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Online Appendix:

Exposure to Grocery Prices and Inflation Expectations

Francesco D'Acunto, Ulrike Malmendier, Juan Ospina, and Michael Weber

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A.1 Survey Noise and Simulation

In this section, we assess the role of survey noise in individually reported values and the tendency of respondents to round to integers or multiples of 5 (see, e. g., Heitjan and Rubin (1990), Jappelli and Pistaferri (2010)).

First, we ask the following questions: If our proposed model were true in the underlying data generating process, implying an R^2 of 1, how much noise would be needed to obtain an R^2 akin to that in our baseline estimation? Table A.7 reports the corresponding simulations. We assume the estimating equation of column (5) in Table 2 as the true association between inflation expectations and the Frequency CPI. Panel A shows the R^2 from re-estimating column (5) of Table 2 (assumed to be the true model in the data generation) when 70% of respondents round to multiples of 5, as is the case in our data, and we add zero-mean normally-distributed noise, ranging from 0 to 10 (cf. columns 1-11). The noise reduces the measured fit from 82% to 5%. Results without any rounding (in Panel B) are similar.

In Panel C, we proxy for an empirically plausible level of noise by setting the standard deviation equal to the one of the estimated residuals of the specification we assume to be true (7.8%) and vary the degree of rounding. Across all columns, the R^2 is similar to our baseline estimation. Panel D shows that rounding without noise reduces the R^2 only partially. All simulations indicate that an empirically plausible amount of survey noise suffices to generate the R^2 from our baseline estimation.

Table A.1: **Summary Statistics by Participation Across Waves**

Notes. This table reports summary statistics of the main independent and dependent variables for our running sample and, separately, for respondents of only wave 1, only wave 2, and both waves. Expected Inflation and Perceived Inflation are survey-reported numerical expectations and perceptions of inflation rates for a 12-month period, and are bounded between -100 and +100 percentage points. Household CPI and Frequency CPI are the measures of household-level grocery inflation based on scanner data from the *Kilts-Nielsen Consumer Panel*. Both measures are computed over a horizon of 12 months before the respondent took part in the *Chicago Booth Expectations and Attitudes Survey*. Income Outlook, Economic Outlook, and Financial Outlook are qualitative respondent expectations on the soundness of income growth, personal financial conditions, and overall economic outlook of the country for the following 12 months, and are bounded between 1 (very bad) and 5 (very good).

	Full Sample			Only Wave 1			Wave 1 & 2			Only Wave 2		
	Obs.	Mean	St. dev.	Obs.	Mean	St. dev.	Obs.	Mean	St. dev.	Obs.	Mean	St. dev.
Age	59,118	61.4	12.9	15,104	61.0	13.93	36,746	62.2	12.12	7,268	58.2	7.27
Male	59,126	0.36	0.48	15,111	0.37	0.48	36,746	0.34	0.48	7,269	0.39	0.49
Unemployed	59,126	0.05	0.22	15,111	0.05	0.22	36,746	0.05	0.21	7,269	0.05	0.22
Home Owner	59,126	0.74	0.44	15,111	0.74	0.44	36,746	0.75	0.43	7,269	0.72	0.45
Household Size	56,227	2.19	1.11	13,470	2.33	1.17	35,754	2.10	1.06	7,003	2.42	1.21
College	59,126	0.48	0.50	15,111	0.45	0.50	36,746	0.49	0.50	7,269	0.49	0.50
Income Outlook [1-3]	59,126	2.18	0.90	15,111	2.18	0.91	36,746	2.18	0.90	7,269	2.17	0.91
Economic Outlook [1-5]	59,126	2.69	1.04	15,111	2.76	1.06	36,746	2.68	1.03	7,269	2.62	0.91
Financial Outlook [1-5]	59,126	3.00	0.88	15,111	3.03	0.89	36,746	2.98	0.88	7,269	3.04	0.92
Expected Inflation	59,126	4.67	8.20	15,111	4.99	8.57	36,746	4.59	8.10	7,269	4.40	7.89
Perceived Inflation	59,126	4.44	8.27	15,111	4.92	8.75	36,746	4.34	8.16	7,269	3.96	7.74
Household CPI	59,126	0.81	7.14	15,111	1.18	6.90	36,746	0.75	7.20	7,269	0.39	7.26
Frequency CPI	59,126	1.61	5.85	15,111	1.79	5.80	36,746	1.63	5.86	7,269	1.12	5.83

