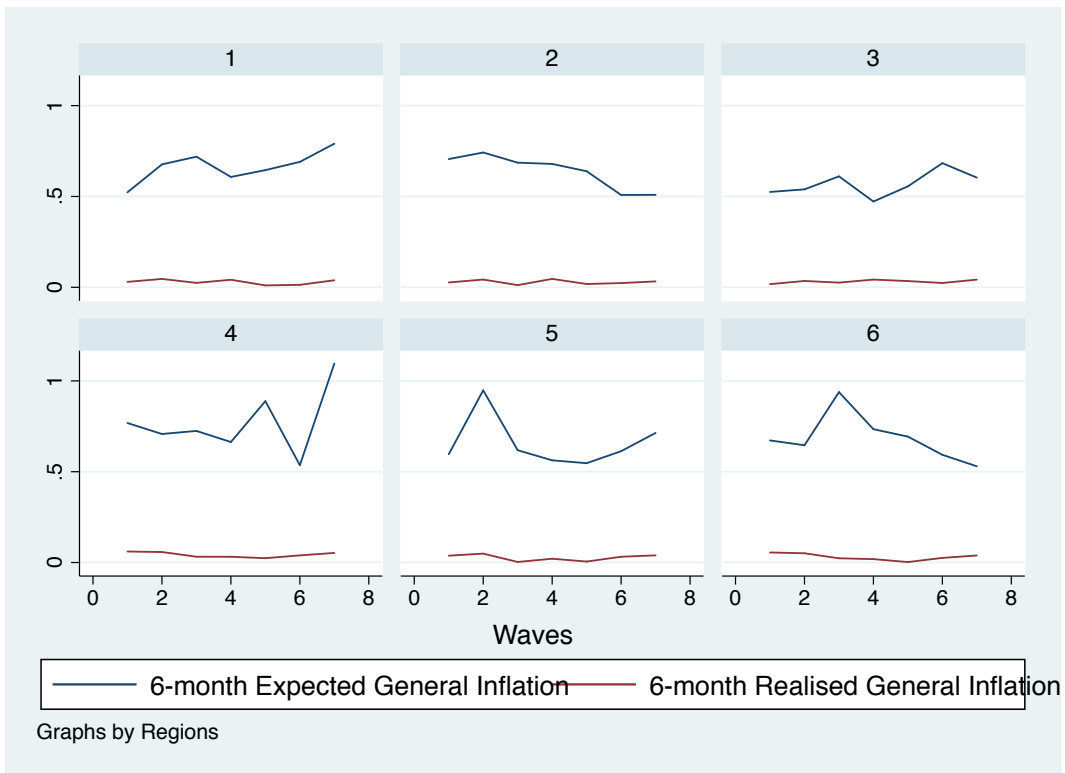


Figure 3: Actual and Expected Inflation over time for a sample of Regions

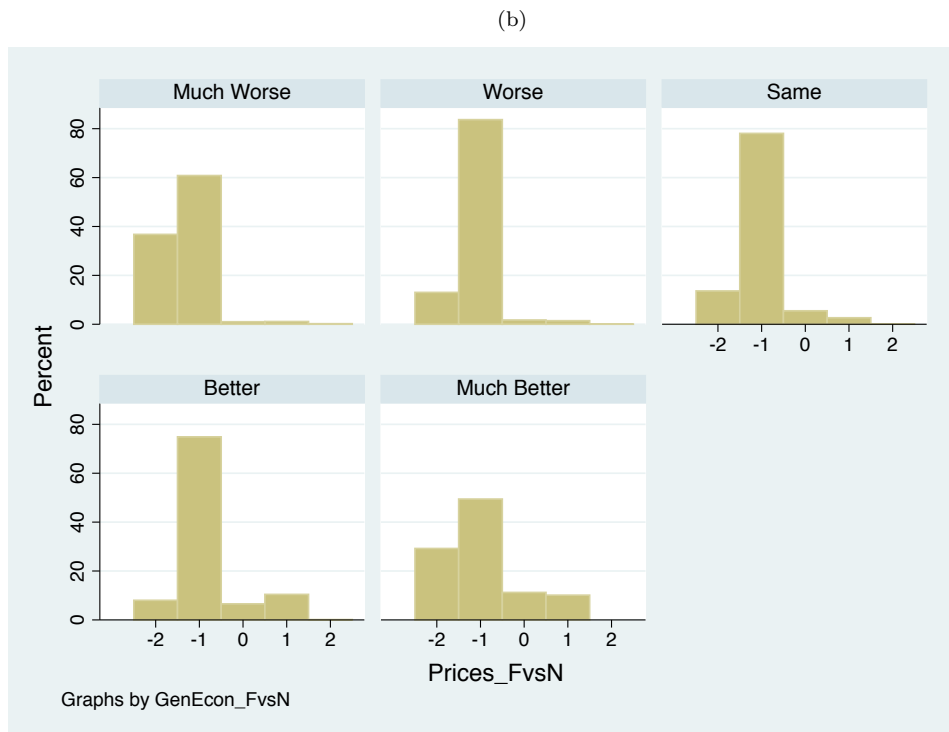
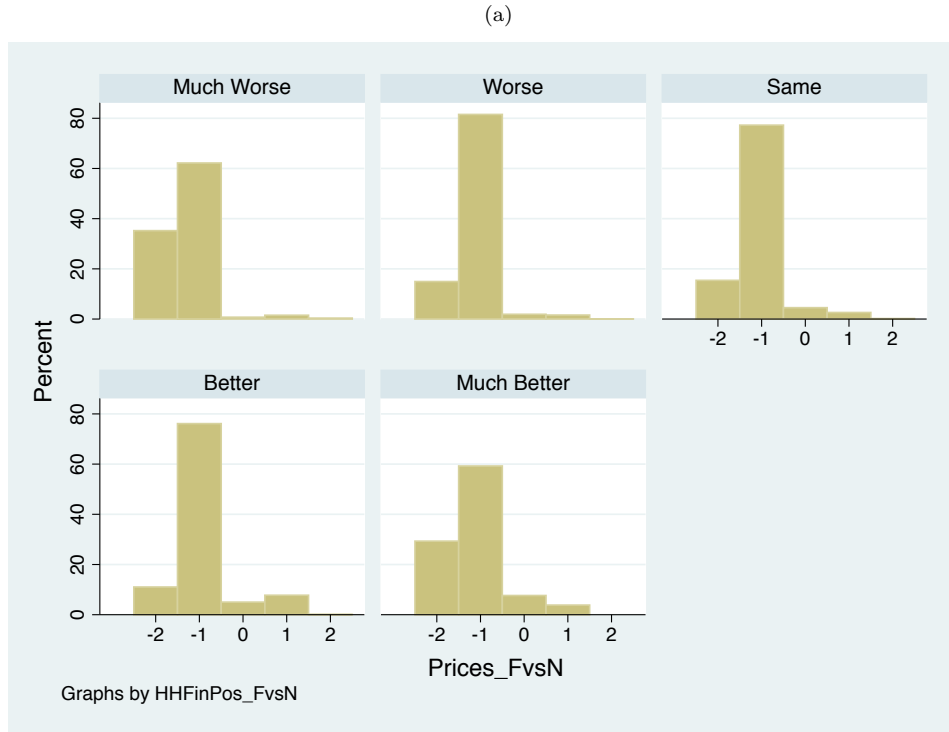


Figure 4: Distribution of Households' Reported Expectation for Future Prices by: (a) Financial Conditions and (b) Economic Conditions.

