WEB APPENDICES

BANNING UNSOLICITED STORE FLYERS: DOES HELPING THE ENVIRONMENT HURT RETAILING?

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WEB APPENDIX A: EXAMPLES OF STICKERS USED TO OPT OUT/IN

FIGURE WA1: EXAMPLES OF STICKERS USED TO OPT OUT/IN

A: OPT-OUT APPROACH	B: OPT-IN APPROACH
	
Translation: No (“NEE”) to unsolicited advertising mail | Yes (“JA”) to community newspapers	Translation: Yes (“JA”) to unsolicited advertising mail | Yes (“JA”) to community newspapers

Note: In the opt-out approach, households receive store flyers and other unsolicited advertising mail unless they use the sticker on the left. In the opt-in approach, households receive no store flyers unless they use the sticker on the right.

WEB APPENDIX B: COMPOSITION OF TREATED AND CONTROL SAMPLES

Table WA1 show descriptive statistics of the household demographics for treated and control households across all cohorts. Table WA2 show similar statistics per cohort.

TABLE WA1: DEMOGRAPHICS TREATED AND CONTROL HOUSEHOLDS, ACROSS COHORTS

	Treated (N = 892)				Control (N = 32,303)			
	Mean	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**
Household size[a]	2.09	1.16	1	5	2.42	1.22	1	5
Age of head of household[b]	7.88	2.19	1	11	7.80	2.17	1	11
Income class[c]	9.70	5.07	1	19	10.25	4.92	1	19
Social class[d]	3.17	1.36	1	5	3.07	1.36	1	5

[a] 1 = 1 household member, 2 = 2 household members, 3 = 3 household members, 4 = 4 household members, 5 = 5 or more household members.
[b] 1 = 12-19 y.o. (years old), 2 = 20-24 y.o., 3 = 25-29 y.o., 4 = 30-34 y.o., 5 = 35-39 y.o., 6 = 40-44 y.o., 7 = 45-49 y.o., 8 = 50-54 y.o., 9 = 55-64 y.o., 10 = 65-74 y.o., 11 = 75 y.o. or older.
[c] Net income per month: 1 = below 700, 2 = 700-900, 3 = 900-1,100, 4 = 1,100-1,300, 5 = 1,300-1,500, 6 = 1,500-1,700, 7 = 1,700-1,900, 8 = 1,900-2,100, 9 = 2,100-2,300, 10 = 2,300-2,500, 11 = 2,500-2,700, 12 = 2,700-2,900, 13 = 2,900-3,100, 14 = 3,100-3,300, 15 = 3,300-3,500, 16 = 3,500-3,700, 17 = 3,700-3,900, 18 = 3,900-4,100, 19 = 4,100 or more.
[d] 1 = D (lower), 2 = C, 3 = B-minus, 4 = B-plus, 5 = A (upper); based on the education level and occupation of the head of the household.

TABLE WA2: DEMOGRAPHICS TREATED AND CONTROL HOUSEHOLDS, ACROSS COHORTS

A: COHORT 1

	Treated (N = 174)				Control (N = 7,336)			
	Mean	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**
Household size[a]	1.84	1.04	1	5	2.38	1.20	1	5
Age of head of household[b]	8.61	1.87	2	11	7.97	2.13	2	11
Income class[c]	8.89	5.12	1	19	9.84	4.74	1	19
Social class[d]	2.96	1.44	1	5	2.94	1.38	1	5

B: COHORT 2

	Treated (N = 293)				Control (N = 7,001)			
	Mean	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**
Household size[a]	2.23	1.21	1	5	2.42	1.22	1	5
Age of head of household[b]	7.62	2.31	1	11	7.79	2.20	1	11
Income class[c]	10.17	5.11	1	19	10.18	4.87	1	19
Social class[d]	3.28	1.32	1	5	3.05	1.36	1	5

C: COHORT 3

	Treated (N = 183)				Control (N = 6,027)			
	Mean	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**
Household size[a]	2.13	1.13	1	5	2.42	1.23	1	5
Age of head of household[b]	7.78	2.10	3	11	7.75	2.17	2	11
Income class[c]	9.95	5.30	1	19	10.43	5.01	1	19
Social class[d]	3.24	1.33		5	3.12	1.35	1	5

TABLE WA2 (CONTINUED)

D: COHORT 4

	Treated (N = 29)				Control (N = 5,971)			
	Mean	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**
Household size[a]	2.14	1.25	1	5	2.43	1.23	1	5
Age of head of household[b]	7.41	2.28	3	11	7.74	2.17	2	11
Income class[c]	8.59	4.57	2	19	10.46	5.00	1	19
Social class[d]	3.21	1.30	1	5	3.13	1.35	1	5

E: COHORT 5

	Treated (N = 213)				Control (N = 5,968)			
	Mean	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**
Household size[a]	2.08	1.16	1	5	2.43	1.23	1	5
Age of head of household[b]	7.81	2.19	2	11	7.73	2.17	2	11
Income class[c]	9.67	4.78	1	19	10.46	5.00	1	19
Social class[d]	3.10	1.38	1	5	3.13	1.35	1	5

[a] 1 = 1 household member, 2 = 2 household members, 3 = 3 household members, 4 = 4 household members, 5 = 5 or more household members.

[b] 1 = 12-19 y.o. (years old), 2 = 20-24 y.o., 3 = 25-29 y.o., 4 = 30-34 y.o., 5 = 35-39 y.o., 6 = 40-44 y.o., 7 = 45-49 y.o., 8 = 50-54 y.o., 9 = 55-64 y.o., 10 = 65-74 y.o., 11 = 75 y.o. or older.

[c] Net income per month: 1 = below 700, 2 = 700-900, 3 = 900-1,100, 4 = 1,100-1,300, 5 = 1,300-1,500, 6 = 1,500-1,700, 7 = 1,700-1,900, 8 = 1,900-2,100, 9 = 2,100-2,300, 10 = 2,300-2,500, 11 = 2,500-2,700, 12 = 2,700-2,900, 13 = 2,900-3,100, 14 = 3,100-3,300, 15 = 3,300-3,500, 16 = 3,500-3,700, 17 = 3,700-3,900, 18 = 3,900-4,100, 19 = 4,100 or more.

[d] 1 = D (lower), 2 = C, 3 = B-minus, 4 = B-plus, 5 = A (upper); based on the education level and occupation of the head of the household.

