Online Appendix for Who Benefits? Perceived Policy Effects and Beneficiaries of Agricultural Protection in Japan

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Contents

A. Question Wording 1

B. Regression Tables 6

C. Additional Analyses 10

C.1. Distribution of Experimental Outcome Variable 10

C.2. Sensitivity Analysis of the Causal Mediation Results 12

C.3. Subsample Analysis by Social Ties to Farmers 13

C.4. Other Pre-registered Analyses 18

A. Question Wording

Below are the wordings of the survey items used in the analysis, presented in the original Japanese. Items marked with asterisks (∗) were presented in randomized order, and items marked with daggers (†) were accompanied by associated open-ended response fields.

Gender
あなたの性別をお答えください。

- 男性
- 女性
- その他・答えたくない

Age
あなたの年齢をお答えください。

- 19歳以下
- 20–29歳
- 30–39歳
- 40–49歳
- 50–59歳
- 60–69歳
- 70歳以上

Region of residence
あなたのお住まいの地域及び都道府県をお答えください。

- (Dropdown lists of eight regions and prefectures are displayed.)

City Size
あなたの現在の居住地域の都市規模を以下の中からお選びください。

- 大都市・政令指定都市（人口50万人以上の都市）
- 中都市（10万人～49万人の都市）
- 小都市・町・村
- 答えたくない

Education
あなたの最終学歴をお答えください。

- 小・中学校
- 高校
- 専門学校
- 短期大学
- 大学
- 大学院
- その他 (具体的に)†

Industry
あなたが働いている会社や団体、またはあなたの事業の業種は、大きく分けて、次のうちどれにあたりますか。

- 農林漁業
- 建設業
- 製造業
- 電気・ガス・熱供給・水道業
- 運輸業
- 卸売業
- 小売業
- 飲食店
- 金融・保険業
- 公務
- 新聞・放送・出版・広告・映画製作業
- 情報・通信サービス業
- 医療・福祉サービス業
- 教育・研究サービス業
- 法律・会計サービス業
- その他サービス業

- わからない
- 答えたくない

Household Income
あなたの所得水準について教えてください。あなたの世帯の税引き前の世帯年収は、およそいくらぐらいでしょうか。税引き前の収入とは、一般的に「額面年収」と言われるものです。年金、株式配当、副収入を含めたものを、以下から一つだけお選びください。

- 200万円未満
- 200–400万円未満
- 400–600万円未満
- 600–800万円未満
- 800–1000万円未満
- 1000–1200万円未満
- 1200–1500万円未満
- 1500万円以上
- わからない・答えたくない

Ideological Self-placement
政治的な立場を、「リベラル」や「保守」という言葉で表すことがあります。以下のものさしで、あなたご自身はどこに位置づけられると思いますか。最もリベラルな立場を0、最も保守の立場を10としてお答えください。

- 0 最もリベラル
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

- 9
- 10 最も保守

Issue Psitions & Directed Questions
次に挙げる意見について、あなたは賛成ですか、それとも反対ですか。10個の項目が順次表示されます。全ての質問に対して回答選択肢を選んだうえで、次のページにお進みください。

- 日本の防衛力はもっと強化すべきだ*
- 憲法を改正すべきだ*
- この項目は「反対」を選んでください
- 時限的または恒久的に消費税率を引き下げるべきだ*
- 夫婦が望む場合には、結婚後も夫婦がそれぞれ結婚前の名字を称することを、法律で認めるべきだ*
- 男性同士、女性同士の結婚を法律で認めるべきだ*
- 環境をまもるため、生活水準を犠牲にすることも必要だ*
- この項目は「どちらかと言えば賛成」を選んでください
- 経済競争力を多少犠牲にしても、いまは社会的格差の是正を優先すべきだ*
- 日本経済をまもるために外国製品の輸入は制限すべきだ*
  - 賛成
  - どちらかと言えば賛成
  - どちらとも言えない
  - どちらかと言えば反対
  - 反対
  - わからない

Acquaintances
ご家族や親戚、親しい知人の中に、農業に従事している方はいますか。

- 家族
- 親戚
- 親しい知人
  - いる
  - いない

– 答えたくない・わからない

Experimental Vignette
日本政府は、毎年その予算から、農業に関連する支出をしています。【(Not displayed)／これにより、食料自給率が高まり、食料が安定的に供給されることが期待できます。／これにより、農業が持続的に発展することが期待できます。／これにより、農村が豊かになることが期待できます。／これにより、農作物の品質が向上することが期待できます。／これにより、災害からの復興や防災につながることが期待できます。】