Table A.2: **Grocery Shopping and Inflation Expectations: Gross Prices**

Notes. This table reports OLS estimates of regressing individuals' inflation expectations on the inflation rates in their household consumption bundles. Inflation expectations are from the customized *Chicago Booth Expectations and Attitudes Survey*, fielded in 6/2015 and 6/2016. The inflation question is randomized to ask about changes in prices (as in the Michigan Survey of Consumers) or about inflation (as in the New York Fed Survey). Measures of household-level inflation are constructed from the *Kilts-Nielsen Consumer Panel*. We use the 12 months before the June of each survey wave to measure price changes, and the 12 months before that period as the base period. The Household CPI uses the Nielsen expenditure shares in the base periods as weights; the Frequency CPI uses the frequencies of purchase (overall quantity) in the base period as weights; both CPIs use volume-weighted gross prices. Demographic controls include age, square of age, sex, employment status, 16 income dummies, home ownership, marital status, household size, college dummy, four race dummies, and reported risk tolerance. Expectation controls include household income expectations, aggregate economic outlook, and personal financial outlook. All columns include survey-wave and inflation-question fixed effects, and we add county and individual fixed effects stepwise as indicated. Standard errors are clustered at the household level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Household CPI	0.146***	0.129***	0.170***				0.01	−0.02	0.07
	(3.80)	(3.38)	(2.79)				(0.14)	(-0.43)	(0.83)
Frequency CPI				0.196***	0.197***	0.232***	0.191***	0.214***	0.176*
				(4.98)	(4.99)	(3.20)	(3.31)	(3.76)	(1.79)
Observations	59,126	56,220	56,220	59,126	56,220	56,220	59,126	56,220	56,220
Adj R^2	0.028	0.090	0.245	0.028	0.091	0.245	0.028	0.091	0.245
Demographic controls		X	X		X	X		X	X
Expectation controls		X	X		X	X		X	X
County FE		X	X		X	X		X	X
Individual FE			X			X			X

t-statistics in parentheses

$^{*}p < 0.10,^{**}p < 0.05,^{***}p < 0.01$

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Table A.3: **Alternative Frequency Measures**

Notes. This table reports OLS estimates of regressing individuals' inflation expectations on the inflation rates in their household consumption bundles. Inflation expectations are from the customized *Chicago Booth Expectations and Attitudes Survey*, fielded in 6/2015 and 6/2016. The inflation question is randomized to ask about changes in prices (as in the Michigan Survey of Consumers) or about inflation (as in the New York Fed Survey). Measures of household-level inflation are constructed from the *Kilts-Nielsen Consumer Panel*. We use the 12 months before the June of each survey wave to measure price changes, and the 12 months before that period as the base period. The Household CPI uses the Nielsen expenditure shares in the base periods as weights; the Frequency CPI uses the frequencies of purchase (overall quantity) in the base period; the Trip CPI uses the number of shopping trips in which a good was purchased in the base period; and the Volume CPI uses only the price changes of goods above the median by purchased volume at the household level. All CPIs use volume-weighted net prices (gross prices net of discounts). Demographic controls include age, square of age, sex, employment status, 16 income dummies, home ownership, marital status, household size, college dummy, four race dummies, and reported risk tolerance. Expectation controls include household income expectations, aggregate economic outlook, and personal financial outlook. All columns include survey-wave, inflation-question, and county fixed effects. Standard errors are clustered at the household level.

	Trip CPI			Volume CPI		
	(1)	(2)	(3)	(4)	(5)	(6)
Alternative CPI	0.172***	0.186***	0.075	0.175***	0.105**	0.048
	(4.24)	(3.30)	(1.29)	(4.42)	(2.08)	(0.05)
Household CPI		−0.021			0.113**	
		(−0.38)			(0.05)	
Frequency CPI			0.164***			0.193***
			(2.89)			(0.005)
Observations	56,220	56,220	56,220	56,212	56,212	56,212
Adj R^2	0.09	0.09	0.09	0.09	0.09	0.09
Demographic controls	X	X	X	X	X	X
Expectation controls	X	X	X	X	X	X
County FE	X	X	X	X	X	X

t-statistics in parentheses

$^{*}p < 0.10,^{**}p < 0.05,^{***}p < 0.01$

Table A.4: **Alternative Definitions of Household Inflation: Horizon and Prices**