Notes: The histograms plot the distribution of households expectation of future prices conditional on how the household report their expectation for their financial condition (top panel) and expectation for general economic condition (lower panel). The expectations are reported categorically, where categories range from -2(much worse) to 2(much better). When recording the expectation for price, -2 corresponds to "increase a lot" and 2 corresponds to "decrease a lot". For example, the top left most plot is the histogram of price expectations for households who report that they expect their financial position to be much worse 6 months from today.

Realized and Expected Economic Variables

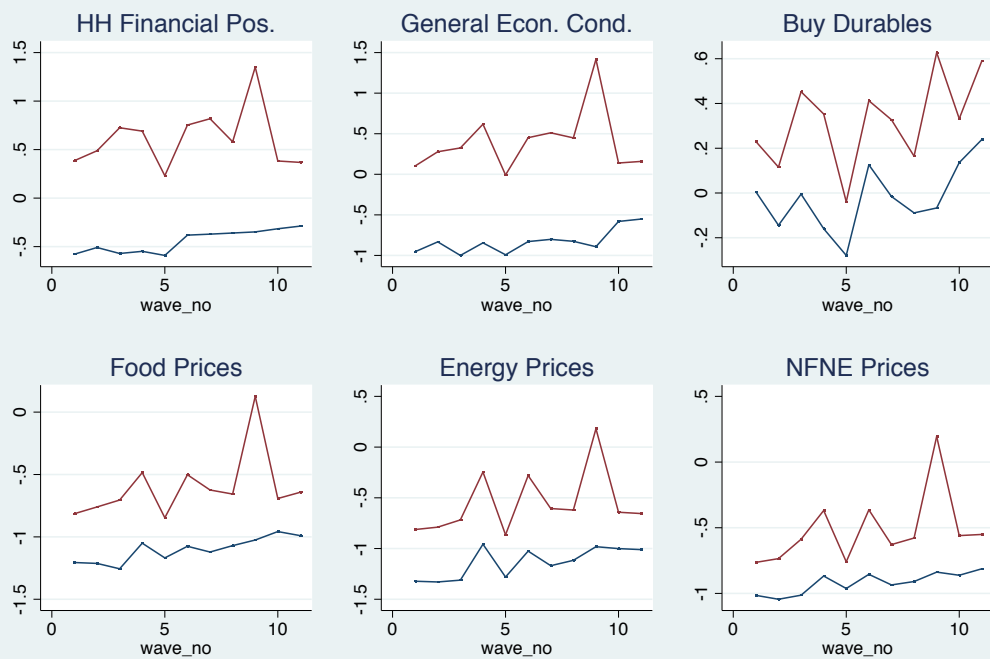


Figure 5

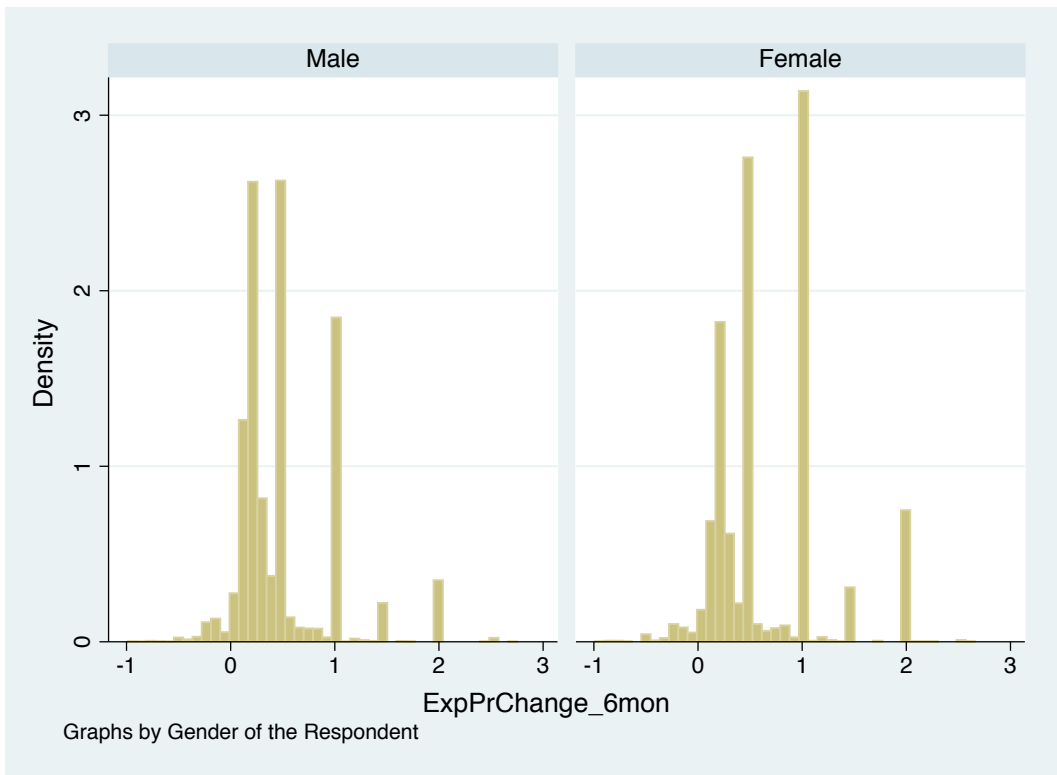


Figure 6: Distribution of Price Expectation by Gender

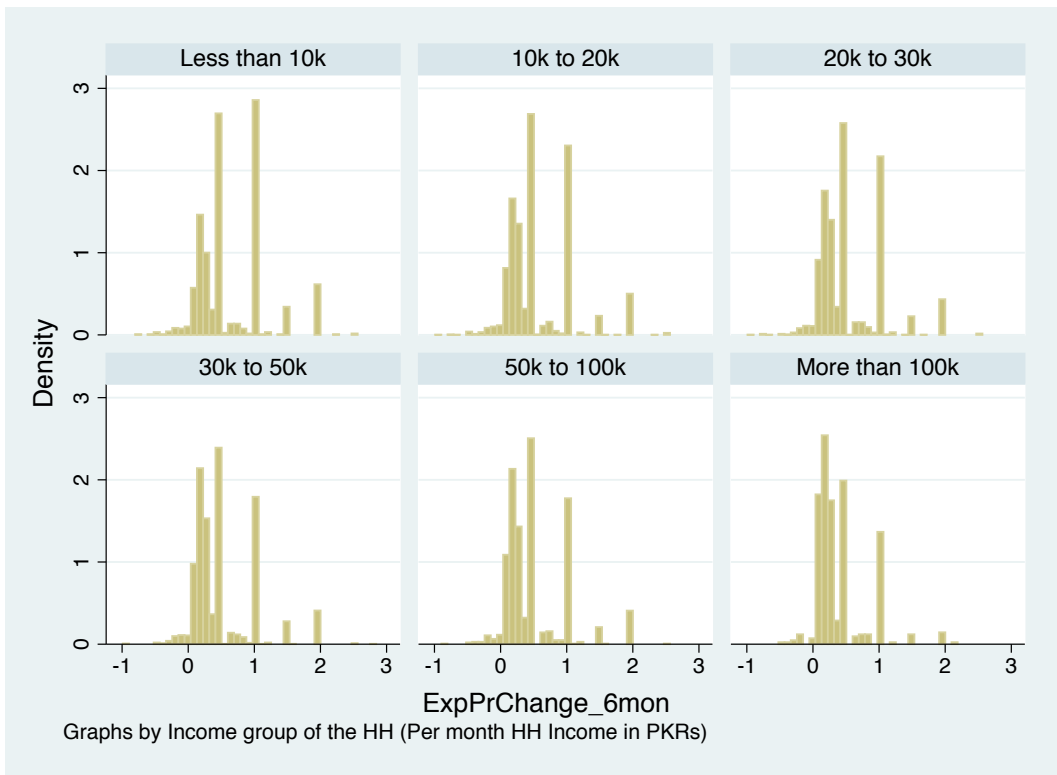


Figure 7: Distribution of Price Expectation by Income Group

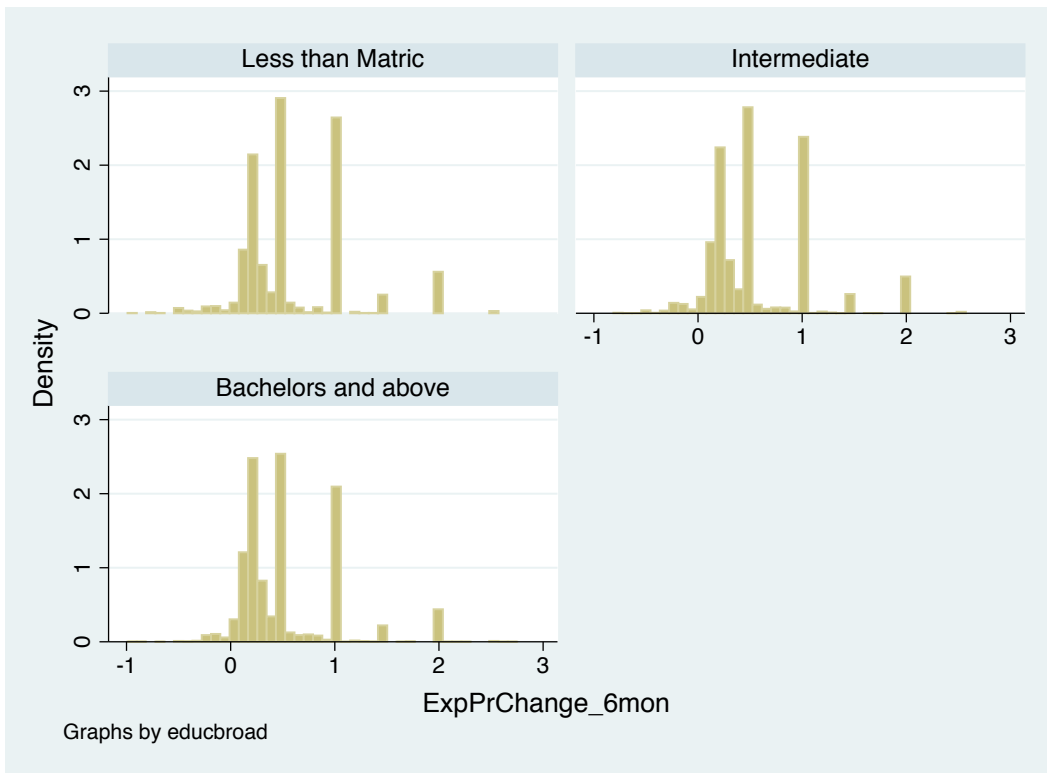


Figure 8: Distribution of Price Expectation by Education Levels

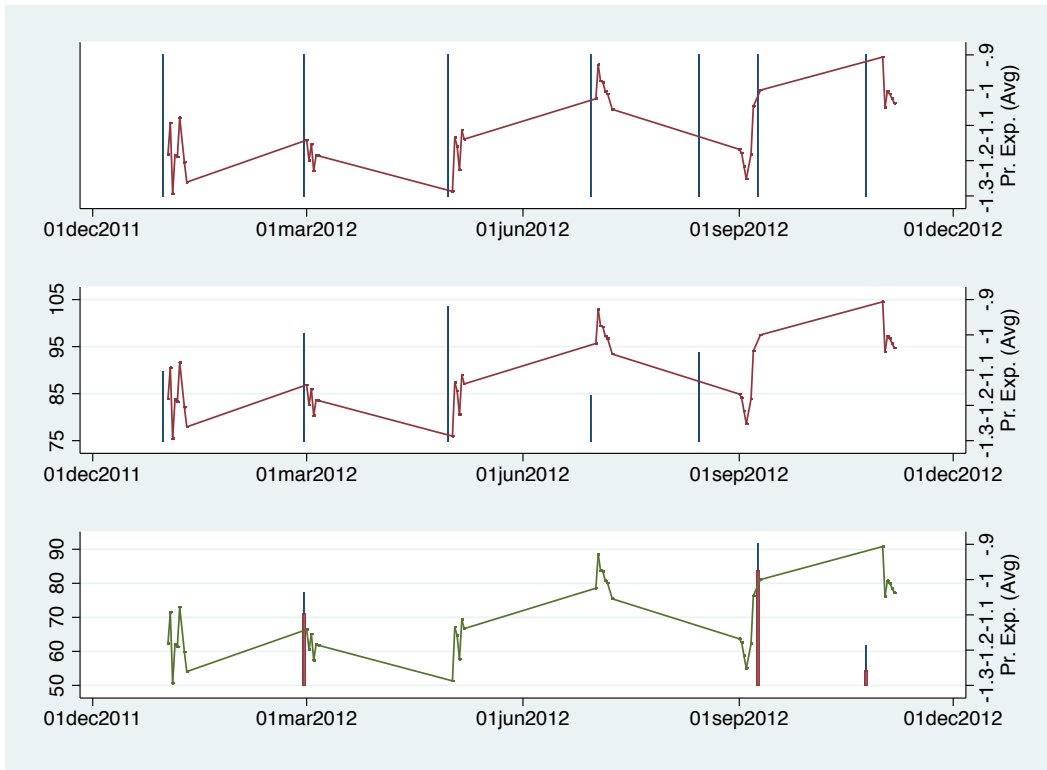


Figure 9: Price Announcements and Expectation.