Outcome Question 1
このような農業への支出は、【日本社会／あなたの周りの人／あなた】にとって有益であると思いますか？以下から1つお選びください。

- 有益だと思う
- どちらかと言えば有益だと思う
- どちらとも言えない
- どちらかと言えば有益ではない
- 有益ではない

Outcome Question 2
あなたは日本政府の農業支出を増やすべきだと思いますか。それとも、減らすべきだと思いますか。以下から1つお選びください。

- 増やすべきだと思う
- 減らすべきだと思う
- どちらとも言えない

Factual Manipulation Check
あなたが先ほどお読みになった文章で、日本政府による農業への支出により期待できることとして挙げられていた理由を1つお選びください。

- 食料自給率が高まり、食料が安定的に供給される*
- 農業が持続的に発展する*
- 農村が豊かになる*
- 農作物の品質が向上する*
- 災害からの復興や防災につながる*
- 環境の保全に役立つ*

- 動植物の保護につながる*
- 理由は挙げられていなかった
- 上記に当てはまるものはない

B. Regression Tables

Table A.1: Regression Analysis of Experimental Data

	Sociotropic	Extended Self-interest	Self-interest
(Intercept)	3.559***	3.241***	3.427***
	(0.132)	(0.133)	(0.141)
Development of Agriculture	0.177*	0.125+	0.159*
	(0.078)	(0.074)	(0.076)
Disaster Prevention	0.152*	0.085	0.261***
	(0.076)	(0.073)	(0.077)
Food Sufficiency	0.274***	0.147*	0.111
	(0.078)	(0.073)	(0.078)
Quality of Agriculture	0.186*	0.080	0.137+
	(0.073)	(0.074)	(0.078)
Richer Rural Communities	0.202**	0.035	0.074
	(0.077)	(0.076)	(0.081)
Covariates	✓	✓	✓
Observations	1653	1664	1656
Adj. R^2	0.034	0.024	0.027

HC2 robust standard errors are in parentheses.
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.2: Results of Causal Mediation Analysis

	Sociotropic	Extended Self-interest	Self-interest
Average Causal Mediation Effect (ACME)	0.066**	0.032	0.050**
	(0.00)	(0.11)	(0.004)
Average Direct Effect (ADE)	0.004	-0.016	-0.002
	(0.918)	(0.63)	(0.936)
Total Effect	0.071+	0.016	0.048
	(0.088)	(0.73)	(0.246)
Proportions Mediated	0.898	0.591	0.877

Simulation-based p-values are in parentheses.
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.3: Regression Analysis of Experimental Data By City Size of Residence