WEB APPENDIX C: PRE-TREATMENT TRENDS

FIGURE WA2: COHORT 1

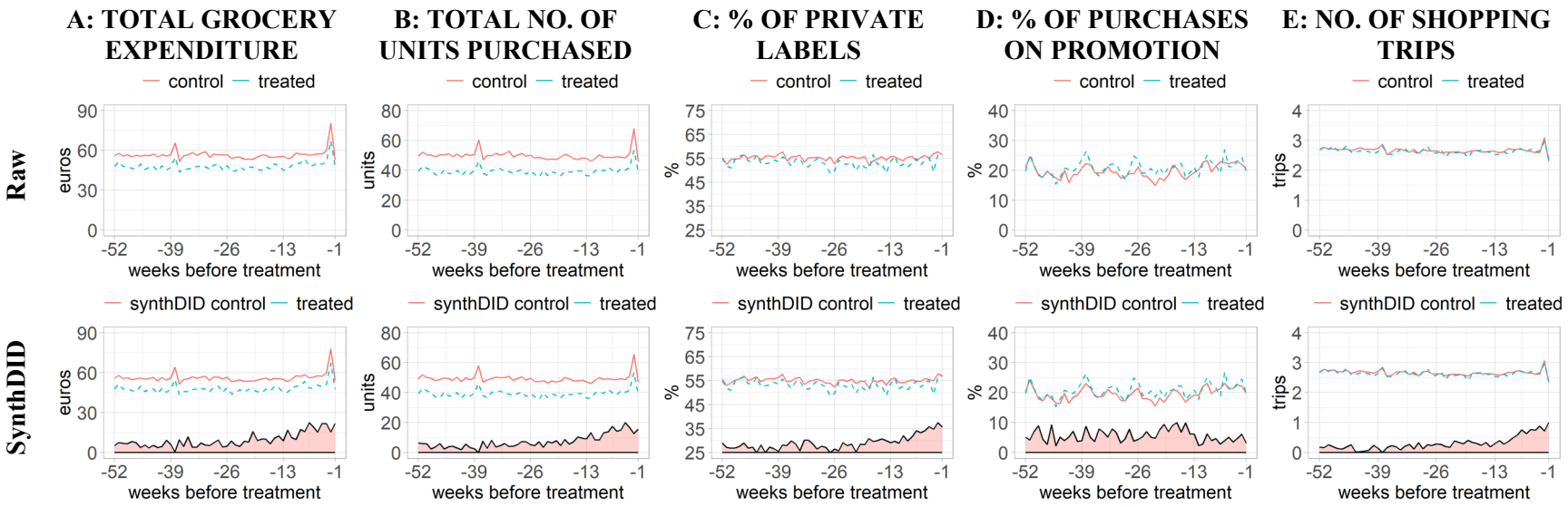
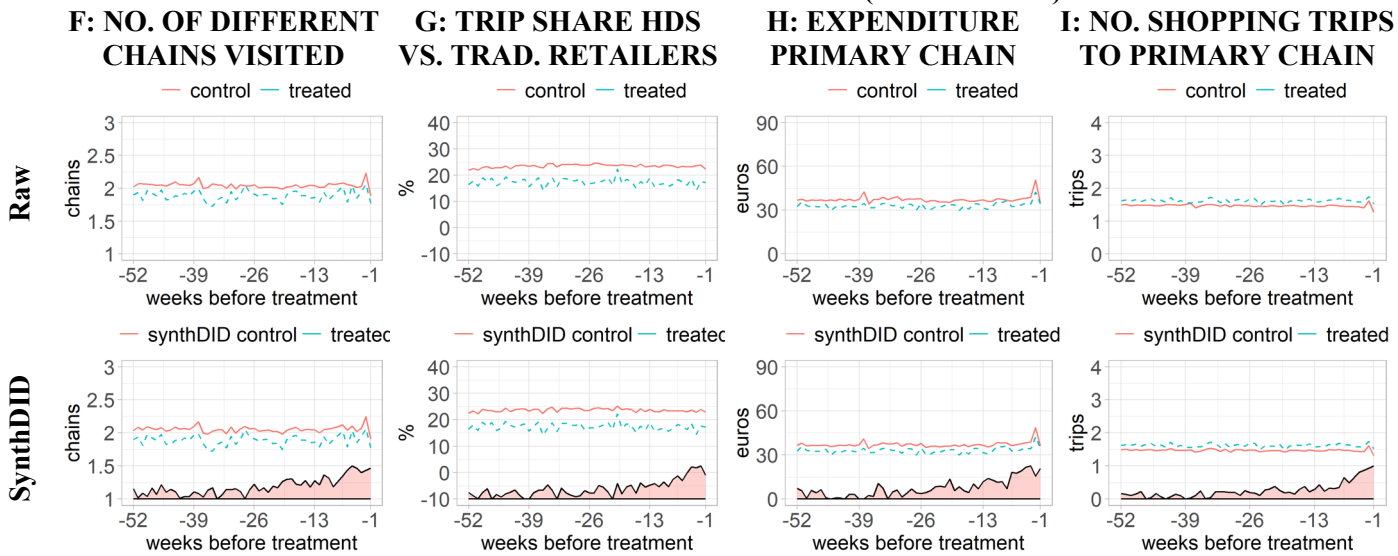
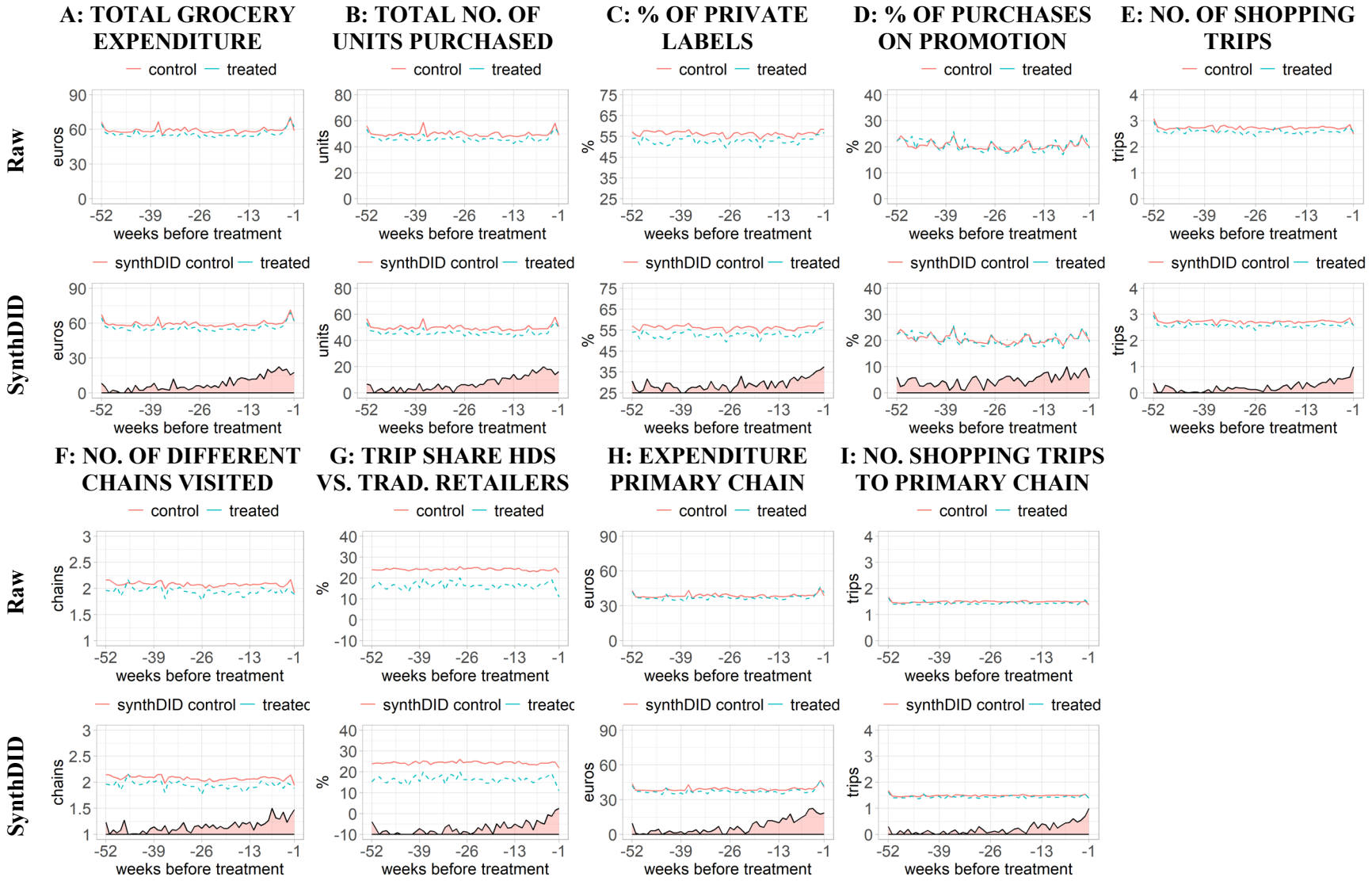


FIGURE WA2 (CONTINUED)



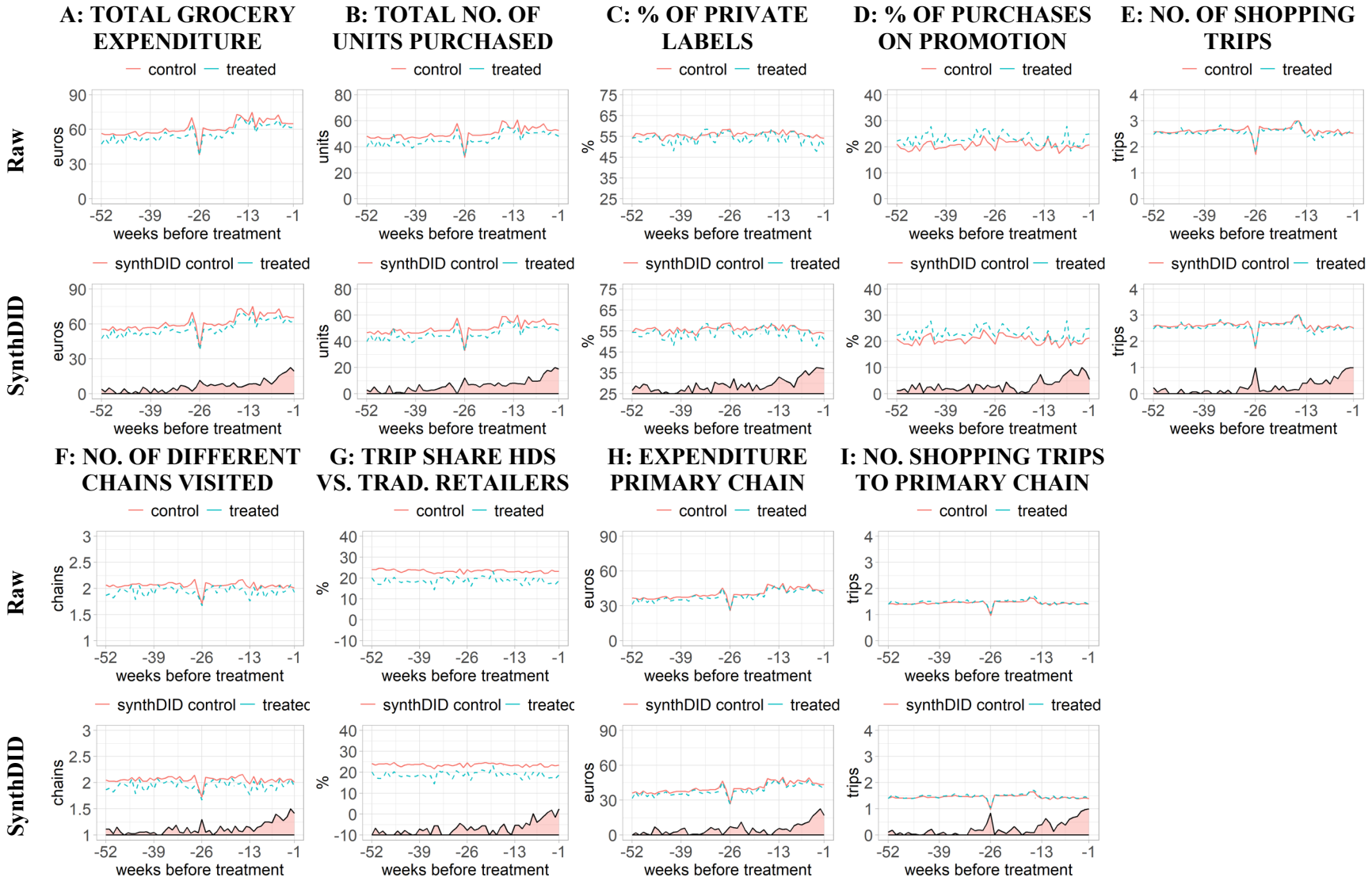
Notes: Dashed (solid) lines represent the weekly average for treated (control) households. The weighted average for the SynthDID control households is weighted as described in the "Synthetic Difference-in-Differences" section. The time weights used to average pre-treatment periods in the SynthDID approach are at the bottom of each plot.