Notes: The graphs plot the average 6-month expected inflation over the course of the year. Solid bars indicate a price announcement on that date. The top panel shows all price announcements. The second and third panels indicate the price announcements for petrol and CNG respectively; the height of the bar indicates the announced price.

Appendix B

Table 1: Comparison by Education

	CCS	HIES 2010/11	HIES 2010/11 Only Tele. HHS
Edu. Level of HH Head	Percent	Percent	Percent
Illiterate	6.3	44.1	13.87
Less than Primary	3.8	4.22	2.62
Less than Matric	7.89	23.1	13.78
Matric	22.99	13.6	19.59
Intermediate	15.32	5.94	14.62
Bachelors	28.69	4.68	16.12
Masters	13.74	2.53	9.37
Doctorate	1.1	0.07	0.28
Other	0.18	1.76	9.75
Total	100	100	100

Table 2: Comparison by Income Group

	CCS	HIES 2010/11	HIES 2010/11 Only Tele. HHS
Income Group of HH			
Less than 10K	10.23	30.89	7.06
10K to 20K	27.75	43.84	23.79
20K to 30K	26.06	15.01	24.91
30K to 50K	20.73	6.73	20.82
50K to 100K	11.74	2.91	18.59
More than 100K	3.48	0.61	4.83
Total	100	100	100

Table 3: Comparison by Gender

	CCS	HIES 2010/11	HIES 2010/11 Only Tele. HHS
Gender of HH Head			
Male	91.62	91.79	87.82
Female	8.38	8.21	12.18
Total	100	100	100

Table 4: Comparison by Age

Age of Respondent	CCS	HIES 2010/11	HIES 2010/11 Only Tele. HHS
Upto 16 years	0.15	0.05	0
17-30 years	12.16	12.14	5.06
31-40 years	22.18	26.21	16.31
41-50 years	27.41	27.7	25.87
51-75 years	35.97	32.01	49.02
76 years and above	2.14	1.89	3.75
Total	100	100	100

Table 5: Summary Statistics by Age and Household Size

Age of Head of HH	CCS	HIES (2010-11)	HIES (2010-11) Only Telephone HHs
Median	47	45	52
Mean	47.34498	46.20452	51
St. Dev	13.98586	13.24747	12.8911
Min	14	14	18
Max	98	99	96
No. of Obs	6696	16341	1067
Size of HH			
Median	7	6	6
Mean	8.056877	6.666238	6.616682
St. Dev	4.529649	3.050811	3.171198
Min	2	1	1
Max	32	38	26
No. of Obs	17494	16341	1067

Table 6: Summary by Household Size

CCS Gender of HH Head		
Household	Male	Female
Self	6,736	616
Spouse	118	3,062
Father/Mother	1,972	1,040
Son/Daughter	2,391	1,328
Brother/Sister	648	306
Daughter in law	6	166
Parents in Law	6	100
Uncle	10	3
Other	23	20
Total	11,910	6,641

Table 7: Observations by Respondents's Age

CCS Age of Respondent		
Age	No. of Obs	Percent
Upto 16 Year	10	0.15%
17-30 Year	814	12.16%
31-40 Year	1,485	22.18%
41-50 Year	1,835	27.41%
51-75 Year	2,408	35.97%
76 & above	143	2.14%
Total	6,695	100%

Table 8: Summary by Age and Observations of Respondents's by Education

CCS	Age of Head of HH	Size of HH
Median	47	7
Mean	47.34498	8.03476
St. Dev	13.98586	4.539714
Min	14	1
Max	98	32
No. of Obs	6696	17549
Edu. Lev of HH Head	Freq.	Percent
Illiterate	458	6.3
Less than Primary	276	3.8
Less than Matric	573	7.89
Matric	1,670	22.99
Intermediate	1,113	15.32
Bachelors	2,084	28.69
Masters	998	13.74
Doctrate	80	1.1
Other	13	0.18
Total	7,265	100

Table 9: Income Group of the Household

Income Groups												
Wave No.	1	2	3	4	5	6	7	8	9	10	11	Overall
Less than 10k	15.16	11.82	12.39	11.16	10.06	11.32	11.10	8.84	6.61	7.58	6.59	10.23
10k to 20k	32.01	28.83	28.98	32.16	28.56	28.62	25.93	25.86	26.87	21.94	25.38	27.75
20k to 30k	25.79	27.99	28.08	24.53	25.55	23.72	26.84	26.87	24.87	26.59	25.91	26.06
30k to 50k	15.97	18.92	18.32	17.74	21.22	19.36	21.52	21.62	22.64	25.59	25.15	20.73
50k to 100k	8.50	9.53	9.76	10.95	11.01	12.55	11.18	12.36	15.74	14.37	13.18	11.74
More than 100k	2.56	2.90	2.48	3.47	3.60	4.44	3.42	4.45	3.27	3.93	3.79	3.48
Total	100	100	100	100	100	100	100	100	100	100	100	100

Table 10: Education Level of the Respondent

Education											
Wave No.	1	2	3	4	5	6	7	8	9	10	11
Illiterate	4.25	5.53	5.27	3.37	4.35	5.23	5.63	4.35	6.79	5.32	6.00
Less than Primary	4.31	2.99	1.71	3.09	2.64	3.08	2.41	2.92	3.48	2.92	3.90
Less than Matric	7.35	7.69	8.82	5.94	6.69	6.04	6.44	8.10	5.49	6.61	6.35
Matric	22.60	19.83	20.33	22.00	21.49	20.73	18.62	19.54	19.78	19.18	20.03
Intermediate	18.71	19.45	20.88	17.49	17.97	19.11	19.08	19.18	18.48	19.88	19.34
Bachelors	26.79	31.72	32.09	33.94	31.42	31.30	32.82	31.69	31.76	31.64	30.46
Masters	14.28	12.14	10.23	12.86	14.39	13.70	13.91	13.76	13.46	13.86	13.05
Doctrate	1.52	0.57	0.67	1.03	0.70	0.46	1.09	0.48	0.71	0.47	0.82
Other	0.18	0.06	-	0.29	0.35	0.35	-	-	0.06	0.12	0.06
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 11: Major Source of Household Income

