Online Appendix of

Income Fluctuations and Firm Choice

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TABLE A.1
Firm Quality Index and Yelp Ratings

Observations are individual retailers from our sample able to be matched to Yelp. Independent variables are indicators for a firm's price range in Yelp, where the excluded category is Yelp '$'. Coefficients denote the average difference in firm 'quality' corresponding to different Yelp price categories. Firm 'quality' is determined by the dollar-weighted average household income of customers at a given retailer. Robust standard errors in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1) ALL STORES	(2) GROCERIES	(3) RESTAURANTS	(4) GENERAL_MERCH	(5) CLOTHING
YELP_$$	753.1***	250.0	761.8***	505.9***	1,412***
	(232.6)	(190.6)	(204.2)	(177.0)	(366.2)
YELP_$$$-$$$$	2,565***	2,033***	1,425***	2,925***	2,896***
	(318.7)	(314.3)	(479.3)	(573.0)	(1,023)
Observations	253	46	63	87	41
R^2	0.409	0.384	0.238	0.428	0.277

TABLE A.2

Retailer Choice Elasticity Using Customer-Level Unemployment Spells

The dependent variable for each specification varies by panel. Each column varies the set of retailers that the given variable spans (e.g.aggregated across retailers, solely restaurants, solely grocery stores, etc.). Each specification includes household and period fixed effects as a dummy for whether the household has an unemployed member as measured by receipt of unemployment insurance. Panel A considers logged spending, panel B considers the logged number of unique retailers, panel C's dependent variable is the HHI within category of retailer, panel D looks at the weighted average of store size that a household shops at (as measured by logged number of total transactions across our sample at a given retailer), and panel E measures the weighted average of firm quality for a household-month. Robust standard errors in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1) AGG	(2) REST	(3) GROCERIES	(4) GEN_MERCH	(5) CLOTHES
Panel A. Aggregate Spending					
UNEMPLOYED	-0.190***	-0.275***	-0.158***	-0.279***	-0.0674***
	(0.00189)	(0.00207)	(0.00249)	(0.00241)	(0.00367)
Observations	2,873,911	2,490,815	2,239,991	2,728,898	1,362,201
R^2	0.499	0.474	0.506	0.435	0.273
Panel B. Unique Stores					
UNEMPLOYED	-0.126***	-0.158***	-0.0441***	-0.109***	-0.0188***
	(0.00109)	(0.00113)	(0.000908)	(0.00101)	(0.00115)
Observations	2,870,452	2,486,370	2,235,058	2,723,360	1,339,340
R^2	0.586	0.567	0.438	0.519	0.233
Panel C. Spending Concentration Across Retailers (HHI)					
UNEMPLOYED	0.175***	0.157***	0.0385***	0.0929***	0.0216***
	(0.00119)	(0.00129)	(0.00103)	(0.00111)	(0.00150)
Observations	2,904,168	2,521,077	2,270,254	2,759,154	1,392,474
R^2	0.452	0.531	0.395	0.407	0.262
Panel D. Average Store Size					
UNEMPLOYED	-0.0505***	-0.115***	-0.0208***	-0.0550***	-0.00584
	(0.00259)	(0.00437)	(0.00514)	(0.00392)	(0.00620)
Observations	2,846,080	2,466,917	2,213,642	2,703,971	1,347,492
R^2	0.402	0.432	0.486	0.364	0.295
Panel E. Average Firm Quality					
UNEMPLOYED	-0.00241***	-0.00457***	-0.000501*	-0.00356***	0.000636
	(0.000186)	(0.000244)	(0.000300)	(0.000241)	(0.000482)
Observations	2,846,078	2,470,609	2,211,910	2,703,967	1,357,236
R^2	0.697	0.626	0.637	0.577	0.471
Year-Month FE	YES	YES	YES	YES	YES
Household FE	YES	YES	YES	YES	YES