FIGURE WA3: COHORT 2



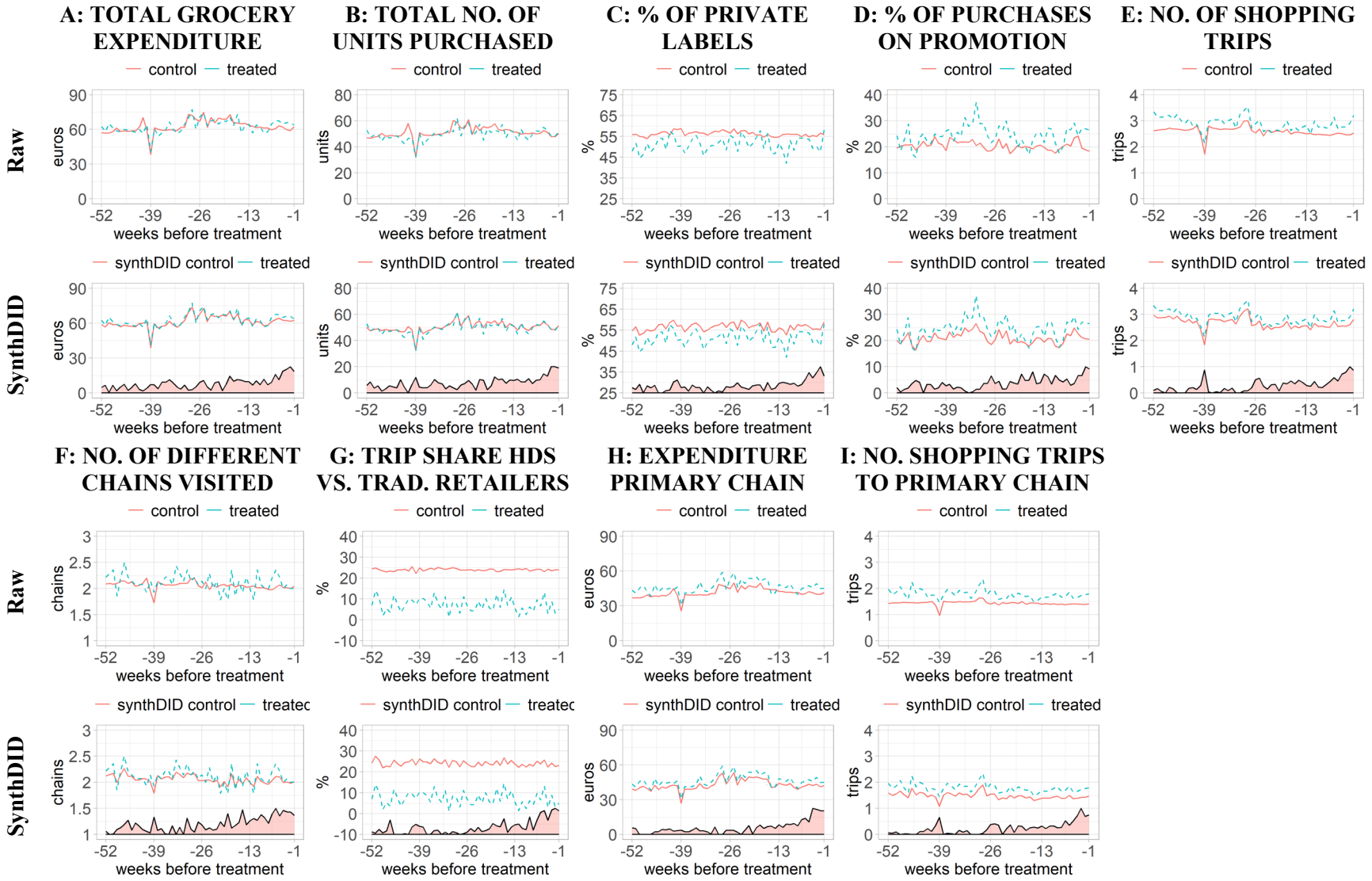
Notes: Dashed (solid) lines represent the weekly average for treated (control) households. The weighted average for the SynthDID control households is weighted as described in the "Synthetic Difference-in-Differences" section. The time weights used to average pre-treatment periods in the SynthDID approach are at the bottom of each plot.

FIGURE WA4: COHORT 3



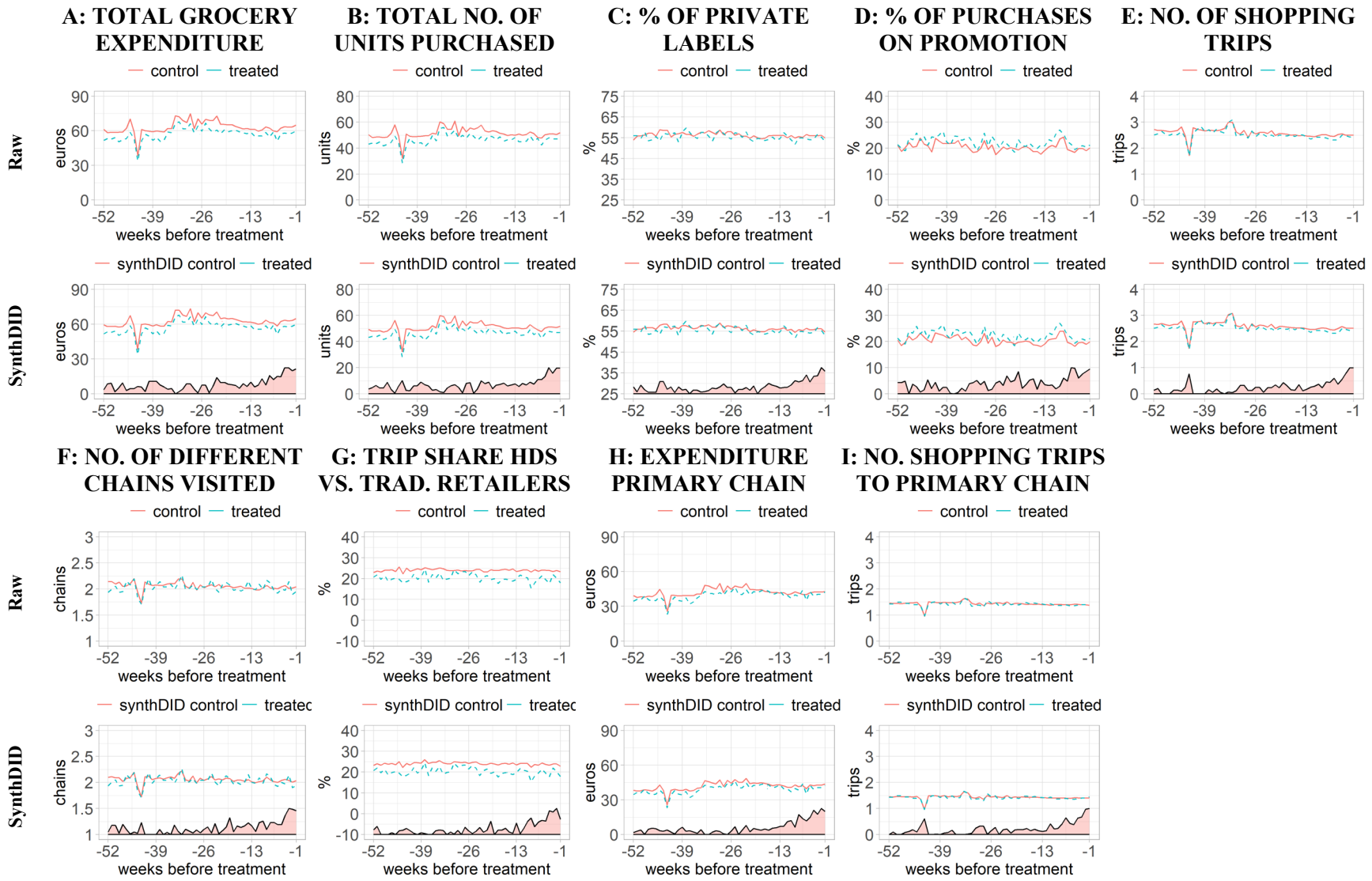
Notes: Dashed (solid) lines represent the weekly average for treated (control) households. The weighted average for the SynthDID control households is weighted as described in the "Synthetic Difference-in-Differences" section. The time weights used to average pre-treatment periods in the SynthDID approach are at the bottom of each plot.

FIGURE WA5: COHORT 4



Notes: Dashed (solid) lines represent the weekly average for treated (control) households. The weighted average for the SynthDID control households is weighted as described in the "Synthetic Difference-in-Differences" section. The time weights used to average pre-treatment periods in the SynthDID approach are at the bottom of each plot.

FIGURE WA6: COHORT 5



Notes: Dashed (solid) lines represent the weekly average for treated (control) households. The weighted average for the SynthDID control households is weighted as described in the "Synthetic Difference-in-Differences" section. The time weights used to average pre-treatment periods in the SynthDID approach are at the bottom of each plot.

WEB APPENDIX D: INTERVAL ESTIMATE CURVES

Figure WA7 shows interval estimates curves for each outcome variable following recent suggestions by McShane et al. (2024). The grey area denotes the confidence interval (interval estimate) for all levels from 0% to 99.9% (right y-axis). The peak (0%) denotes the point estimate (e.g., .40 for total grocery expenditure) and the bounds of a traditional 95% confidence interval (CI) are shown towards the bottom.