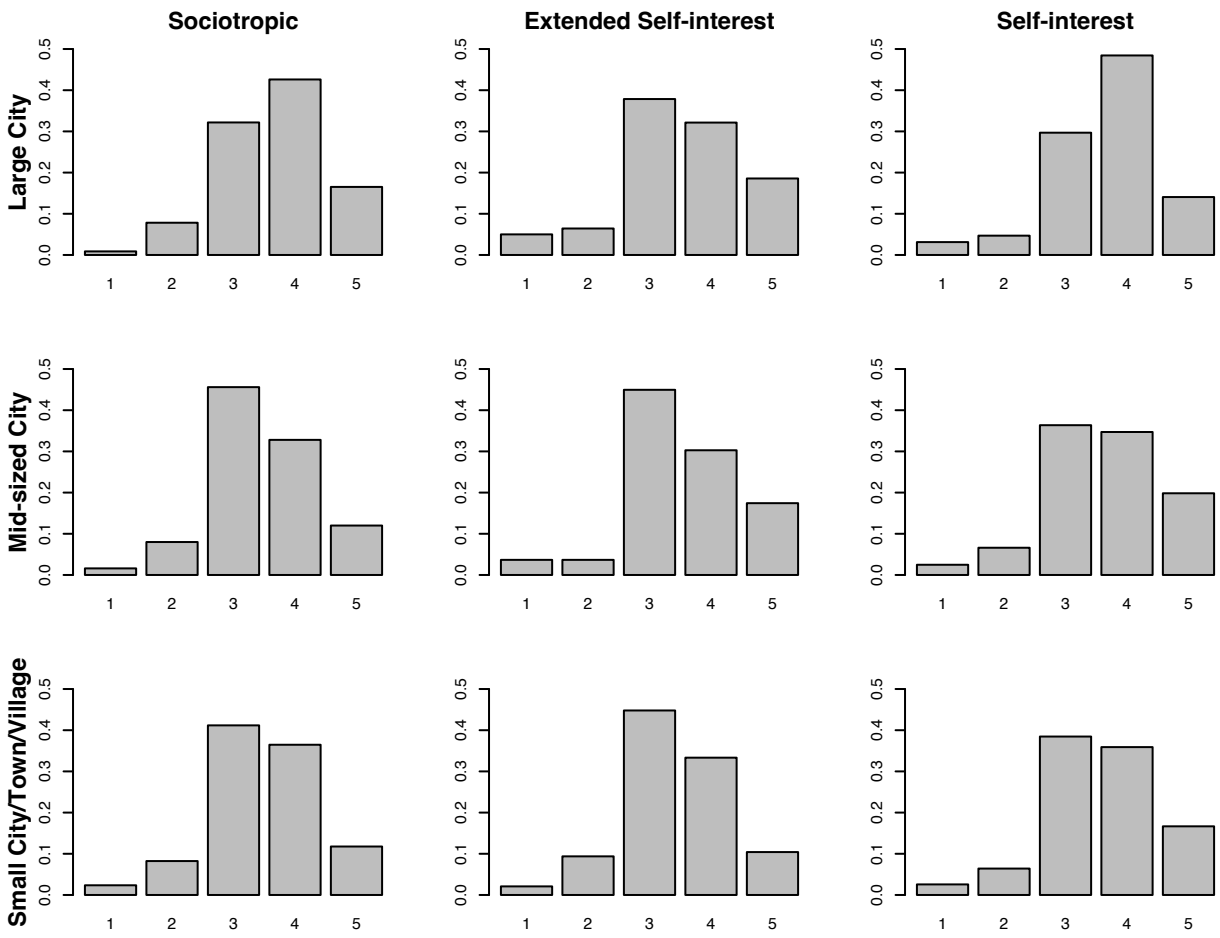
	Sociotropic	Extended Self-interest	Self-interest
Large City			
(Intercept)	3.644***	3.438***	3.442***
	(0.192)	(0.224)	(0.228)
Development of Agriculture	0.205+	-0.081	0.180
	(0.119)	(0.129)	(0.120)
Disaster Prevention	0.230*	0.007	0.148
	(0.114)	(0.115)	(0.125)
Food Sufficiency	0.374***	-0.082	-0.019
	(0.110)	(0.126)	(0.129)
Quality of Agriculture	0.253*	-0.172	0.079
	(0.113)	(0.120)	(0.122)
Richer Rural Communities	0.120	-0.123	0.138
	(0.114)	(0.121)	(0.131)
Observations	670	606	622
Adj. R^2	0.013	0.010	0.033
Mid-sized City			
(Intercept)	3.454***	3.091***	3.423***
	(0.234)	(0.230)	(0.229)
Development of Agriculture	0.209	0.176	0.147
	(0.146)	(0.119)	(0.127)
Disaster Prevention	0.176	0.113	0.183
	(0.140)	(0.124)	(0.124)
Food Sufficiency	0.180	0.213+	0.151
	(0.144)	(0.117)	(0.123)
Quality of Agriculture	0.119	0.128	0.059
	(0.133)	(0.122)	(0.129)
Richer Rural Communities	0.233+	0.127	0.015
	(0.137)	(0.127)	(0.131)
Observations	592	652	605
Adj. R^2	0.030	0.013	0.051
Small City, Town, Village			
(Intercept)	3.618***	3.275***	3.236***
	(0.271)	(0.221)	(0.249)
Development of Agriculture	0.033	0.339*	0.133
	(0.154)	(0.153)	(0.146)
Disaster Prevention	0.001	0.152	0.554***
	(0.152)	(0.153)	(0.150)
Food Sufficiency	0.233	0.370*	0.143
	(0.175)	(0.145)	(0.150)
Quality of Agriculture	0.129	0.372*	0.290+
	(0.149)	(0.151)	(0.151)
Richer Rural Communities	0.331*	0.178	-0.009
	(0.162)	(0.156)	(0.163)
Observations	391	406	429
Adj. R^2	0.043	0.045	0.072

HC2 robust standard errors are in parentheses. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
All models include the same set of covariates as those used in models reported in Table A.1.