Wave No.	1	2	3	4	5	6	7	8	9	10	11	Overall
Salary	53.81	50.72	51.53	47.13	48.86	48.98	50.00	48.89	48.18	53.83	53.47	50.44
Trade Profit	25.24	27.25	26.08	25.85	23.60	26.53	23.07	24.23	23.72	24.14	24.95	24.95
Agriculture	10.07	11.19	9.35	9.94	8.67	10.41	8.27	9.74	8.71	7.65	8.54	9.30
Professional Services	6.67	4.80	6.62	2.16	2.27	2.53	3.48	4.24	5.06	2.22	2.09	3.78
Remittances	0.14	0.14	0.19	2.51	1.60	2.23	2.36	2.09	2.41	1.79	2.03	1.62
Rent/Dividend Income	3.27	4.87	5.03	2.05	3.87	0.84	2.36	1.83	1.79	2.59	0.86	2.63
Pension	0.82	1.03	0.70	4.39	4.12	4.45	4.54	3.92	3.89	4.57	4.49	3.41
Labor	-	-	0.51	5.73	6.64	4.03	5.85	5.06	5.87	3.21	3.50	3.75
Other	-	-	-	0.23	0.37	-	0.06	-	0.25	-	0.06	0.09
Total	100	100	100	100	100	100	100	100	100	100	100	100

Table 12: Summary of Waves by the Respondents Age

Wave No.	Mean	Median	St. Dev	Min.	Max.	Obs.
1	36.97852	35	14.3798	16	86	1350
2	38.38714	35	15.93859	8	212	1400
3	36.94733	35	14.49895	6	94	1462
4	37.56169	35	15.21572	14	85	1613
5	36.75992	33	15.06114	12	85	1487
6	37.96394	35	15.21385	13	88	1553
7	38.62301	36	15.74846	10	90	1504
8	37.89413	35	15.06232	3	98	1483
9	37.27593	35	14.94333	13	90	1504
10	37.16569	35	15.14089	12	88	1533
11	36.68103	33	14.92542	11	89	1508
Total	37.47795	35	15.12123	3	212	16397

Table 13

VARIABLES	Expectations and Actual Price Changes					
	(1) pred_6m	(2) pred_6m	(3) pred_6m	(4) pred_6m	(5) pred_6m	(6) pred_6m
inf_gen_back1	-5.710 (11.56)					
inf_gen_back3	-4.675 (9.362)					
inf_gen_back6	2.999 (7.274)					
inf_ene_back1		6.771** (2.785)				
inf_nfne_back1		8.095 (12.73)				
inf_food_back1		-14.11** (5.614)				
inf_ene_back3			3.007 (1.937)			
inf_nfne_back3			0.146 (8.083)			
inf_food_back3			-7.657* (4.470)			
inf_ene_back6				2.447 (1.769)		
inf_nfne_back6				-4.193 (4.405)		
inf_food_back6				-0.402 (3.651)		
inf_gen_fwd6					0.997 (4.319)	1.297 (4.579)
Observations	4,949	4,949	4,949	4,949	3,226	2,947
R-squared	0.018	0.020	0.019	0.018	0.012	0.037

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Includes wave fixed effects and city fixed effects

Table 14

VARIABLES	Actual Inflation and Price and Financial Expectations								
	(1) HHFimPos_pres a1	(2) HHFimPos_pres a1	(3) HHFimPos_pres a1	(4) HHFimPos_fwd a2	(5) HHFimPos_fwd a2	(6) HHFimPos_fwd a2	(7) Prices_fwd a5	(8) Prices_fwd a5	(9) Prices_fwd a5
inf_ene_back1	-1.371 (1.129)			0.194 (1.215)			2.000 (1.464)		
inf_nfne_back1	5.168 (5.332)			2.426 (5.675)			-4.277 (6.529)		
inf_food_back1	-2.292 (2.363)			0.696 (2.486)			-7.001** (2.927)		
inf_ene_back3		-0.077 (0.786)			1.257 (0.845)			0.237 (0.993)	
inf_nfne_back3		-2.944 (3.370)			-6.742* (3.565)			0.280 (4.096)	
inf_food_back3		-3.447* (1.855)			-3.262* (1.954)			-4.538** (2.259)	
inf_ene_back6			-0.040 (0.724)			1.083 (0.770)			-0.026 (0.905)
inf_nfne_back6			-3.862** (1.789)			-7.118*** (1.902)			2.656 (2.169)
inf_food_back6			-1.384 (1.528)			-0.188 (1.615)			-0.843 (1.890)
Observations	5,314	5,314	5,314	4,782	4,782	4,782	5,195	5,195	5,195

For example: HHFimPos_pres and HHFimPos_fwd denote household financial position current and expected.

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Includes area fixed effects and wave fixed effects

Table 15

VARIABLES	Actual Inflation and Price and Financial Expectations													
	(1) Food_pres a7	(2) Food_pres a7	(3) Food_pres a7	(4) Food_fwd a8	(5) Food_fwd a8	(6) Food_fwd a8	(7) Ene_pres a9	(8) Ene_pres a9	(9) Ene_pres a9	(10) Ene_fwd a10	(11) Ene_fwd a10	(12) Ene_fwd a10	(13) NPFNE_pres a11	(14) NPFNE_pres a11
inf_ene_back1	0.720 (1.319)	-0.584 (0.908)	-0.444 (0.828)	-0.876 (1.406)	-1.105 (0.973)	-0.840 (0.887)	2.585** (1.301)	-0.162 (0.886)	0.110 (0.807)	-0.551 (1.390)	-2.044** (0.950)	-1.193 (0.864)	2.911** (1.410)	-0.848 (0.972)
inf_nfne_back1	4.087 (6.058)	4.294 (3.791)	2.741 (2.014)	6.102 (6.533)	7.048* (4.076)	5.944*** (2.132)	-4.445 (5.865)	-3.263 (3.655)	0.077 (1.941)	-4.221 (6.379)	1.287 (3.956)	2.503 (2.093)	13.019** (6.526)	16.118*** (4.103)
inf_food_back1	-6.199** (2.668)	-3.930* (2.086)	-1.323 (1.733)	4.563 (2.858)	-3.077 (2.224)	2.623 (1.856)	-5.267** (2.594)	1.929 (2.045)	0.233 (1.683)	2.807 (2.831)	1.065 (2.201)	1.659 (1.834)	-5.901** (2.860)	-3.351 (2.255)
inf_ene_back3														
inf_nfne_back3														
inf_food_back3														
inf_ene_back6														
inf_nfne_back6														
inf_food_back6														
Observations	5,261	5,261	5,261	5,101	5,101	5,101	5,286	5,286	5,286	5,079	5,079	5,079	5,249	5,249

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Includes area fixed effects and wave fixed effects