TABLE A.3
Retailer Choice Elasticity Using Customer-Level Tax Rebates

The dependent variable for each specification varies by panel. Each column varies the set of retailers that the given variable spans (e.g. aggregated across retailers, solely restaurants, solely grocery stores, etc.). Each specification includes household and period fixed effects as well as a measure of financial inflows from federal and state tax rebates scaled by average household income (e.g. a value of 0.01 represents 1% of monthly household income). Panel A considers logged spending, panel B considers the logged number of unique retailers, panel C's dependent variable is the HHI within category of retailer, panel D looks at the weighted average of store size that a household shops at (as measured by logged number of total transactions across our sample at a given retailer), and panel E measures the weighted average of firm quality for a household-month. Robust standard errors in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1) AGG	(2) REST	(3) GROCERIES	(4) GEN_MERCH	(5) CLOTHES
Panel A. Aggregate Spending					
$\frac{TAX\_REFUND}{INCOME}$	0.127***	0.0746***	0.0414***	0.147***	0.104***
	(0.00171)	(0.00187)	(0.00236)	(0.00220)	(0.00326)
Observations	2,097,846	1,870,371	1,669,905	2,016,655	1,046,623
R^2	0.506	0.480	0.507	0.444	0.268
Panel B. Unique Stores					
$\frac{TAX\_REFUND}{INCOME}$	0.0515***	0.0368***	0.00979***	0.0452***	0.0234***
	(0.00102)	(0.00105)	(0.000869)	(0.000943)	(0.00103)
Observations	2,091,032	1,862,963	1,663,767	2,008,288	1,026,350
R^2	0.584	0.567	0.440	0.522	0.232
Panel C. Spending Concentration Across Retailers (HHI)					
$\frac{TAX\_REFUND}{INCOME}$	-0.0211***	-0.0344***	-0.00705***	-0.0283***	-0.0317***
	(0.00114)	(0.00119)	(0.000986)	(0.00105)	(0.00135)
Observations	2,120,481	1,892,955	1,692,382	2,040,213	1,068,133
R^2	0.443	0.531	0.398	0.407	0.261
Panel D. Average Store Size					
$\frac{TAX\_REFUND}{INCOME}$	-0.00854***	-0.0140***	-0.0145***	-0.0299***	-0.0213***
	(0.00239)	(0.00393)	(0.00489)	(0.00358)	(0.00553)
Observations	2,085,393	1,857,910	1,652,748	2,005,210	1,034,644
R^2	0.414	0.430	0.485	0.372	0.293
Panel E. Average Firm Quality					
$\frac{TAX\_REFUND}{INCOME}$	0.00158***	0.00102***	0.00302***	0.00159***	0.000417
	(0.000175)	(0.000221)	(0.000283)	(0.000223)	(0.000428)
Observations	2,086,878	1,861,520	1,654,975	2,005,907	1,043,630
R^2	0.703	0.624	0.631	0.583	0.460
Year-Month FE	YES	YES	YES	YES	YES
Household FE	YES	YES	YES	YES	YES

TABLE A.4
Household Income and Labor Intensity – Dynamics

Dependent variable is logged labor intensity at a household-month level. Labor intensity at a firm level is measured as the number of employees per million dollars of sales at a given firm. For each household-month, a dollar-weighted average of the labor intensity at matched retailers (either across all categories or within a retail category as noted by column headers) is constructed and used in these specifications. Household months with no spending at a matched retailer are excluded for lack of labor intensity data. Standard errors clustered at a household level. Robust standard errors in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1) ln(LI)_AGG	(2) ln(LI)_GROC	(3) ln(LI)_REST	(4) ln(LI)_GEN	(5) ln(LI)_CLOTH
ln(INC)_3_MO_LEAD	0.00100	0.00139	0.00261	0.00112	-0.00260
	(0.00155)	(0.00151)	(0.00207)	(0.00160)	(0.00310)
ln(INC)_2_MO_LEAD	-0.00528***	0.00158	0.00798***	0.00451***	-0.00203
	(0.00162)	(0.00157)	(0.00217)	(0.00168)	(0.00324)
ln(INC)_1_MO_LEAD	-0.00465***	0.000499	0.00327	0.00727***	-0.000385
	(0.00164)	(0.00159)	(0.00220)	(0.00170)	(0.00328)
ln(INC)	-0.0251***	0.00462***	0.0140***	0.0165***	-0.000414
	(0.00165)	(0.00160)	(0.00221)	(0.00170)	(0.00326)
ln(INC)_1_MO_LAG	-0.0151***	0.00612***	0.00920***	0.00887***	0.000391
	(0.00164)	(0.00159)	(0.00219)	(0.00170)	(0.00324)
ln(INC)_2_MO_LAG	-0.00946***	0.00336**	0.00325	0.00470***	0.00505
	(0.00164)	(0.00159)	(0.00219)	(0.00170)	(0.00325)
ln(INC)_3_MO_LAG	-0.00275*	0.00225	-0.00147	0.00381**	-0.00127
	(0.00164)	(0.00159)	(0.00219)	(0.00170)	(0.00326)
ln(INC)_4_MO_LAG	-0.00627***	0.00163	0.000231	-0.00249	0.00175
	(0.00163)	(0.00157)	(0.00218)	(0.00168)	(0.00324)
ln(INC)_5_MO_LAG	-0.00231	-0.000973	0.000423	-0.000689	-0.0105***
	(0.00161)	(0.00155)	(0.00215)	(0.00166)	(0.00321)
ln(INC)_6_MO_LAG	0.00238	0.00236	-0.00380*	0.00397**	0.00490
	(0.00153)	(0.00149)	(0.00204)	(0.00159)	(0.00307)
Observations	1,593,683	928,376	1,088,843	1,469,119	565,886
R^2	0.381	0.694	0.309	0.407	0.297
Year-Month FE	YES	YES	YES	YES	YES
Household FE	YES	YES	YES	YES	YES

FIGURE A.1
Income Distribution of Sample and Census Data

This figure compares the distribution of annual income of households in our sample relative to the 2010 U.S. Census. Data are binned into $5,000 buckets. For households in the sample for multiple years, we take the average across all observed years.

Distribution of Annual Income: Data vs U.S. Census