FIGURE WA7: INTERVAL ESTIMATE CURVES

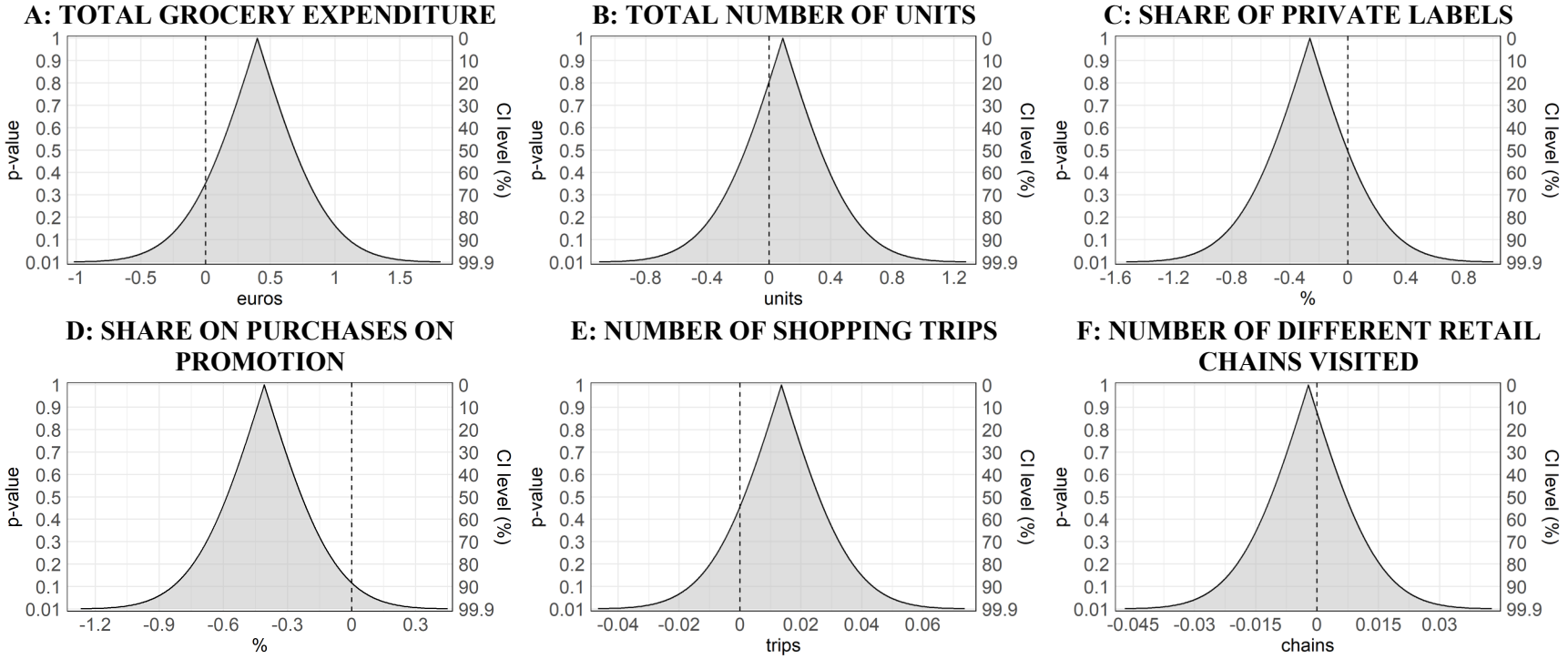
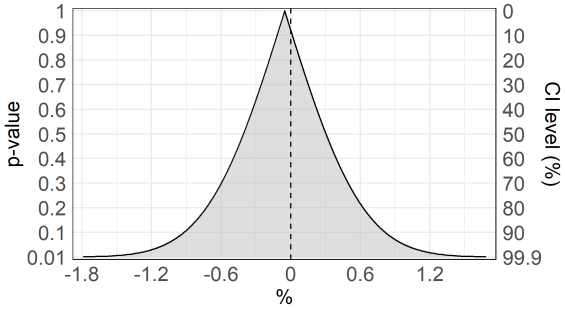
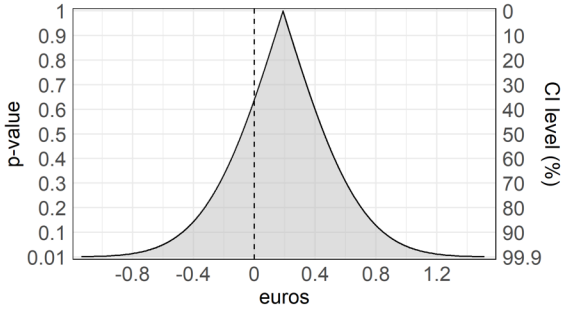


FIGURE WA7 (CONTINUED)

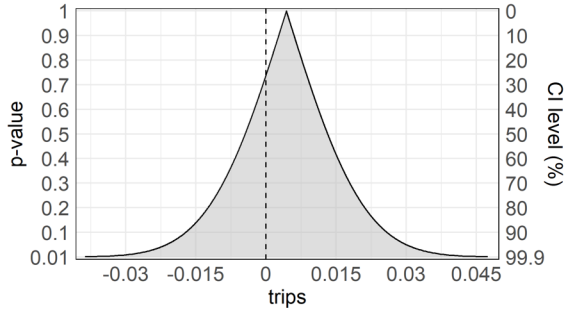
G: TRIP SHARE HDS VS. TRADITIONAL RETAILERS



H: GROCERY EXPENDITURE AT PRIMARY CHAIN



I: NUMBER OF SHOPPING TRIPS TO PRIMARY CHAIN



Notes: The curve plots the confidence interval (CI) for each dependent variable for the level indicated by the right y-axis. Similarly, it plots the p-value for each variable against the target hypothesis of the value on the x-axis.

WEB APPENDIX E: SYNTHETIC CONTROL METHOD

As discussed in the main text, an alternative analysis method would be to use synthetic control (SC). SC can be seen as a middle ground between DID and SynthDID in terms of the number of weights and parameters that are estimated. However, and crucially, the lack of regularization in terms of control weights vis-à-vis SynthDID may lead to overfitting. This issue seems particularly relevant in our setting as it has many controls. Indeed, as Abadie (2021) and Li and Sonnier (2023) write, the risk with the SC method in combination with a large donor pool is that of overfitting. In particular, a lack of regularization means that the SC method tries to find controls that predict the pre-treatment DV without penalizing the control weights. In practice, this could lead to an over-reliance on a small subset of controls, rather than more nuanced down/upweighting of the SynthDID approach (see also Arkhangelsky et al. 2021, p. 4094).

To understand this further, we compare our results with that of SC and compute several complementary statistics to assess overfitting. Table WA3 shows the results of SC and contrasts it with the results of our focal SynthDID model and DID. SC yields substantially larger parameter estimates than our focal estimates and some confidence intervals no longer include zero. Yet, these effects may be caused by overfitting. As a first test to understand this, we calculate the prediction mean squared error (PMSE) suggested by Li and Van den Bulte (2023), by splitting the pre-treatment period and using the last 26 weeks of the pre-treatment period as pseudo post-treatment period. In our setting the PMSE is substantially higher for SC than the focal SynthDID ($PMSE_{focal}$ / $PMSE_{SC}$ = .16 on average across cohorts and dependent variables). Next, to formally assess over-reliance on a small subset of controls, we calculate several statistics based on the control weights obtained in our analysis. In Table WA4, we contrast the different methods in terms of their approach (column 1) and several descriptives derived from the realized values for the control weights in our setting (columns 2-4). As shown in column 2, we find that SC relies on very few controls (3.27%) and discards roughly 96.73% of the control observations. Put differently, with SC, few controls uniquely determine the behavior of the control group post-treatment. For SynthDID, we observe that 97.94% of the controls receive a positive weight, such that only few controls (2.06%) are completely discarded. In column 3, we calculate the ratio of the weight for each non-

zero weighted control over the DID weight (1/N). For SC, we see that the used (non-zero-weight) controls on average are 37.91 times more influential than they would have been in a DID model (vis-à-vis 1.023 for SynthDID vs. DID). Last, in column 4, we also calculate a measure of dispersion of the control weights. More specifically, we calculate the Herfindahl-Hirschman index (HHI) per method and normalize it such that the HHI for DID equals 1. We find a value of 335.32 for SC, whereas SynthDID stays relatively close to DID, with a value of 1.12. In summary, in our setting, the control weights in SynthDID are distributed relatively evenly across the large majority of controls, whereas with SC, few controls receive relatively large weights, creating an over-reliance on these weights.

Last, we test the stability of the estimates by contrasting the estimates obtained with SC with those of random samples of a smaller size (that are less prone to overfitting). In particular, Table WA5 shows the statistics on the estimates from 500 random control group samples, where we each time restrict the number of potential control units to be the same as the number of treated units. The means of the parameter estimates coming from the 500 samples (in Panel A) are in line with DID and SynthDID. Finally, we also observe a much higher standard deviation in effect size for SC (vis-à-vis DID and SynthDID) across the 500 samples (see Panel B), suggesting that the (potential over-)reliance on few controls influences the results substantially.

TABLE WA3: SC ESTIMATES VS. FOCAL AND DID ESTIMATES

	Focal	DID	SC
Total grocery expenditure (in euros)	.40 [-.45, 1.24]	.70 [-.20, 1.59]	.58 [-.58, 2.07]
Total number of units purchased	.09 [-.62, .80]	.39 [-.37, 1.15]	**1.39 [.38, 2.51]**
Share of private labels (%)	-.26 [-1.02, .49]	-.28 [-1.05, .48]	-.85 [-1.38, .17]
Share of purchases on promotion (%)	-.41 [-.92, .10]	-.42 [-.94, .09]	**-.40 [-1.15, -.12]**
Number of shopping trips	.01 [-.02, .05]	.02 [-.02, .06]	**-.10 [-.15, -.03]**
Number of different retail chains visited	.00 [-.03, .02]	.00 [-.03, .03]	**-.06 [-.09, -.04]**
Trip share HDs vs. traditional retailers (%)	-.05 [-1.09, .98]	-.22 [-1.26, .82]	-.30 [-.67, .08]
Grocery expenditure at primary chain (in euros)	.19 [-.60, .98]	.55 [-.30, 1.41]	**1.81 [.52, 3.85]**
Number of shopping trips to primary chain	.00 [-.02, .03]	.01 [-.02, .04]	-.03 [-.07, .01]

Notes: 95% confidence interval in brackets; confidence intervals excluding zero in bold. For SC, the Jackknife procedure is discouraged (see Arkhangelsky et al. 2021) and we use the subsampling method as discussed in Li (2020). We set the subsample size to 26 weeks (i.e., half the number of pre-treatment periods) and use 10,000 subsample simulations. HD = hard discounter, coh. = cohort.

TABLE WA4: SUMMARY STATISTICS CONTROL WEIGHTS FOR SC VS. SYNTHDID AND DID

	Approach regarding control weights	% of controls with non-zero weight	Average weight of non-zero controls divided by the average weight in DID	HHI (normalized by HHI of DID)
DID	$1/N_c$	100%	1	1
SC	Estimated	3.27%	37.91	335.32
SynthDID	Estimated with regularization	97.94%	1.023	1.12

Notes: Values displayed are averages across all nine DVs and five cohorts.