Table 16

VARIABLES	Actual Inflation and Price and Financial Expectations										
	(1) GenEcon_pres a3	(2) GenEcon_pres a3	(3) GenEcon_pres a3	(4) GenEcon_fwd a4	(5) GenEcon_fwd a4	(6) GenEcon_fwd a4	(7) BuyDur_pres a14	(8) BuyDur_pres a14	(9) BuyDur_pres a14	(10) BuyDur_fwd a15	(11) BuyDur. a15
inf_ene_back1	1.977* (1.194)	0.683 (0.840)	0.299 (0.773)	-0.809 (1.229)	-0.588 (0.845)	-0.422 (0.772)	-0.532 (1.208)	0.661 (0.832)	0.910 (0.764)	-1.759 (1.302)	0.040 (0.877)
inf_nfne_back1	-4.890 (5.630)	-3.785 (3.542)	-5.500*** (1.870)	-13.938** (5.696)	-8.598** (3.601)	-5.632*** (1.918)	3.931 (5.606)	2.594 (3.541)	-2.520 (1.896)	-1.226 (6.016)	-2.374 (3.787)
inf_food_back1	0.476 (2.477)	-2.241 (1.956)	-3.784** (1.617)	-2.423 (2.521)	-4.773** (1.996)	-1.687 (1.632)	-1.259 (2.479)	1.234 (1.966)	3.083* (1.621)	2.132 (2.655)	-0.613 (2.087)
inf_ene_back3											
inf_nfne_back3											
inf_food_back3											
inf_ene_back6											
inf_nfne_back6											
inf_food_back6											
Observations	5,266	5,266	5,266	4,792	4,792	4,792	4,945	4,945	4,945	4,699	4,699

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Includes area fixed effects and wave fixed effects

Table 17

VARIABLES	Actual Inflation and Price and Financial Expectations											
	(1) BuyCar_fwd a16	(2) BuyCar_fwd a16	(3) BuyCar_fwd a16	(4) House_fwd a17	(5) House_fwd a17	(6) House_fwd a17	(7) GovtEconPol a18	(8) GovtEconPol a18	(9) GovtEconPol a18	(10) Unemp_pres a19	(11) Unemp_pres a19	(12) Unemp a19
inf_ene_back1	0.002 (1.303)	0.704 (0.879)	1.230 (0.804)	-0.779 (1.144)	1.109 (0.796)	1.641** (0.729)	0.696 (1.171)	0.784 (0.826)	0.994 (0.760)	0.664 (1.347)	-0.463 (0.932)	0.00 (0.85)
inf_nfne_back1	8.396 (5.959)	0.553 (3.748)	-2.400 (1.983)	-3.288 (5.421)	-7.030** (3.424)	-3.266* (1.828)	-7.540 (5.601)	-3.429 (3.548)	0.175 (1.862)	-9.054 (6.318)	-2.641 (3.976)	-4.57 (2.08)
inf_food_back1	-2.116 (2.639)	-2.581 (2.064)	1.077 (1.710)	-1.787 (2.394)	-0.631 (1.893)	-0.976 (1.539)	-2.806 (2.451)	-2.917 (1.945)	-1.429 (1.598)	-4.269 (2.763)	3.161 (2.193)	-0.5 (1.79)
inf_ene_back3												5.117
inf_nfne_back3												5,117
inf_food_back3												5,117
inf_ene_back6												5,117
inf_nfne_back6												5,117
inf_food_back6												5,117
Observations	4,777	4,777	4,777	5,078	5,078	5,078	5,212	5,212	5,212	5,117	5,117	5,117

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Includes area fixed effects and wave fixed effects

Table 18

VARIABLES	Actual Inflation and Price and Financial Expectations								
	(1) HHFinPos_pres a1	(2) HHFinPos_pres a1	(3) HHFinPos_pres a1	(4) HHFinPos_fwd a2	(5) HHFinPos_fwd a2	(6) HHFinPos_fwd a2	(7) Prices_fwd a5	(8) Prices_fwd a5	(9) Prices_fwd a5
inf_ene_fwd1	-1.413 (4.138)			1.533 (4.395)			-5.391 (5.032)		
inf_nfne_fwd1	-2.921 (4.055)			-0.498 (4.176)			11.993** (4.963)		
inf_food_fwd1	2.662 (2.625)			1.317 (2.783)			-12.605*** (3.241)		
inf_ene_fwd3		-1.240 (1.467)			0.419 (1.553)			-1.537 (1.775)	
inf_nfne_fwd3		3.634 (3.465)			2.190 (3.762)			-8.092* (4.321)	
inf_food_fwd3		2.158 (1.990)			0.194 (2.109)			7.695*** (2.489)	
inf_ene_fwd6			-5.264 (3.431)						-8.220* (4.230)
inf_nfne_fwd6			-3.302 (4.015)						-6.263 (4.876)
inf_food_fwd6			-2.402 (1.734)						-6.401*** (2.130)
Observations	5,314	4,252	3,146	4,782	3,806	2,834	5,195	4,164	3,082

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Includes area fixed effects and wave fixed effects

Table 19

VARIABLES	Actual Inflation and Price and Financial Expectations													
	(1) Food_pres a7	(2) Food_pres a7	(3) Food_pres a7	(4) Food_fwd a8	(5) Food_fwd a8	(6) Food_fwd a8	(7) Ene_pres a9	(8) Ene_pres a9	(9) Ene_pres a9	(10) Ene_fwd a10	(11) Ene_fwd a10	(12) Ene_fwd a10	(13) NFNE_pres a11	(14) NFNE_pres a11
inf_ene_fwd1	-3.684 (4.655)			1.105 (5.000)			-7.338 (4.513)			6.891 (4.914)			2.421 (5.008)	
inf_nfne_fwd1	3.354 (4.620)			1.185 (4.782)			9.375** (4.389)			0.809 (4.642)			-2.399 (4.842)	
inf_food_fwd1	-8.329*** (2.948)			-8.193*** (3.178)			-8.081*** (2.882)			-9.644*** (3.125)			-9.730*** (3.191)	
inf_ene_fwd3		-7.273*** (1.607)			-5.394*** (1.688)			-5.581*** (1.585)			-5.106*** (1.678)			-5.861** (1.70)
inf_nfne_fwd3		-4.013 (3.917)			-4.932 (4.174)			2.774 (3.899)			-1.471 (4.132)			-3.60 (4.16)
inf_food_fwd3		3.368 (2.245)			-0.338 (2.407)			2.754 (2.216)			2.998 (2.410)			4.432 (2.42)
inf_ene_fwd6			9.056** (3.810)			7.596* (4.113)			12.264*** (3.906)			4.594 (4.074)		
inf_nfne_fwd6			-9.162*** (4.423)			-10.318*** (4.659)			-6.060 (4.351)			3.775 (4.604)		
inf_food_fwd6			-3.094 (1.907)			-9.578*** (2.080)			-3.915** (1.922)			-7.185*** (2.040)		
Observations	5,261	4,208	3,117	5,101	4,070	3,027	5,286	4,231	3,136	5,079	4,050	3,034	5,249	4,200

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Includes area fixed effects and wave fixed effects