Table A.4: Results of Causal Mediation Analysis By City Size of Residence

	Sociotropic	Extended Self-interest	Self-interest
Large City			
Average Causal Mediation Effect (ACME)	0.085**	-0.033	0.040
	(0.006)	(0.36)	(0.228)
Average Direct Effect (ADE)	0.003	0.081	0.101+
	(0.956)	(0.18)	(0.058)
Total Effect	0.0881	0.048	0.140*
	(0.140)	(0.46)	(0.026)
Proportions Mediated	0.873	-0.149	0.289
Mid-sized City			
Average Causal Mediation Effect (ACME)	0.056+	0.048	0.0405
	(0.07)	(0.16)	(0.22)
Average Direct Effect (ADE)	-0.033	-0.022	-0.010
	(0.60)	(0.75)	(0.86)
Total Effect	0.024	0.026	0.030
	(0.75)	(0.70)	(0.65)
Proportions Mediated	0.571	0.543	0.492
Small City, Town, Village			
Average Causal Mediation Effect (ACME)	0.047	0.095*	0.061*
	(0.27)	(0.022)	(0.030)
Average Direct Effect (ADE)	0.057	-0.104	-0.122+
	(0.45)	(0.154)	(0.082)
Total Effect	0.104	-0.009	-0.061
	(0.23)	(0.960)	(0.406)
Proportions Mediated	0.378	-0.199	-0.475

Simulation-based p-values are in parentheses.
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$



Note: Larger values of the variable indicate stronger perceptions that agricultural subsidies benefit either Japanese society as a whole (*sociotropic* condition), people around the respondent (*extended self-interest* condition), or the respondent personally (*self-interest* condition).

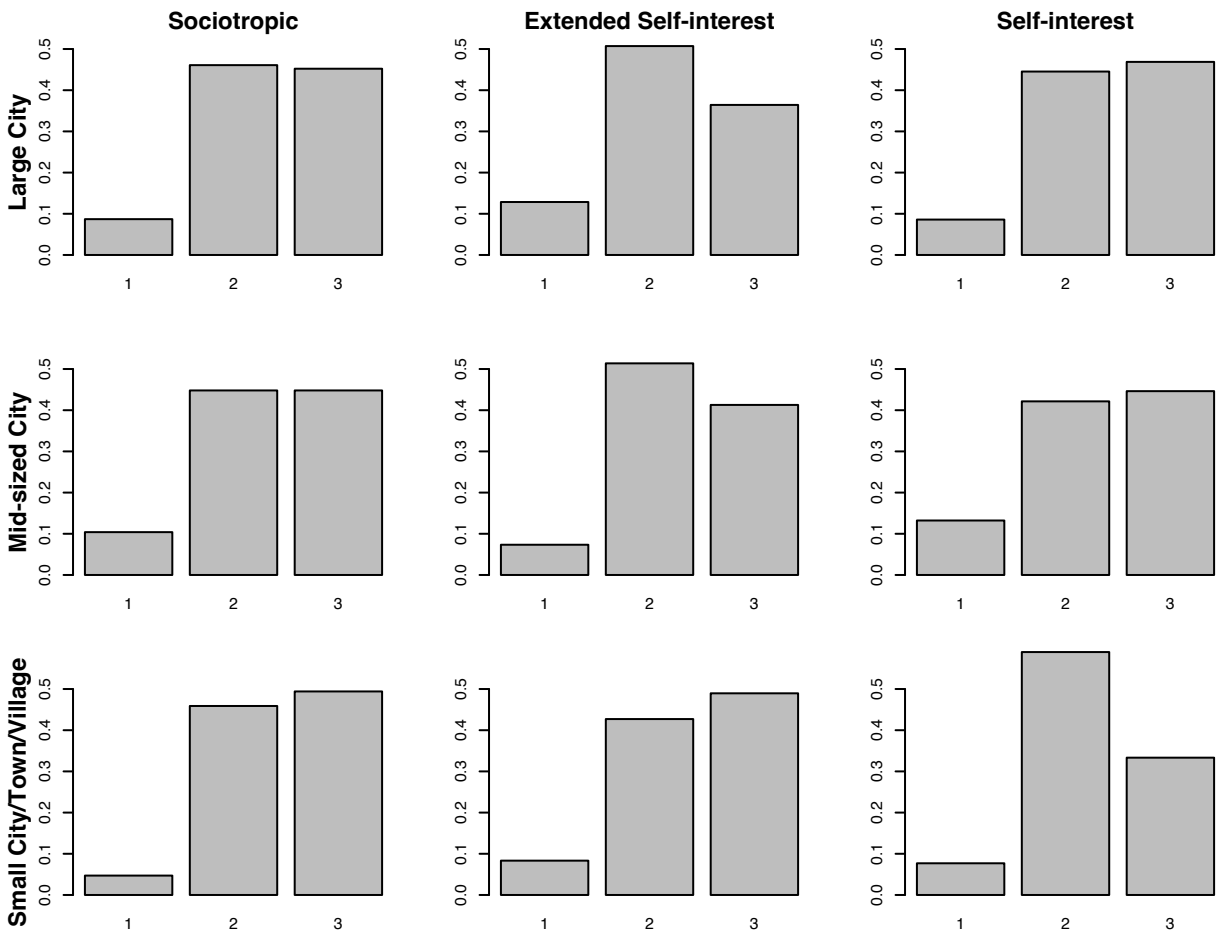
Figure A.1: Distribution of Outcome 1 Variable among Control Group by City Size