TABLE WA5: STABILITY OF ESTIMATES

A: ESTIMATES MAIN ANALYSES VS. MEAN OF 500 RANDOM SAMPLES

	SynthDID		DID		SC	
	Main	**Samples**	**Main**	**Samples**	**Main**	**Samples**
Total grocery expenditure (in euros)	.40	.42	.70	.71	.58	.02
Total number of units purchased	.09	-.01	.39	.40	1.39	-.34
Share of private labels (%)	-.26	-.20	-.28	-.28	-.85	-.31
Share of purchases on promotion (%)	-.41	-.55	-.42	-.42	-.40	-.25
Number of shopping trips	.01	.01	.02	.02	-.10	-.00
Number of different retail chains visited	.00	-.01	.00	.00	-.06	-.01
Trip share HDs vs. traditional retailers (%)	-.05	-.27	-.22	-.22	-.30	-.28
Grocery expenditure at primary chain (in euros)	.19	.16	.55	.56	1.81	.14
Number of shopping trips to primary chain	.00	-.00	.01	.01	-.03	.01

B: STANDARD DEVIATION OF 500 RANDOM SAMPLES

	SynthDID	DID	SC
Total grocery expenditure (in euros)	.39	.37	.81
Total number of units purchased	.34	.33	.66
Share of private labels (%)	.38	.32	.48
Share of purchases on promotion (%)	.28	.23	.40
Number of shopping trips	.02	.02	.03
Number of different retail chains visited	.02	.01	.02
Trip share HDs vs. traditional retailers (%)	.40	.40	.52
Grocery expenditure at primary chain (in euros)	.39	.38	.77
Number of shopping trips to primary chain	.01	.01	.03

Notes: HD = hard discounter. The estimates in the columns “Main” are the results of our main analyses, as reported in the main text/this Web Appendix.

WEB APPENDIX F: POWER TO DETECT MEANINGFUL EFFECTS

The estimates in Table 7 in the main text are small and statistically indistinguishable from zero. However, null findings may be driven by the lack of an effect or insufficient statistical power to detect economically meaningful effects. There are two noteworthy characteristics of our setting that influence the calculation of MDEs. First, we employ panel data, therefore we must use a MDE calculation that is robust to serial correlation. Second, the treatment is implemented in a staggered manner, requiring us to use an MDE calculation that is robust to this staggered implementation. We note that while the literature has developed MDEs using DID designs in a panel setting (Burlig, Preonas, and Woerman 2020), with extensions to staggered treatment (Schochet 2022), generalizations that incorporate SynthDID do not exist to the best of our knowledge. We consider developing power calculations for SynthDID with staggered adoption to be beyond the scope of this paper and, supported by the largely identical results obtained with the SynthDID and DID methods, report the MDEs based on a staggered two-way fixed effects DID specification (as used in the robustness check in the main text).

To calculate the MDE, we follow the procedure outlined in Equation 12 by Schochet (2022, p. 382) to calculate the variance of the staggered treatment effect defined by:

$$\mathrm{Var}\left(\hat{\tau}^{\mathrm{DID}}\right) = \frac{1}{\left(\sum_{r=1}^{R} A_r\right)^2} \sum_{r=1}^{R} A_r^2 \, \mathrm{Var}\left(\hat{\tau}_r^{\mathrm{DID}}\right), \tag{W1}$$

where A_r equals the weight of cohort r, determined by the respective number of treated households in cohort r. To determine $\mathrm{Var}\left(\hat{\tau}_r^{\mathrm{DID}}\right)$, we Equation 2 of Burlig, Preonas, and Woerman (2020, p. 3):

$$\mathrm{Var}\left(\hat{\tau}_r^{\mathrm{DID}}\right) = \frac{1}{P(1-P)J}\left[\left(\frac{\ell_{\min} + \ell_{\max}}{\ell_{\min} * \ell_{\max}}\right)\sigma_w^2 + \left(\frac{\ell_{\min} - 1}{\ell_{\min}}\right)\psi^B + \left(\frac{\ell_{\max} - 1}{\ell_{\max}}\right)\psi^A - 2\psi^X\right], \tag{W2}$$

where P is the proportion of observations of households in treatment municipalities after the ban is active; J is the total number of households; $\ell_{\min}$ and $\ell_{\max}$ refer to the number of weeks pre- and post-treatment, respectively; σ_w^2 indicates the variance of the error term in a two-way fixed effects DID framework; and ψ^B, ψ^A, and ψ^X are the average pre-treatment, post-treatment, and across-period covariance between

residuals at t and t+1 of the given time period (of the same household), respectively. As before, we set $\ell_{\min}$ and $\ell_{\max}$ to 52 and derive all other quantities from the data.[1]

Then, as a last step, we calculate the MDE for each dependent variable as:

$$\text{MDE} = \text{M}_{\text{J}-2}\sqrt{\text{Var}(\hat{\tau}^{\text{DID}})}, \tag{W3}$$

where $\text{M}_{\text{J}-2}$ is the sum of the t-values for alpha (significance level) and beta (power). We set alpha (significance) and beta (power) to conventional values of .05 and .80, resulting in an $\text{M}_{\text{J}-2}$ of 2.8 ($\text{t}^{\text{J}}_{\alpha/2} + \text{t}^{\text{J}}_{1-\beta} = 1.96 + .84 = 2.8$). We present the MDEs in Table WA6.

As Table WA6 indicates, the MDEs for the dependent variables are relatively small. These results lend credibility to our estimates, which are smaller than the MDEs. Moreover, for most treatment effects, the MDEs lie within the confidence intervals. That is, the MDEs effectively tighten the bounds of our estimates (cf. the confidence interval itself) because we should be able to find effects that are as large as the MDE. We thus gain meaningful insights into the upper bound of the treatment effect. In conclusion, both the estimated treatment effect and the MDE boundaries are small in magnitude, confirming the lack of a sizable effect in our setting.

[1] To derive $\sigma^2_{\text{w}}, \psi^{\text{B}}, \psi^{\text{A}}$, and ψ^{X} , we retain the residuals of the estimated two-way fixed effects models. We then, (1) calculate the variance of these residuals to obtain σ^2_{w}, (2) calculate the within-unit covariance of the pre-period (ψ^{B}), post-period (ψ^{A}), and across period (ψ^{X}) residuals.

TABLE WA6: MINIMUM DETECTABLE EFFECTS (MDEs)

	MDE	DID estimate
Total grocery expenditure (in euros)	1.09	.70 [-.20, 1.59]
Total number of units purchased	.94	.39 [-.37, 1.15]
Share of private labels (%)	1.03	-.28 [-1.05, .48]
Share of purchases on promotion (%)	.67	-.42 [-.94, .09]
Number of shopping trips	.05	.02 [-.02, .06]
Number of different retail chains visited	.04	.00 [-.03, .03]
Trip share HDs vs. traditional retailers (%)	1.38	-.22 [-1.26, .82]
Grocery expenditure at primary chain	1.17	.55 [-.30, 1.41]
Number of shopping trips to primary chain	.04	.01 [-.02, .04]

Notes: Notes: HD = hard discounter. MDEs are presented in absolute terms. 95% confidence interval of the DID estimates in brackets. DID estimates and confidence intervals come from Table 8 in the main text.

WEB APPENDIX G: IMPUTATION OF OPT-IN CHOICE

As discussed in the "Setting and Data" section of the main text, we obtain data on households' opt-in choices (i.e., use of a mailbox sticker) from GfK and NOM, a Dutch media research organization, which survey a sample of GfK panel households every year. In the first week of 2021, just after the introduction of the latest ban, we ran a separate survey among all treated households that were still active in the panel, as well as a random sample of control households to supplement the GfK/NOM data. The survey asked households if they used a mailbox sticker and, if so, when they started using it. Due to panel attrition and nonresponse, the data on the choice to opt in were available for 60% of the households in the treatment municipalities. We impute the opt-in choice for the remaining 40% of households using a random forest algorithm with the missForest package in R (Stekhoven and Buehlmann 2012). As inputs, we use (1) households' opt-out choice in the period before treatment,[2] (2) the opt-in choice of the geographically nearest three panel households, (3) household demographics obtained from GfK (household size, age of head of household, income class, and social class), (4) neighborhood characteristics obtained from Statistics Netherlands (percentage of households on social welfare, percentage of Western immigrants, percentage of non-Western immigrants, home ownership rate, average home value, population density, distance to the nearest grocery store, number of grocery stores in a 3-km radius, distance to the nearest department store, and number of department stores in a 5-km radius), and (5) municipality dummy variables. We obtain a hit rate of 94.8%.

[2] For households for which the data do not include their opt-out choice in the period before treatment either, we impute their opt-out choice using a similar approach.

WEB APPENDIX H: COMPOSITION OF SUBGROUPS

Table WA7 shows descriptive statistics of the household demographics of the three subgroups across all cohorts. Tables WA8-WA12 show similar statistics per cohort.

TABLE WA7: DEMOGRAPHICS TREATED HOUSEHOLDS PER SUBGROUP, ACROSS COHORTS

A: COMPLIERS (HOUSEHOLDS WITHOUT A STICKER) (N = 344)

	Mean	SD	Min	Max
Household size[a]	2.15	1.17	1	5
Age of head of household[b]	7.74	2.15	2	11
Income class[c]	10.04	5.22	1	19
Social class[d]	3.30	1.34	1	5

B: DEFIERS (HOUSEHOLDS THAT OPT IN) (N = 372)

	Mean	SD	Min	Max
Household size[a]	2.23	1.17	1	5
Age of head of household[b]	8.40	1.93	1	11
Income class[c]	9.59	4.98	1	19
Social class[d]	2.81	1.34	1	5

C: ALWAYS-TAKERS (HOUSEHOLDS THAT ALREADY OPTED OUT) (N = 176)

	Mean	SD	Min	Max
Household size[a]	1.69	1.01	1	5
Age of head of household[b]	7.09	2.48	2	11
Income class[c]	9.28	4.97	1	19
Social class[d]	3.65	1.26	1	5

[a] 1 = 1 household member, 2 = 2 household members, 3 = 3 household members, 4 = 4 household members, 5 = 5 or more household members.

[b] 1 = 12-19 y.o. (years old), 2 = 20-24 y.o., 3 = 25-29 y.o., 4 = 30-34 y.o., 5 = 35-39 y.o., 6 = 40-44 y.o., 7 = 45-49 y.o., 8 = 50-54 y.o., 9 = 55-64 y.o., 10 = 65-74 y.o., 11 = 75 y.o. or older.