Notes. This table reports OLS estimates of regressing individuals' inflation expectations on the inflation rates in their household consumption bundles. Inflation expectations are from the customized *Chicago Booth Expectations and Attitudes Survey*, fielded in 6/2015 and 6/2016. The inflation question is randomized to ask about changes in prices (as in the Michigan Survey of Consumers) or about inflation (as in the New York Fed Survey). Measures of household-level inflation are constructed from the *Kilts-Nielsen Consumer Panel*. We use the 12 months before the June of each survey wave to measure price changes, and the 12 months before that period as the base period. We include both the Frequency CPI and an Alternative CPI as independent variables. The Frequency CPI employs the frequencies of purchase (overall quantity) in the base period as weights. The Alternative CPIs in columns (1) to (3) condition on goods the household purchased one month before the survey and vary the horizon over which the price changes are calculated: from April to May in column (1), from November to May in column (2), and from June to May in column (3). The Alternative CPI in column (4) uses the maximum price in both observation and measurement period to calculate price changes, and column (5) uses the median prices rather than volume-weighted prices. The Alternative CPIs in columns (6) to (8) follow Gorodnichenko and Weber (2016) and apply a V-shaped sales filter to the Nielsen weekly retail scanner data. We replace the temporary sales price with the regular price if the price returned to the pre-sales price after one week in column (6), two weeks in column (7), and after three weeks in column (6). All CPIs use volume-weighted net prices (gross prices net of discounts). Demographic controls include age, square of age, sex, employment status, 16 income dummies, home ownership, marital status, household size, college dummy, four race dummies, and reported risk tolerance. Expectation controls include household income expectations, aggregate economic outlook, and personal financial outlook. All columns include survey-wave, inflation-question, and county fixed effects. Standard errors are clustered at the household level.

	Horizon 1 1 month	Horizon 6 months	Horizon 12 months	Max Change	Median Change	Temporary 1 week	Temporary 2 weeks	Temporary 3 weeks
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Frequency CPI	0.207***	0.205***	0.212***	0.218***	0.224***	0.184***	0.183***	0.183***
	(5.30)	(5.05)	(5.24)	(5.73)	(5.56)	(4.49)	(4.48)	(4.48)
Alternative CPI	−0.070*	−0.048	−0.032	−0.053	0.008	−0.033	−0.030	−0.029
	(−1.82)	(−1.26)	(−0.86)	(−1.40)	(0.20)	(−0.85)	(−0.77)	(−0.76)
Observations	53,331	53,128	54,064	56,220	56,220	51,821	51,821	51,821
Adj R^2	0.093	0.092	0.092	0.091	0.091	0.042	0.042	0.042
Demographic controls	X	X	X	X	X	X	X	X
Expectation controls	X	X	X	X	X	X	X	X
County FE	X	X	X	X	X	X	X	X

t-statistics in parentheses

$^{*}p < 0.10, ^{**}p < 0.05, ^{***}p < 0.01$

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Table A.5: **Alternative Definitions of Household Inflation: Aggregation**

Notes. This table reports OLS estimates of regressing individuals' inflation expectations on the inflation rates in their household consumption bundles. Inflation expectations are from the customized *Chicago Booth Expectations and Attitudes Survey*, fielded in 6/2015 and 6/2016. The inflation question is randomized to ask about changes in prices (as in the Michigan Survey of Consumers) or about inflation (as in the New York Fed Survey). Measures of household-level inflation are constructed from the *Kilts-Nielsen Consumer Panel*. We use the 12 months before the June of each survey wave to measure price changes, and the 12 months before that period as the base period. We include both the Frequency CPI and an Alternative CPI as independent variables. The Frequency CPI employs the frequencies of purchase (overall quantity) in the base period as weights. The Alternative CPIs aggregates UPCs to the group level in column (1), to the department level in column (2), and to the module level in column (3). In column (4), we use prices from the retail (store-level) panel instead of individual-level prices to calculate price changes. All CPIs use volume-weighted net prices (gross prices net of discounts). Demographic controls include age, square of age, sex, employment status, 16 income dummies, home ownership, marital status, household size, college dummy, four race dummies, and reported risk tolerance. Expectation controls include household income expectations, aggregate economic outlook, and personal financial outlook. All columns include survey-wave, inflation-question, and county fixed effects. Standard errors are clustered at the household level.

	Group	Department	Module	Store Prices
	(1)	(2)	(3)	(4)
Frequency CPI	0.208***	0.204***	0.209***	0.209***
	(5.38)	(5.28)	(5.40)	(5.40)
Alternative CPI	−0.043	0.013	−0.012	−0.042
	(−1.10)	(0.34)	(−0.32)	(−1.12)
Observations	52,048	52,048	52,048	52,048
Adj R^2	0.091	0.091	0.091	0.091
Demographic controls	X	X	X	X
Expectation controls	X	X	X	X
County FE	X	X	X	X

t-statistics in parentheses
$^{*}p < 0.10,^{**}p < 0.05,^{***}p < 0.01$

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Table A.6: **Alternative Definitions of Household Inflation: Weights**