C. Additional Analyses

C.1. Distribution of Experimental Outcome Variable

A potential concern is that the distributions of the outcome variables differ by city size, potentially affecting the subsample analyses presented in the main text. This issue is particularly relevant if distributions are skewed toward either extreme in specific areas, creating floor or ceiling effects.

Figures A.1 and A.2 illustrate the distributions for Outcome 1 and Outcome 2, respectively, among respondents in the control condition (i.e., those not exposed to any policy effects of agri-



Note: Higher values of the variable signify greater support for increasing agricultural subsidies.

Figure A.2: Distribution of Outcome 2 Variable among Control Group by City Size

cultural subsidies), categorized by city size. These figures indicate that the outcome distributions are generally consistent across different city sizes. For Outcome 1, the majority of respondents cluster around values 3 and 4, indicating responses of "can't say either way" and "somewhat beneficial" across all target groups and city sizes. For Outcome 2, respondents from smaller cities show slightly greater support for agricultural subsidies in the extended self-interest condition and somewhat less support in the self-interest condition, but the overall trends across city sizes are comparable. Generally, respondents either remain neutral or express support for increasing agricultural subsidies.

Therefore, we conclude that the differences in the distributions of the outcome variables are

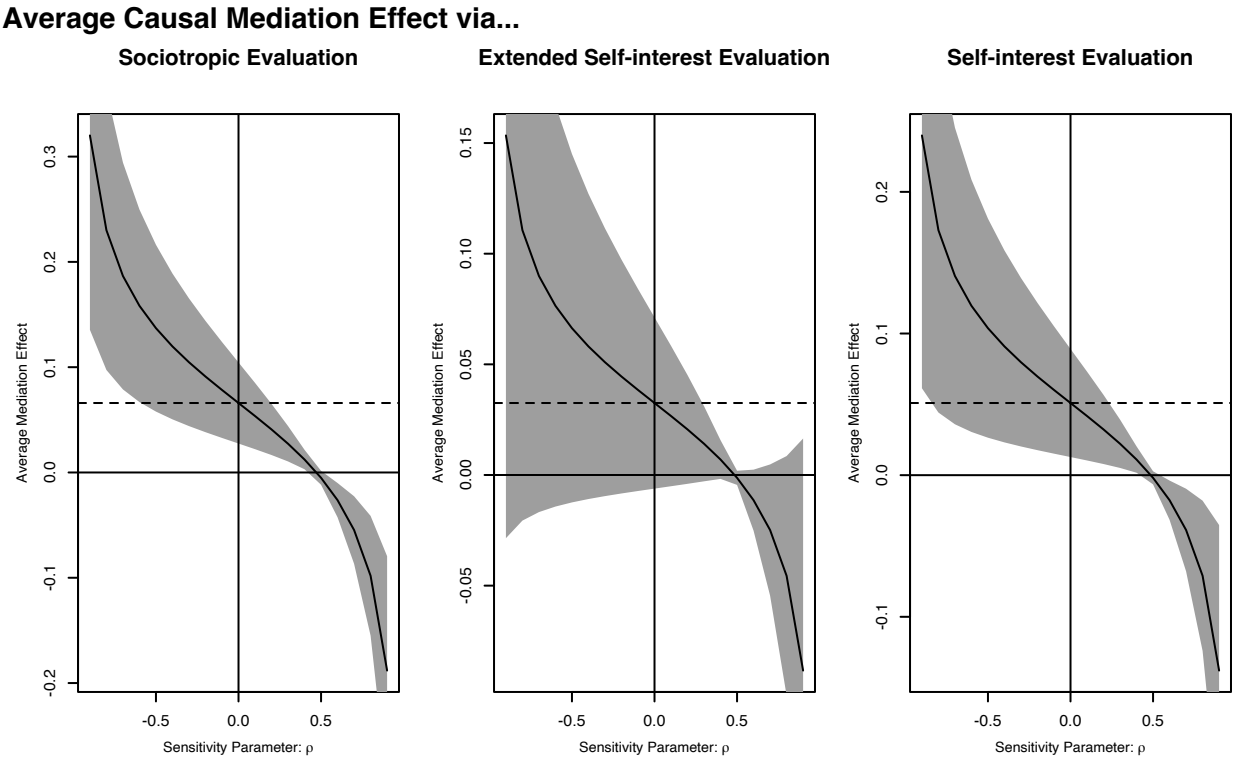


Figure A.3: Results of the Sensitivity Analysis

relatively modest.

C.2. Sensitivity Analysis of the Causal Mediation Results

To accurately identify the ACME using the causal mediation analysis proposed by Imai et al. (2011), the sequential ignorability assumption must be satisfied. This assumption stipulates that both the assignment of treatment and the values of the mediator must be ignorable. However, since our experiment was not specifically designed to identify causal mechanisms (Imai, Tingley and Yamamoto 2013), it is unlikely that this assumption is fully upheld in our data. To assess the robustness of the results presented in the main text against potential violations of this assumption, we conducted the sensitivity analysis proposed by Imai et al. (2011).

Figure A.3 presents a summary of the analysis results. The plots illustrate how the ACMEs fluctuate as the sensitivity parameter (ρ)—representing the correlation between the error terms in the regression model of the mediator and the outcome regression model—varies across the

sociotropic, *extended self-interest*, and *self-interest* conditions. Consistent with the results reported in the main text, the estimated ACMEs in the *extended self-interest* condition remain statistically indistinguishable from zero across all values of ρ. In contrast, for the *sociotropic* and *self-interest* conditions, the ACMEs are positive when the ρ parameter is less than 0.5. Compared to the sensitivity analyses conducted by Imai et al. (2011), the value of ρ at which the sign of the estimated ACME shifts is relatively high in our analysis. This suggests that our causal mediation results are robust, even under moderate violations of the sequential ignorability assumption.