Table 20

VARIABLES	Actual Inflation and Economic Expectations										
	(1) GenEcon_pres a3	(2) GenEcon_pres a3	(3) GenEcon_pres a3	(4) GenEcon_fwd a4	(5) GenEcon_fwd a4	(6) GenEcon_fwd a4	(7) BuyDur_pres a14	(8) BuyDur_pres a14	(9) BuyDur_pres a14	(10) BuyDur_fwd a15	(11) BuyDur_fwd a15
inf_ene_fwd1	-3.897 (4.367)			3.559 (4.394)	-1.582 (1.559)		-0.481 (4.359)			4.377 (4.603)	
inf_nfne_fwd1	12.781*** (4.172)			7.509* (4.170)	5.950 (3.686)		-0.176 (4.260)			2.549 (4.652)	
inf_food_fwd1	0.734 (2.764)			1.662 (2.800)	2.351 (2.148)		-5.641** (2.741)			-1.511 (2.941)	
inf_ene_fwd3		-0.287 (1.549)									-2.359 (1.594)
inf_nfne_fwd3		7.827** (3.623)									-1.973 (3.815)
inf_food_fwd3		3.200 (2.117)									-2.140 (2.221)
inf_ene_fwd6			-10.169*** (3.694)			-6.444* (3.634)					
inf_nfne_fwd6			1.535 (4.203)			12.752*** (4.312)					
inf_food_fwd6			-3.397* (1.828)			-4.222** (1.834)					
Observations	5,266	4,213	3,116	4,792	3,820	2,843	4,945	3,935	2,899	4,699	3,733

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Includes area fixed effects and wave fixed effects

Table 21

VARIABLES	Actual Inflation and Economic Expectations											
	(1) BuyCar_fwd a16	(2) BuyCar_fwd a16	(3) BuyCar_fwd a16	(4) House_fwd a17	(5) House_fwd a17	(6) House_fwd a17	(7) GovtEconPol a18	(8) GovtEconPol a18	(9) GovtEconPol a18	(10) Unemp_pres a19	(11) Unemp_pres a19	(12) Unemp_ a19
inf_ene_fwd1	9.845** (4.599)	-4.059** (1.586)	2.704 (3.754)	4.256 (4.157)	-3.472** (1.442)	-4.454 (3.375)	-0.186 (4.301)	-1.679 (1.517)	-3.407 (3.560)	6.588 (4.857)	-0.856 (1.690)	-5.17 (3.937)
inf_nfne_fwd1	3.746 (4.434)	-1.802 (3.823)	3.894 (4.406)	9.824** (4.071)	-4.032 (3.532)	4.533 (4.014)	6.426 (4.149)	3.505 (3.630)	-7.325* (4.150)	6.765 (4.661)	-0.133 (4.027)	-3.23 (4.513)
inf_food_fwd1	-0.372 (2.937)	0.979 (2.211)	-4.840** (1.935)	2.396 (2.646)	4.854** (2.002)	-8.363*** (1.771)	3.060 (2.746)	4.365** (2.088)	-3.463* (1.821)	-6.788** (3.081)	1.559 (2.317)	-9.258* (2.013)
Observations	4,777	3,792	2,785	5,078	4,046	2,989	5,212	4,163	3,076	5,117	4,094	3,037

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Includes area fixed effects and wave fixed effects

Table 22

Demographics and Economic Expectations

VARIABLES	(1) GenEcon_pres a3	(2) GenEcon_fwd a4	(3) BuyDur_pres a14	(4) BuyDur_fwd a15	(5) BuyCar_fwd a16	(6) House_fwd a17	(7) GovtEconPol a18	(8) Unemp_pres a19	(9) Interest_fwd a20
res_gender==Female	-0.183*** (0.054)	0.020 (0.055)	-0.067 (0.054)	-0.172*** (0.056)	-0.117** (0.057)	-0.140*** (0.052)	0.034 (0.054)	0.102* (0.060)	-0.291*** (0.073)
res_edu==l.t.matric	-0.067 (0.154)	0.028 (0.162)	0.075 (0.155)	0.110 (0.165)	0.321* (0.166)	0.298** (0.147)	0.055 (0.152)	0.116 (0.172)	-0.107 (0.252)
res_edu==matric	-0.120 (0.135)	0.057 (0.144)	0.146 (0.137)	-0.071 (0.145)	0.247* (0.148)	0.207 (0.130)	0.018 (0.133)	-0.125 (0.152)	0.097 (0.226)
res_edu==intermed	-0.228* (0.138)	0.037 (0.146)	0.070 (0.139)	-0.086 (0.147)	0.328** (0.150)	0.363*** (0.132)	-0.152 (0.135)	-0.243 (0.154)	-0.014 (0.228)
res_edu==grad	-0.282** (0.134)	0.061 (0.143)	0.209 (0.135)	0.087 (0.144)	0.386*** (0.147)	0.331** (0.129)	-0.351*** (0.132)	-0.254* (0.150)	0.137 (0.223)
res_edu==postgrad	-0.349** (0.144)	-0.095 (0.153)	0.171 (0.145)	-0.214 (0.154)	0.351** (0.157)	0.214 (0.139)	-0.498*** (0.143)	-0.405** (0.161)	0.144 (0.232)
res_edu==phd	-0.597** (0.294)	-0.274 (0.305)	-0.122 (0.296)	-0.559* (0.313)	0.149 (0.299)	0.347 (0.281)	-1.105*** (0.306)	-0.946*** (0.313)	-0.240 (0.416)
hh_group==10to20k	-0.041 (0.084)	0.112 (0.086)	0.231*** (0.084)	0.286*** (0.089)	0.309*** (0.089)	0.244*** (0.080)	0.111 (0.083)	0.169* (0.092)	-0.124 (0.122)
hh_group==20to30k	0.006 (0.087)	0.088 (0.089)	0.502*** (0.087)	0.513*** (0.092)	0.420*** (0.092)	0.408*** (0.084)	0.152* (0.087)	0.195** (0.095)	0.099 (0.124)
hh_group==30to50k	0.022 (0.094)	0.110 (0.096)	0.589*** (0.094)	0.524*** (0.100)	0.513*** (0.099)	0.567*** (0.090)	0.086 (0.094)	0.306*** (0.104)	0.354*** (0.131)
hh_group==50to100k	0.119 (0.109)	0.050 (0.111)	0.636*** (0.110)	0.767*** (0.116)	0.556*** (0.114)	0.489*** (0.105)	0.031 (0.109)	0.285** (0.120)	0.360** (0.146)
hh_group==g.t.100k	0.163 (0.158)	0.218 (0.161)	1.090*** (0.157)	0.917*** (0.164)	0.774*** (0.165)	0.737*** (0.151)	0.066 (0.161)	0.545*** (0.175)	0.588*** (0.191)
res_age	-0.002 (0.001)	-0.006*** (0.001)	-0.006*** (0.001)	-0.006*** (0.002)	-0.005*** (0.001)	-0.008*** (0.001)	-0.003* (0.001)	-0.003* (0.002)	0.005** (0.002)
Observations	6,663	6,076	6,318	6,029	6,137	6,481	6,621	6,506	4,535