Notes. This table reports OLS estimates of regressing individuals' inflation expectations on the inflation rates in their household consumption bundles. Inflation expectations are from the customized *Chicago Booth Expectations and Attitudes Survey*, fielded in 6/2015 and 6/2016. The inflation question is randomized to ask about changes in prices (as in the Michigan Survey of Consumers) or about inflation (as in the New York Fed Survey). Measures of household-level inflation are constructed from the *Kilts-Nielsen Consumer Panel*. We use the 12 months before the June of each survey wave to measure price changes, and the 12 months before that period as the base period. We include both Frequency CPI and, in columns (2) to (5), an Alternative CPI as independent variables, which are based on volume-weighted net prices (gross prices net of discounts). The Frequency CPI employs the frequencies of purchase (overall quantity) in the base period to construct Laspeyres weights. The Alternative CPIs use Paasche weights in column (2) and Fisher weights in column (3). In column (4), we construct weights across both the base and observation period; and in column (5), we use absolute price changes as weights. Demographic controls include age, square of age, sex, employment status, 16 income dummies, home ownership, marital status, household size, college dummy, four race dummies, and reported risk tolerance. Expectation controls include household income expectations, aggregate economic outlook, and personal financial outlook. All columns include survey-wave, inflation-question, and county fixed effects. Standard errors are clustered at the household level.

		Paasche	Fisher	Total	Absolute
	(1)	(2)	(3)	(4)	(5)
Frequency CPI	0.221***	0.218***	0.183***	0.186***	0.199***
	(5.83)	(5.63)	(3.93)	(3.65)	(4.42)
Alternative CPI		0.015	0.067	0.050	0.038
		(0.38)	(1.41)	(1.05)	(0.84)
Observations	56,220	56,220	56,219	56,195	56,220
Adj R^2	0.091	0.091	0.091	0.091	0.091
Demographic controls	X	X	X	X	X
Expectation controls	X	X	X	X	X
County FE	X	X	X	X	X

t-statistics in parentheses

$^{*}p < 0.10,^{**}p < 0.05,^{***}p < 0.01$

Table A.7: **Simulated R^2 with Variations in Noise and Rounding**

Notes. This table reports the estimates of regressing individuals' inflation expectations on the inflation rates realized in their household consumption bundles in simulated data. We assume column (5) of Table 2 as the true underlying model. In Panel A, we add mean-zero, normally distributed noise, varying the standard deviation across columns, and round a random subset of 70% of observations to the closest multiple of 5, which approximately corresponds to the empirical fraction of rounders after adding the noise. Panel B repeats the same exercise but without rounding. Panel C varies the fraction of rounders but keeps the amount of noise constant, namely, equal to the error term standard deviation of the specification of column (5) of Table 2. Panel D repeats the same exercise as in Panel C but without adding any noise to the data. Standard errors are clustered at the household level.

	Panel A: Variation in Noise and Empirical Rounding										
	0	1	2	3	4	5	6	7	8	9	10
Frequency CPI	0.229***	0.219***	0.212***	0.208***	0.210***	0.247***	0.194***	0.224***	0.228***	0.251***	0.253***
	(42.47)	(32.55)	(21.01)	(15.03)	(11.49)	(11.26)	(7.40)	(7.44)	(6.61)	(6.31)	(5.80)
Adj R^2	0.818	0.712	0.522	0.362	0.254	0.183	0.132	0.109	0.086	0.066	0.054
	Panel B: Variation in Noise, No Rounding										
	0	1	2	3	4	5	6	7	8	9	10
Frequency CPI	0.221***	0.228***	0.232***	0.225***	0.224***	0.201***	0.260***	0.197***	0.199***	0.243***	0.267***
		(53.50)	(26.74)	(17.67)	(13.02)	(9.21)	(10.14)	(6.49)	(5.85)	(6.30)	(6.30)
Adj R^2	1.000	0.857	0.598	0.400	0.271	0.188	0.143	0.110	0.088	0.069	0.055
	Panel C: Variation in Rounding, Empirical Noise										
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Frequency CPI	0.297***	0.298***	0.297***	0.302***	0.302***	0.304***	0.306***	0.305***	0.305***	0.299***	0.303***
	(8.77)	(8.79)	(8.72)	(8.88)	(8.85)	(8.91)	(8.93)	(8.88)	(8.87)	(8.68)	(8.80)
Adj R^2	0.090	0.090	0.089	0.089	0.089	0.089	0.088	0.088	0.088	0.088	0.088
	Panel D: Variation in Rounding, No Noise										
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Frequency CPI	0.221***	0.222***	0.225***	0.226***	0.225***	0.225***	0.232***	0.236***	0.230***	0.234***	0.235***
		(110.62)	(78.01)	(63.96)	(55.70)	(49.86)	(46.73)	(43.82)	(40.19)	(38.28)	(36.27)
Adj R^2	1.000	0.967	0.937	0.909	0.883	0.859	0.836	0.816	0.799	0.781	0.764

t-statistics in parentheses

$^{*}p < 0.10, ^{**}p < 0.05, ^{***}p < 0.01$