C.3. Subsample Analysis by Social Ties to Farmers

In the main text, we presented results from analyses of subsamples based on respondents' city size. These analyses examine whether individuals living in rural and urban areas may have differing economic interests in the agricultural sector and are exposed to distinct social and informational contexts, leading to systematically different perceptions and attitudes toward agricultural subsidies. Building on this reasoning, we anticipate heterogeneous effects between individuals with family or close friends engaged in agriculture and those without, as these groups likely differ in their economic interests and social contexts related to agriculture. Since our survey asked whether respondents had family or close friends employed in the agricultural industry, we conducted additional analyses comparing subsamples with and without such social ties to farmers.

Table A.5 presents the results of regression analyses for Outcome 1 based on the experimental treatments, with panel (a) showing respondents without social ties to farmers and panel (b) showing those with such ties. We report HC1 robust standard errors, as HC2 standard errors could not be computed for models estimated on the subsample with social ties to farmers due to high leverage values arising from the small sample size.

The table shows that for respondents without social ties to farmers, information about the policy effects of agricultural subsidies increased perceptions that these subsidies benefit Japanese society as a whole. However, the experimental treatments did not yield statistically significant effects on respondents' beliefs about personal benefits from these subsidies (except for *Disaster prevention*;

Table A.5: Regression Analysis by Respondents' Social Ties to Farmers

	Sociotropic	Extended Self-interest	Self-interest
(a) Respondents w/o Social Ties to Farmers			
(Intercept)	3.599***	3.201***	3.408***
	(0.146)	(0.150)	(0.158)
Development of Agriculture	0.180*	0.096	0.133
	(0.088)	(0.087)	(0.087)
Disaster Prevention	0.166+	0.085	0.153+
	(0.087)	(0.083)	(0.087)
Food Self-sufficiency	0.244**	0.118	0.048
	(0.091)	(0.082)	(0.090)
Quality of Agriculture	0.167+	0.052	0.021
	(0.087)	(0.084)	(0.090)
Richer Rural Communities	0.185*	0.033	0.028
	(0.088)	(0.088)	(0.092)
Covariates	✓	✓	✓
Observations	1248	1223	1239
Adj. R^2	0.020	0.016	0.015
(b) Respondents w/ Social Ties to Farmers			
(Intercept)	3.460***	3.816***	3.235***
	(0.258)	(0.248)	(0.275)
Development of Agriculture	0.173	0.154	0.390*
	(0.170)	(0.146)	(0.166)
Disaster Prevention	0.113	0.080	0.711***
	(0.161)	(0.145)	(0.169)
Food Self-sufficiency	0.410**	0.206	0.320+
	(0.146)	(0.152)	(0.165)
Quality of Agriculture	0.226	0.074	0.570***
	(0.139)	(0.154)	(0.156)
Richer Rural Communities	0.225	0.024	0.321+
	(0.156)	(0.149)	(0.168)
Covariates	✓	✓	✓
Observations	417	459	432
Adj. R^2	0.038	-0.016	0.041