[c] Net income per month: 1 = below 700, 2 = 700-900, 3 = 900-1,100, 4 = 1,100-1,300, 5 = 1,300-1,500, 6 = 1,500-1,700, 7 = 1,700-1,900, 8 = 1,900-2,100, 9 = 2,100-2,300, 10 = 2,300-2,500, 11 = 2,500-2,700, 12 = 2,700-2,900, 13 = 2,900-3,100, 14 = 3,100-3,300, 15 = 3,300-3,500, 16 = 3,500-3,700, 17 = 3,700-3,900, 18 = 3,900-4,100, 19 = 4,100 or more.

[d] 1 = D (lower), 2 = C, 3 = B-minus, 4 = B-plus, 5 = A (upper); based on the education level and occupation of the head of the household.

TABLE WA8: DEMOGRAPHICS TREATED HOUSEHOLDS PER SUBGROUP, COHORT 1

A: COMPLIERS (HOUSEHOLDS WITHOUT A STICKER) (N = 71)

	Mean	SD	Min	Max
Household size[a]	1.73	0.97	1	5
Age of head of household[b]	8.42	1.93	2	11
Income class[c]	8.66	4.94	2	19
Social class[d]	2.87	1.41	1	5

B: DEFIERS (HOUSEHOLDS THAT OPT IN) (N = 79)

	Mean	SD	Min	Max
Household size[a]	1.92	1.07	1	5
Age of head of household[b]	9.13	1.46	5	11
Income class[c]	8.51	5.04	2	19
Social class[d]	2.66	1.40	1	5

C: ALWAYS-TAKERS (HOUSEHOLDS THAT ALREADY OPTED OUT) (N = 24)

	Mean	SD	Min	Max
Household size[a]	1.92	1.14	1	5
Age of head of household[b]	7.46	2.30	2	11
Income class[c]	10.79	5.71	1	19
Social class[d]	4.21	0.98	2	5

[a] 1 = 1 household member, 2 = 2 household members, 3 = 3 household members, 4 = 4 household members, 5 = 5 or more household members.

[b] 1 = 12-19 y.o. (years old), 2 = 20-24 y.o., 3 = 25-29 y.o., 4 = 30-34 y.o., 5 = 35-39 y.o., 6 = 40-44 y.o., 7 = 45-49 y.o., 8 = 50-54 y.o., 9 = 55-64 y.o., 10 = 65-74 y.o., 11 = 75 y.o. or older.

[c] Net income per month: 1 = below 700, 2 = 700-900, 3 = 900-1,100, 4 = 1,100-1,300, 5 = 1,300-1,500, 6 = 1,500-1,700, 7 = 1,700-1,900, 8 = 1,900-2,100, 9 = 2,100-2,300, 10 = 2,300-2,500, 11 = 2,500-2,700, 12 = 2,700-2,900, 13 = 2,900-3,100, 14 = 3,100-3,300, 15 = 3,300-3,500, 16 = 3,500-3,700, 17 = 3,700-3,900, 18 = 3,900-4,100, 19 = 4,100 or more.

[d] 1 = D (lower), 2 = C, 3 = B-minus, 4 = B-plus, 5 = A (upper); based on the education level and occupation of the head of the household.

TABLE WA9: DEMOGRAPHICS TREATED HOUSEHOLDS PER SUBGROUP, COHORT 2

A: COMPLIERS (HOUSEHOLDS WITHOUT A STICKER) (N = 92)

	Mean	SD	Min	Max
Household size[a]	2.32	1.17	1	5
Age of head of household[b]	7.63	2.38	3	11
Income class[c]	11.03	5.38	1	19
Social class[d]	3.34	1.28	1	5

B: DEFIERS (HOUSEHOLDS THAT OPT IN) (N = 135)

	Mean	SD	Min	Max
Household size[a]	2.41	1.25	1	5
Age of head of household[b]	8.01	1.99	1	11
Income class[c]	9.69	5.04	1	19
Social class[d]	2.93	1.28	1	5

C: ALWAYS-TAKERS (HOUSEHOLDS THAT ALREADY OPTED OUT) (N = 66)

	Mean	SD	Min	Max
Household size[a]	1.71	1.05	1	5
Age of head of household[b]	6.83	2.64	2	11
Income class[c]	9.95	4.78	3	19
Social class[d]	3.92	1.18	1	5

[a] 1 = 1 household member, 2 = 2 household members, 3 = 3 household members, 4 = 4 household members, 5 = 5 or more household members.

[b] 1 = 12-19 y.o. (years old), 2 = 20-24 y.o., 3 = 25-29 y.o., 4 = 30-34 y.o., 5 = 35-39 y.o., 6 = 40-44 y.o., 7 = 45-49 y.o., 8 = 50-54 y.o., 9 = 55-64 y.o., 10 = 65-74 y.o., 11 = 75 y.o. or older.

[c] Net income per month: 1 = below 700, 2 = 700-900, 3 = 900-1,100, 4 = 1,100-1,300, 5 = 1,300-1,500, 6 = 1,500-1,700, 7 = 1,700-1,900, 8 = 1,900-2,100, 9 = 2,100-2,300, 10 = 2,300-2,500, 11 = 2,500-2,700, 12 = 2,700-2,900, 13 = 2,900-3,100, 14 = 3,100-3,300, 15 = 3,300-3,500, 16 = 3,500-3,700, 17 = 3,700-3,900, 18 = 3,900-4,100, 19 = 4,100 or more.

[d] 1 = D (lower), 2 = C, 3 = B-minus, 4 = B-plus, 5 = A (upper); based on the education level and occupation of the head of the household.

TABLE WA10: DEMOGRAPHICS TREATED HOUSEHOLDS PER SUBGROUP, COHORT 3

A: COMPLIERS (HOUSEHOLDS WITHOUT A STICKER) (N = 74)

	Mean	SD	Min	Max
Household size[a]	2.35	1.16	1	5
Age of head of household[b]	7.72	2.01	3	11
Income class[c]	10.65	5.51	3	19
Social class[d]	3.41	1.37	1	5

B: DEFIERS (HOUSEHOLDS THAT OPT IN) (N = 65)

	Mean	SD	Min	Max
Household size[a]	2.17	1.13	1	5
Age of head of household[b]	8.26	1.92	3	11
Income class[c]	9.97	4.87	1	19
Social class[d]	2.98	1.30	1	5

C: ALWAYS-TAKERS (HOUSEHOLDS THAT ALREADY OPTED OUT) (N = 44)

	Mean	SD	Min	Max
Household size[a]	1.68	0.96	1	5
Age of head of household[b]	7.16	2.36	3	11
Income class[c]	8.75	5.45	2	19
Social class[d]	3.34	1.27	1	5

[a] 1 = 1 household member, 2 = 2 household members, 3 = 3 household members, 4 = 4 household members, 5 = 5 or more household members.

[b] 1 = 12-19 y.o. (years old), 2 = 20-24 y.o., 3 = 25-29 y.o., 4 = 30-34 y.o., 5 = 35-39 y.o., 6 = 40-44 y.o., 7 = 45-49 y.o., 8 = 50-54 y.o., 9 = 55-64 y.o., 10 = 65-74 y.o., 11 = 75 y.o. or older.

[c] Net income per month: 1 = below 700, 2 = 700-900, 3 = 900-1,100, 4 = 1,100-1,300, 5 = 1,300-1,500, 6 = 1,500-1,700, 7 = 1,700-1,900, 8 = 1,900-2,100, 9 = 2,100-2,300, 10 = 2,300-2,500, 11 = 2,500-2,700, 12 = 2,700-2,900, 13 = 2,900-3,100, 14 = 3,100-3,300, 15 = 3,300-3,500, 16 = 3,500-3,700, 17 = 3,700-3,900, 18 = 3,900-4,100, 19 = 4,100 or more.

[d] 1 = D (lower), 2 = C, 3 = B-minus, 4 = B-plus, 5 = A (upper); based on the education level and occupation of the head of the household.

TABLE WA11: DEMOGRAPHICS TREATED HOUSEHOLDS PER SUBGROUP, COHORT 4

A: COMPLIERS (HOUSEHOLDS WITHOUT A STICKER) (N = 19)

	Mean	SD	Min	Max
Household size[a]	2.37	1.34	1	5
Age of head of household[b]	7.58	2.14	4	11
Income class[c]	8.63	3.95	2	19
Social class[d]	3.21	1.27	1	5

B: DEFIERS (HOUSEHOLDS THAT OPT IN) (N = 6)

	Mean	SD	Min	Max
Household size[a]	2.00	1.10	1	4
Age of head of household[b]	8.67	1.86	5	10
Income class[c]	9.50	6.06	4	19
Social class[d]	3.00	1.67	1	5

C: ALWAYS-TAKERS (HOUSEHOLDS THAT ALREADY OPTED OUT) (N = 4)

	Mean	SD	Min	Max
Household size[a]	1.25	0.50	1	2
Age of head of household[b]	4.75	1.50	3	6
Income class[c]	7.00	5.94	2	15
Social class[d]	3.75	0.96	3	5

[a] 1 = 1 household member, 2 = 2 household members, 3 = 3 household members, 4 = 4 household members, 5 = 5 or more household members.

[b] 1 = 12-19 y.o. (years old), 2 = 20-24 y.o., 3 = 25-29 y.o., 4 = 30-34 y.o., 5 = 35-39 y.o., 6 = 40-44 y.o., 7 = 45-49 y.o., 8 = 50-54 y.o., 9 = 55-64 y.o., 10 = 65-74 y.o., 11 = 75 y.o. or older.

[c] Net income per month: 1 = below 700, 2 = 700-900, 3 = 900-1,100, 4 = 1,100-1,300, 5 = 1,300-1,500, 6 = 1,500-1,700, 7 = 1,700-1,900, 8 = 1,900-2,100, 9 = 2,100-2,300, 10 = 2,300-2,500, 11 = 2,500-2,700, 12 = 2,700-2,900, 13 = 2,900-3,100, 14 = 3,100-3,300, 15 = 3,300-3,500, 16 = 3,500-3,700, 17 = 3,700-3,900, 18 = 3,900-4,100, 19 = 4,100 or more.

[d] 1 = D (lower), 2 = C, 3 = B-minus, 4 = B-plus, 5 = A (upper); based on the education level and occupation of the head of the household.