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Omits male category, illiterate category and less than 10k category

Includes area fixed effects and wave fixed effects

Controls for age, education and income

Table 23

Demographics and Price and Financial Expectations

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Exp_6m	HHFinPos_pres	HHFinPos_fwd	Prices_fwd	Food_pres	Food_fwd	Enr_pres	Enr_fwd	NFNE_pres	NFNE_fwd
		a1	a2	a5	a7	a8	a9	a10	a11	a12
res_gender==Female	0.659*** (0.118)	0.237*** (0.052)	0.250*** (0.054)	-0.348*** (0.062)	-0.392*** (0.057)	-0.307*** (0.061)	-0.090 (0.056)	-0.132*** (0.060)	-0.245*** (0.062)	-0.147*** (0.065)
res_edu==l.t.matric	0.190 (0.341)	0.110 (0.148)	-0.241 (0.158)	0.147 (0.182)	0.001 (0.165)	-0.006 (0.177)	0.206 (0.159)	0.031 (0.175)	0.128 (0.175)	0.181 (0.187)
res_edu==matric	0.191 (0.300)	0.126 (0.130)	-0.234* (0.139)	-0.006 (0.159)	-0.126 (0.146)	-0.029 (0.156)	0.057 (0.140)	-0.183 (0.154)	0.009 (0.154)	0.012 (0.163)
res_edu==intermed	0.237 (0.305)	0.150 (0.132)	-0.192 (0.140)	-0.126 (0.161)	-0.190 (0.147)	-0.088 (0.158)	-0.082 (0.142)	-0.128 (0.156)	0.079 (0.156)	0.141 (0.166)
res_edu==grad	0.159 (0.297)	0.179 (0.129)	-0.254* (0.137)	-0.095 (0.158)	-0.226 (0.144)	-0.171 (0.154)	-0.089 (0.138)	-0.152 (0.152)	-0.013 (0.152)	0.010 (0.162)
res_edu==postgrad	0.310 (0.320)	0.252* (0.139)	-0.322** (0.147)	-0.126 (0.169)	-0.224 (0.155)	-0.148 (0.166)	-0.232 (0.149)	-0.255 (0.163)	-0.180 (0.164)	-0.167 (0.174)
res_edu==phd	0.332 (0.645)	-0.146 (0.284)	-0.361 (0.303)	-0.003 (0.349)	-0.225 (0.311)	0.139 (0.350)	-0.972*** (0.311)	-0.243 (0.326)	-0.554* (0.323)	-0.399 (0.340)
hh_group==10to20k	0.000964 (0.182)	0.278*** (0.081)	0.265*** (0.085)	0.156 (0.096)	0.225** (0.088)	0.043 (0.095)	0.056 (0.086)	0.122 (0.092)	0.092 (0.094)	0.104 (0.098)
hh_group==20to30k	-0.0933 (0.189)	0.576*** (0.084)	0.472*** (0.089)	0.105 (0.099)	0.228** (0.092)	0.068 (0.099)	0.118 (0.090)	0.117 (0.096)	0.213** (0.099)	0.210** (0.102)
hh_group==30to50k	-0.120 (0.204)	0.624*** (0.091)	0.644*** (0.096)	0.314*** (0.109)	0.262*** (0.099)	0.164 (0.107)	0.125 (0.097)	0.235*** (0.104)	0.229** (0.107)	0.335*** (0.112)
hh_group==50to100k	0.114 (0.237)	0.812*** (0.105)	0.740*** (0.110)	0.141 (0.126)	0.168 (0.115)	0.129 (0.124)	0.140 (0.113)	0.271** (0.122)	0.342*** (0.126)	0.415*** (0.131)
hh_group==g.t.100k	-0.397 (0.347)	1.208*** (0.155)	1.049*** (0.159)	0.669*** (0.190)	0.148 (0.168)	0.353* (0.185)	0.190 (0.165)	0.422** (0.179)	0.276 (0.183)	0.440** (0.193)
res_age	-0.00741** (0.00312)	-0.011*** (0.001)	-0.011*** (0.001)	-0.002 (0.002)	-0.004** (0.002)	-0.003** (0.002)	-0.007*** (0.001)	-0.005*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)
Observations	6,305	6,727	6,091	6,588	6,663	6,491	6,687	6,454	6,661	6,487
R-squared	0.026									

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Omits male category, illiterate category and less than 10k category

Includes area fixed effects and wave fixed effects

Controls for age, education and income

Table 24

VARIABLES	Expectations and Price Announcements												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	pred_6m	pred_6m	pred_6m	pred_6m	pred_6m	pred_6m	pred_6m	pred_6m	pred_6m	pred_6m	pred_6m	pred_6m	pred_6m
shock1	0.0906 (0.753)	-3.277 (4.383)	0.0906 (0.753)	-3.030 (3.963)	0.0906 (0.753)	-4.747 (5.874)							
c.shock1#c.petrol		0.0346 (0.0444)											
c.shock1#c.diesel				0.0251 (0.0313)									
c.shock1#c.keros						0.0510 (0.0615)							
shock2							0.228 (0.412)	-3.290 (4.350)	0.228 (0.412)	-2.993 (3.895)	0.228 (0.412)	-4.720 (5.753)	
c.shock2#c.petrol								0.0348 (0.0427)					
c.shock2#c.diesel										0.0245 (0.0293)			
c.shock2#c.keros											0.0505 (0.0583)		0.336 (0.517)
shock3													
c.shock3#c.petrol													
c.shock3#c.diesel													
c.shock3#c.keros													
Observations	10,777	9,107	10,777	9,107	10,777	9,107	10,777	9,107	10,777	9,107	10,777	9,107	10,777
R-squared	0.014	0.018	0.014	0.018	0.014	0.018	0.014	0.018	0.014	0.018	0.014	0.018	0.014

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Includes wave fixed effects and city fixed effects. Controls for individual characteristics

Table 25

VARIABLES	Expectations and Price Announcements												
	(1) Prices_fwd a5	(2) Prices_fwd a5	(3) Prices_fwd a5	(4) Food_pres a7	(5) Food_pres a7	(6) Food_pres a7	(7) Food_fwd a8	(8) Food_fwd a8	(9) Food_fwd a8	(10) Ene_pres a9	(11) Ene_pres a9	(12) Ene_pres a9	(13) Ene_fwd a10
shock1	0.165 (0.159)			-0.524*** (0.154)			-0.025 (0.161)			-0.345*** (0.144)			-0.040 (0.155)
shock2		0.054 (0.088)			-0.256*** (0.081)		0.002 (0.088)				-0.138* (0.078)		
shock3			0.172 (0.111)			-0.235** (0.103)		-0.041 (0.110)				-0.201** (0.099)	
Observations	11,378	11,378	11,378	11,612	11,612	11,612	11,232	11,232	11,232	11,645	11,645	11,645	11,141

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Includes area fixed effects and wave fixed effects