HC1 robust standard errors are in parentheses.

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.6: Results of Causal Mediation Analysis by Respondents' Social Ties to Farmers

	Sociotropic	Extended Self-interest	Self-interest
Respondents w/o Social Ties to Farmers			
Average Causal Mediation Effect (ACME)	0.062**	0.0254	0.027
	(0.008)	(0.26)	(0.24)
Average Direct Effect (ADE)	0.227	0.005	0.0282
	(0.590)	(0.87)	(0.45)
Total Effect	0.086*	0.031	0.0554
	(0.050)	(0.51)	(0.21)
Proportions Mediated	0.715	0.450	0.426
Respondents w/ Social Ties to Farmers			
Average Causal Mediation Effect (ACME)	0.078+	0.036	0.138***
	(0.054)	(0.35)	(0.00)
Average Direct Effect (ADE)	-0.019	-0.0800	-0.060
	(0.818)	(0.24)	(0.42)
Total Effect	0.059	-0.044	0.078
	(0.520)	(0.58)	(0.35)
Proportions Mediated	0.686	-0.094	1.20

Simulation-based p-values are in parentheses.
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

$p > 0.1$) or their perceptions of benefits to others. In contrast, among respondents with social ties to farmers, the experimental treatments demonstrated significant effects on perceptions of personal benefits. However, these treatments did not alter respondents' views on whether agricultural subsidies benefit others or Japanese society as a whole (except for *Food self-sufficiency*).

Table A.6 presents the results of the causal mediation analyses for subsamples of respondents without and with social ties to farmers. As shown in the table, among respondents without such ties, the experimental treatments influenced support for agricultural subsidies primarily through the *sociotropic* pathway. By contrast, among respondents with social ties to farmers, the treatments affected Outcome 2 mainly through the *self-interest* pathway (and to a lesser extent through the *sociotropic* pathway). These findings suggest that individuals with and without social ties to farmers hold distinct perceptions of who benefits from agricultural subsidies, potentially reflecting differences in their economic interests and social contexts related to the agricultural sector.

Table A.7: Regression Analysis of Experimental Data Among Respondents Without Social Ties to Farmers

	Sociotropic	Extended Self-interest	Self-interest
(Intercept)	3.752***	3.265***	3.484***
	(0.140)	(0.164)	(0.184)
Experimental Treatment	0.281**	-0.095	0.114
	(0.099)	(0.100)	(0.114)
Mid-sized City	0.086	-0.136	0.013
	(0.154)	(0.136)	(0.140)
Small City/Town/Village	0.049	-0.206	0.005
	(0.147)	(0.150)	(0.164)
Treatment × Mid-sized City	-0.127	0.239	-0.069
	(0.166)	(0.150)	(0.153)
Treatment × Small City/Town/Village	-0.214	0.382*	-0.087
	(0.165)	(0.167)	(0.179)
Covariates	✓	✓	✓
Observations	1238	1209	1224
Adj. R^2	0.023	0.020	0.011

HC2 robust standard errors are in parentheses.
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results reported above may appear inconsistent with those in the main text. In analyses based on respondents' city size, information about the policy effects of agricultural subsidies influenced perceptions of both *self-interest* and *extended self-interest* among small-city residents, subsequently affecting their support for increased agricultural subsidies. To explore how these findings can be reconciled, we conducted regression analyses of Outcome 1 using the experimental treatment, city size, and their interaction terms, restricting the sample to respondents without social ties to farmers to ensure an adequate sample size. For simplicity, we employed a combined binary indicator for the experimental treatment.