TABLE WA12: DEMOGRAPHICS TREATED HOUSEHOLDS PER SUBGROUP, COHORT 5

A: COMPLIERS (HOUSEHOLDS WITHOUT A STICKER) (N = 88)

	Mean	SD	Min	Max
Household size[a]	2.10	1.23	1	5
Age of head of household[b]	7.36	2.10	3	11
Income class[c]	9.91	5.04	2	19
Social class[d]	3.53	1.29	1	5

B: DEFIERS (HOUSEHOLDS THAT OPT IN) (N = 87)

	Mean	SD	Min	Max
Household size[a]	2.29	1.10	1	5
Age of head of household[b]	8.41	2.05	3	11
Income class[c]	10.16	4.80	1	19
Social class[d]	2.63	1.35	1	5

C: ALWAYS-TAKERS (HOUSEHOLDS THAT ALREADY OPTED OUT) (N = 38)

	Mean	SD	Min	Max
Household size[a]	1.55	0.95	1	5
Age of head of household[b]	7.45	2.45	2	11
Income class[c]	8.00	3.75	3	19
Social class[d]	3.18	1.35	1	5

[a] 1 = 1 household member, 2 = 2 household members, 3 = 3 household members, 4 = 4 household members, 5 = 5 or more household members.

[b] 1 = 12-19 y.o. (years old), 2 = 20-24 y.o., 3 = 25-29 y.o., 4 = 30-34 y.o., 5 = 35-39 y.o., 6 = 40-44 y.o., 7 = 45-49 y.o., 8 = 50-54 y.o., 9 = 55-64 y.o., 10 = 65-74 y.o., 11 = 75 y.o. or older.

[c] Net income per month: 1 = below 700, 2 = 700-900, 3 = 900-1,100, 4 = 1,100-1,300, 5 = 1,300-1,500, 6 = 1,500-1,700, 7 = 1,700-1,900, 8 = 1,900-2,100, 9 = 2,100-2,300, 10 = 2,300-2,500, 11 = 2,500-2,700, 12 = 2,700-2,900, 13 = 2,900-3,100, 14 = 3,100-3,300, 15 = 3,300-3,500, 16 = 3,500-3,700, 17 = 3,700-3,900, 18 = 3,900-4,100, 19 = 4,100 or more.

[d] 1 = D (lower), 2 = C, 3 = B-minus, 4 = B-plus, 5 = A (upper); based on the education level and occupation of the head of the household.

WEB APPENDIX I: RESULTS OF SUBGROUP ANALYSES

TABLE WA13: SYNTHDID ESTIMATES OF THE IMPACT OF INTRODUCING A BAN

A: COMPLIERS (HOUSEHOLDS WITHOUT STICKER)

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	.18	.66	-1.11	1.46	.79
Total number of units purchased	-.08	.52	-1.10	.95	.88
Share of private labels (%)	-.55	.69	-1.91	.81	.43
Share of purchases on promotion (%)	-.97	.44	-1.82	-.11	.03
Number of shopping trips	.01	.03	-.05	.07	.72
Number of different retail chains visited	-.02	.02	-.07	.02	.30
Trip share HDs vs. traditional retailers (%)	-1.04	1.03	-3.06	.97	.31
Grocery expenditure at primary chain	-.02	.64	-1.28	1.23	.97
Number of shopping trips to primary chain	.00	.02	-.04	.04	.87

Notes: HD = hard discounter. Number of treated (control) households: 344 (32,303) for variables unconditional on a trip observed in a week, and 136 (13,474) for variables conditional on a trip observed in a week.

B: DEFIERS (HOUSEHOLDS THAT OPT IN)

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	.70	.72	-.70	2.10	.33
Total number of units purchased	-.03	.63	-1.28	1.21	.96
Share of private labels (%)	-.03	.47	-.94	.88	.94
Share of purchases on promotion (%)	.27	.37	-.45	.99	.46
Number of shopping trips	.00	.03	-.06	.05	.96
Number of different retail chains visited	.01	.02	-.03	.05	.57
Trip share HDs vs. traditional retailers (%)	.21	.42	-.61	1.04	.61
Grocery expenditure at primary chain	.79	.62	-.43	2.01	.21
Number of shopping trips to primary chain	.01	.02	-.02	.05	.49

Notes: HD = hard discounter. Number of treated (control) households: 372 (32,303) for variables unconditional on a trip observed in a week, and 168 (13,474) for variables conditional on a trip observed in a week.

TABLE WA13 (CONTINUED)
C: ALWAYS-TAKERS (HOUSEHOLDS THAT ALREADY OPTED OUT)

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	.19	.87	-1.52	1.90	.83
Total number of units purchased	.67	.69	-.67	2.01	.33
Share of private labels (%)	-.25	1.12	-2.45	1.94	.82
Share of purchases on promotion (%)	-1.07	.64	-2.33	.18	.09
Number of shopping trips	.05	.04	-.03	.13	.20
Number of different retail chains visited	.01	.04	-.06	.09	.75
Trip share HDs vs. traditional retailers (%)	1.53	1.88	-2.16	5.21	.42
Grocery expenditure at primary chain	-.66	.89	-2.40	1.07	.45
Number of shopping trips to primary chain	.00	.03	-.06	.06	.98

Notes: HD = hard discounter. Number of treated (control) households: 176 (32,303) for variables unconditional on a trip observed in a week, and 57 (13,474) for variables conditional on a trip observed in a week.

D: NON-COMPLIERS (HOUSEHOLDS THAT OPT IN AND HOUSEHOLDS THAT ALREADY OPTED OUT COMBINED)

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	.54	.56	-.57	1.64	.34
Total number of units purchased	.19	.49	-.76	1.14	.69
Share of private labels (%)	-.09	.45	-.97	.79	.84
Share of purchases on promotion (%)	-.07	.32	-.70	.56	.83
Number of shopping trips	.02	.02	-.03	.06	.51
Number of different retail chains visited	.01	.02	-.02	.04	.52
Trip share HDs vs. traditional retailers (%)	.55	.57	-.57	1.67	.34
Grocery expenditure at primary chain	.32	.51	-.68	1.33	.53
Number of shopping trips to primary chain	.01	.02	-.02	.04	.58

Notes: HD = hard discounter. Number of treated (control) households: 548 (32,303) for variables unconditional on a trip observed in a week, and 225 (13,474) for variables conditional on a trip observed in a week.

WEB APPENDIX J: TREATMENT HETEROGENEITY

TABLE WA14: SYNTHDID ESTIMATES OF THE IMPACT OF INTRODUCING A BAN ACROSS INCOME GROUPS

A: HOUSEHOLDS WITH LOW INCOME

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	-.12	.51	-1.11	.87	.81
Total number of units purchased	-.38	.38	-1.13	.37	.32
Share of private labels (%)	.52	.54	-.54	1.58	.33
Share of purchases on promotion (%)	-.17	.41	-.98	.64	.68
Number of shopping trips	.03	.03	-.03	.08	.34
Number of different retail chains visited	.01	.02	-.03	.05	.64
Trip share HDs vs. traditional retailers (%)	.47	.80	-1.11	2.04	.56
Grocery expenditure at primary chain	-.58	.48	-1.53	.37	.23
Number of shopping trips to primary chain	.00	.02	-.03	.04	.90

Notes: HD = hard discounter. Number of treated (control) households: 411 (12,937) for variables unconditional on a trip observed in a week, and 163 (5,299) for variables conditional on a trip observed in a week.

B: HOUSEHOLDS WITH MIDDLE INCOME

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	.75	.78	-.77	2.27	.34
Total number of units purchased	.23	.70	-1.14	1.60	.74
Share of private labels (%)	-.95	.62	-2.17	.26	.12
Share of purchases on promotion (%)	-.54	.37	-1.28	.19	.15
Number of shopping trips	.00	.03	-.06	.06	.97
Number of different retail chains visited	-.01	.02	-.05	.03	.59
Trip share HDs vs. traditional retailers (%)	-.48	.89	-2.23	1.28	.59
Grocery expenditure at primary chain	.46	.72	-.96	1.87	.53
Number of shopping trips to primary chain	.00	.02	-.05	.04	.81

Notes: HD = hard discounter. Number of treated (control) households: 375 (15,818) for variables unconditional on a trip observed in a week, and 154 (6,705) for variables conditional on a trip observed in a week.

TABLE WA14 (CONTINUED)
C: HOUSEHOLDS WITH HIGH INCOME

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	1.19	1.34	-1.45	3.82	.38
Total number of units purchased	1.02	1.06	-1.05	3.10	.33
Share of private labels (%)	-.13	1.07	-2.23	1.96	.90
Share of purchases on promotion (%)	-.58	.74	-2.04	.87	.43
Number of shopping trips	.02	.05	-.07	.11	.68
Number of different retail chains visited	-.04	.04	-.12	.03	.27
Trip share HDs vs. traditional retailers (%)	-.44	.74	-1.90	1.01	.55
Grocery expenditure at primary chain	1.66	1.30	-.88	4.20	.20
Number of shopping trips to primary chain	.07	.04	-.00	.14	.05

Notes: HD = hard discounter. Number of treated (control) households: 106 (3,548) for variables unconditional on a trip observed in a week, and 43 (1,470) for variables conditional on a trip observed in a week.

TABLE WA15: SYNTHDID ESTIMATES OF THE IMPACT OF INTRODUCING A BAN ACROSS AGE GROUPS

A: HOUSEHOLDS AGED LOWER THAN 65

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	.51	.54	-.55	1.57	.35
Total number of units purchased	.09	.47	-.83	1.01	.84
Share of private labels (%)	-.28	.52	-1.30	.73	.58
Share of purchases on promotion (%)	-.10	.34	-.76	.56	.77
Number of shopping trips	.01	.02	-.03	.05	.63
Number of different retail chains visited	.00	.02	-.04	.03	.86
Trip share HDs vs. traditional retailers (%)	-.36	.75	-1.83	1.10	.63
Grocery expenditure at primary chain	.32	.51	-.68	1.31	.53
Number of shopping trips to primary chain	.00	.02	-.03	.03	.93

Notes: HD = hard discounter. Number of treated (control) households: 646 (24,286) for variables unconditional on a trip observed in a week, and 237 (9,679) for variables conditional on a trip observed in a week.

B: HOUSEHOLDS AGED 65 OR HIGHER

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	.22	.63	-1.02	1.47	.72
Total number of units purchased	.03	.45	-.85	.92	.94
Share of private labels (%)	.07	.55	-1.01	1.16	.89
Share of purchases on promotion (%)	-.90	.43	-1.74	-.07	.03
Number of shopping trips	.01	.03	-.05	.07	.72
Number of different retail chains visited	-.01	.02	-.06	.03	.54
Trip share HDs vs. traditional retailers (%)	.52	.58	-.61	1.65	.36
Grocery expenditure at primary chain	.07	.62	-1.14	1.29	.90
Number of shopping trips to primary chain	.01	.02	-.04	.05	.77

Notes: HD = hard discounter. Number of treated (control) households: 246 (8,017) for variables unconditional on a trip observed in a week, and 124 (3,795) for variables conditional on a trip observed in a week.

TABLE WA16: SYNTHDID ESTIMATES OF THE IMPACT OF INTRODUCING A BAN ACROSS HOUSEHOLDS THAT VISIT A BELOW VS. ABOVE MEDIAN AMOUNT OF RETAIL CHAINS

A: HOUSEHOLDS THAT VISIT A BELOW MEDIAN AMOUNT OF RETAIL CHAINS

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	.40	.54	-.66	1.45	.46
Total number of units purchased	.11	.42	-.72	.94	.80
Share of private labels (%)	.12	.59	-1.03	1.28	.84
Share of purchases on promotion (%)	-.03	.37	-.76	.69	.93
Number of shopping trips	.01	.02	-.03	.04	.69
Number of different retail chains visited	-.02	.01	-.05	.01	.13
Trip share HDs vs. traditional retailers (%)	-.47	.82	-2.07	1.12	.56
Grocery expenditure at primary chain	.31	.54	-.75	1.37	.57
Number of shopping trips to primary chain	.00	.02	-.03	.04	.79

Notes: HD = hard discounter. Number of treated (control) households: 510 (16,130) for variables unconditional on a trip observed in a week, and 163 (4,940) for variables conditional on a trip observed in a week.

B: HOUSEHOLDS THAT VISIT AN ABOVE MEDIAN AMOUNT OF RETAIL CHAINS

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	.31	.72	-1.10	1.72	.66
Total number of units purchased	-.01	.64	-1.25	1.24	.99
Share of private labels (%)	-.66	.52	-1.67	.36	.21
Share of purchases on promotion (%)	-.69	.37	-1.41	.03	.06
Number of shopping trips	.00	.04	-.06	.07	.89
Number of different retail chains visited	.00	.02	-.04	.05	.89
Trip share HDs vs. traditional retailers (%)	.13	.67	-1.19	1.45	.84
Grocery expenditure at primary chain	-.07	.61	-1.26	1.12	.91
Number of shopping trips to primary chain	.01	.02	-.04	.05	.80

Notes: HD = hard discounter. Number of treated (control) households: 382 (16,173) for variables unconditional on a trip observed in a week, and 198 (8,534) for variables conditional on a trip observed in a week.

TABLE WA17: SYNTHDID ESTIMATES OF THE IMPACT OF INTRODUCING A BAN ACROSS LOW, MODERATE, AND HIGH PRICE SENSITIVE HOUSEHOLDS

A: LOW PRICE SENSITIVE HOUSEHOLDS

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	-.28	1.13	-2.49	1.93	.81
Total number of units purchased	.27	.92	-1.55	2.08	.77
Share of private labels (%)	.32	1.12	-1.87	2.50	.78
Share of purchases on promotion (%)	-1.05	.73	-2.49	.38	.15
Number of shopping trips	-.03	.04	-.12	.05	.41
Number of different retail chains visited	-.05	.03	-.12	.01	.12
Trip share HDs vs. traditional retailers (%)	-.19	.92	-2.00	1.63	.84
Grocery expenditure at primary chain	.08	1.19	-2.26	2.41	.95
Number of shopping trips to primary chain	-.02	.04	-.09	.06	.66

Notes: HD = hard discounter. Number of treated (control) households: 116 (3,892) for variables unconditional on a trip observed in a week, and 52 (1,582) for variables conditional on a trip observed in a week.

B: MODERATE PRICE SENSITIVE HOUSEHOLDS

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	.65	.83	-.97	2.27	.43
Total number of units purchased	-.37	.65	-1.65	.90	.57
Share of private labels (%)	-.73	.80	-2.30	.84	.36
Share of purchases on promotion (%)	-1.28	.56	-2.38	-.18	.02
Number of shopping trips	.06	.03	.00	.13	.06
Number of different retail chains visited	.01	.03	-.04	.06	.64
Trip share HDs vs. traditional retailers (%)	-.25	.64	-1.50	1.01	.70
Grocery expenditure at primary chain	-.54	.78	-2.06	.98	.49
Number of shopping trips to primary chain	.02	.02	-.03	.06	.51

Notes: HD = hard discounter. Number of treated (control) households: 215 (7,931) for variables unconditional on a trip observed in a week, and 87 (3,210) for variables conditional on a trip observed in a week.

TABLE WA17 (CONTINUED)
C: HIGH PRICE SENSITIVE HOUSEHOLDS

	Estimate		95% Confidence Interval		
	$\hat{\tau}$	Jackknife SE	Lower Bound	Upper Bound	*p*-Value
Total grocery expenditure (in euros)	.32	.53	-.72	1.35	.55
Total number of units purchased	.28	.43	-.56	1.12	.52
Share of private labels (%)	-.20	.51	-1.20	.81	.70
Share of purchases on promotion (%)	.04	.34	-.63	.71	.90
Number of shopping trips	.00	.03	-.05	.05	.86
Number of different retail chains visited	.01	.02	-.03	.04	.75
Trip share HDs vs. traditional retailers (%)	-.04	.84	-1.69	1.61	.96
Grocery expenditure at primary chain	.54	.50	-.44	1.52	.28
Number of shopping trips to primary chain	.00	.02	-.04	.03	.96

Notes: HD = hard discounter. Number of treated (control) households: 521 (19,214) for variables unconditional on a trip observed in a week, and 206 (8,256) for variables conditional on a trip observed in a week.

WEB APPENDIX K: READERSHIP OF DIGITAL STORE FLYERS

To understand readership of digital store circulars, we surveyed households in treatment and control municipalities in January 2021, just after the introduction of the ban in the last six municipalities, to ask them whether they use digital store flyers (yes/no) and, if so, when they started doing so (1 month ago, 2–3 months ago, etc.), and how often (more than once a week, once a week, etc.). Table WA18, Panel A, contains the descriptive statistics for households in the control and treatment municipalities; Table WA18, Panel B, specifies these descriptive statistics for Rotterdam, the municipality that implemented a ban in November 2020, two months before our survey.

TABLE WA18: DESCRIPTIVE STATISTICS READERSHIP OF DIGITAL STORE FLYERS

A: HOUSEHOLDS IN TREATMENT MUNICIPALITIES VS. CONTROL MUNICIPALITIES

		Treated (N = 777)	Control (N = 1,409)	Chi sq.	*p*-Value
Readership:	Yes	68.7%	67.1%	.58	.45
	No	31.3%	32.9%		
If yes, since when:	1 month	3.4%	4.1%		
	2-3 months	9.9%	6.5%		
	4-6 months	9.9%	11.6%	7.89	.10
	7-12 months	11.4%	13.4%		
	Longer than 1 year ago	65.4%	64.3%		
If yes, how often:	More than once a week	18.2%	15.2%		
	Once a week	42.1%	40.5%		
	Multiple times a month	22.7%	21.7%	7.17	.13
	Once a month	9.7%	12.8%		
	Less than once a month	7.3%	9.7%		

B: HOUSEHOLDS IN ROTTERDAM VS. CONTROL MUNICIPALITIES

		Rotterdam (N = 191)	Control (N = 1,409)	Chi sq.	*p*-Value
Readership:	Yes	71.2%	67.1%	1.27	.26
	No	28.8%	32.9%		
If yes, since when:	1 month	5.1%	4.1%		
	2-3 months	9.6%	6.5%		
	4-6 months	11.8%	11.6%	4.65	.32
	7-12 months	8.1%	13.4%		
	Longer than 1 year ago	65.4%	64.3%		
If yes, how often:	More than once a week	20.6%	15.2%		
	Once a week	45.6%	40.5%		
	Multiple times a month	19.1%	21.7%	6.88	.14
	Once a month	7.4%	12.8%		
	Less than once a month	7.4%	9.7%		

Next, Table WA19 specifies the descriptive statistics per subgroup of treated households: those that do not opt in (compliers), those that opt in (defiers), and those that already opted out prior to the ban (always-takers).

TABLE WA19: DESCRIPTIVE STATISTICS READERSHIP OF DIGITAL STORE FLYERS PER SUBGROUP OF TREATED HOUSEHOLDS

		Compliers (without a sticker) (N = 286)	**Defiers (opted in) (N = 277)**	**Chi sq.[a]**	***p*-Value[a]**	**Always-takers (already opted out before) (N = 214)**	**Chi sq.[b]**	***p*-Value[b]**
Readership:	Yes	72.7%	70.0%	.50	.48	61.7%	7.29	.03
	No	27.3%	30.0%			38.3%		
If yes, since when:	1 month	3.8%	3.6%			2.3%		
	2-3 months	12.0%	10.3%			6.1%		
	4-6 months	10.6%	13.4%	1.35	.85	3.8%	16.14	.04
	7-12 months	11.1%	12.9%			9.8%		
	Longer than 1 year ago	62.5%	59.8%			78.0%		
If yes, how often:	More than once a week	18.8%	20.6%			13.6%		
	Once a week	40.9%	40.7%			46.2%		
	Multiple times a month	24.0%	23.7%	1.00	.91	18.9%	10.24	.25
	Once a month	9.6%	10.3%			9.1%		
	Less than once a month	6.7%	4.6%			12.1%		

[a] Chi-square test of the cross-tabulation between the variable in the first column against the first two subgroups of treated households.
[b] Similar as above but against all three subgroups of treated households.

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