Table A.7 presents the estimation results. To facilitate interpretation of the interaction terms, we computed the marginal effects of the treatment indicator at each value of the city-size variable and present the results in Figure A.4. Among residents of large cities, the experimental treatment increased perceptions that agricultural subsidies benefit Japanese society as a whole. By contrast,

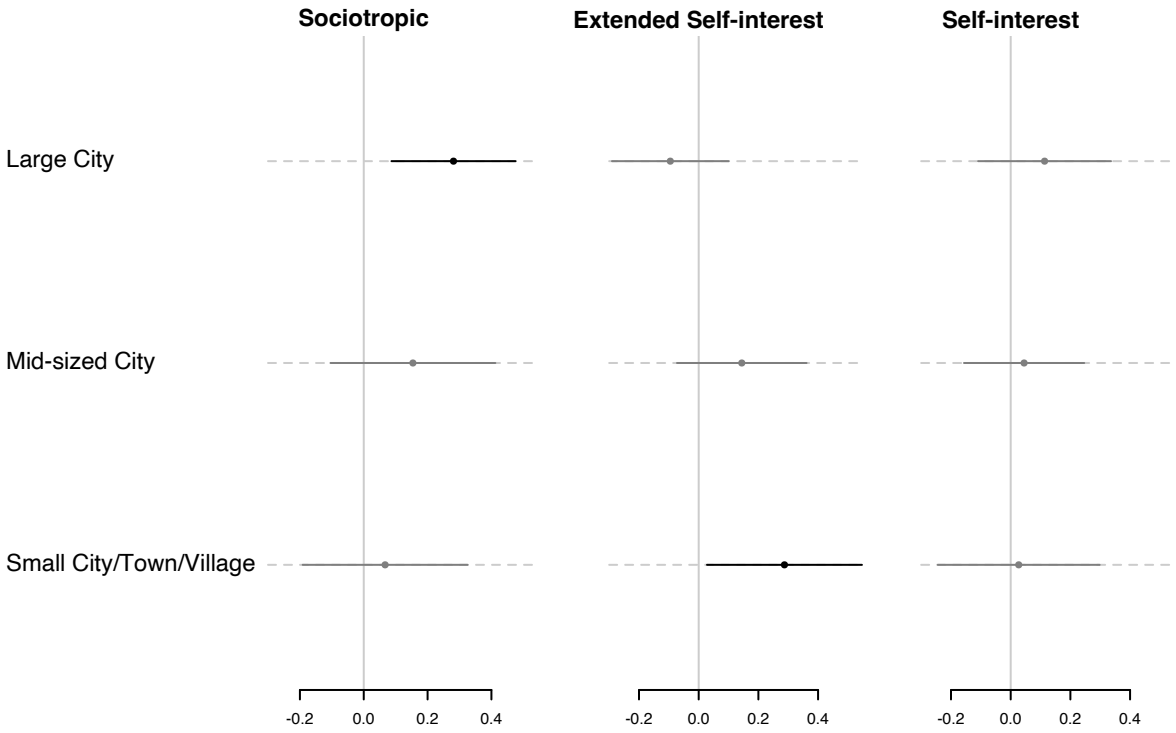


Figure A.4: Marginal Effects of Experimental Treatment by City Size

among residents of smaller cities, information about the policy effects of agricultural subsidies increased perceptions that the subsidies benefit others around them. Overall, these results suggest that even among individuals without social ties to farmers, differences in economic interests and social contexts associated with place of residence shape distinct perceptions of who benefits from agricultural subsidies.

C.4. Other Pre-registered Analyses

In the pre-analysis plan, we stated that we would (i) conduct analyses of Outcome 2 based on the experimental treatments and (ii) replicate the regression analyses using ordered logistic regression models instead of linear regression models. The results of these analyses are reported below in Tables A.8, A.9, and A.10.

Table A.8: Regression Analysis of Outcome 2 Variable

	Sociotropic	Extended Self-interest	Self-interest
(Intercept)	2.332***	2.338***	2.206***
	(0.091)	(0.089)	(0.090)
Development of Agriculture	0.029	-0.008	0.053
	(0.054)	(0.053)	(0.050)
Disaster Prevention	0.137*	-0.004	0.100+
	(0.053)	(0.054)	(0.051)
Food Self-sufficiency	0.061	0.052	0.035
	(0.055)	(0.051)	(0.053)
Quality of Agriculture	0.040	0.040	0.048
	(0.051)	(0.053)	(0.055)
Richer Rural Communities	0.082	-0.008	0.007
	(0.052)	(0.053)	(0.053)
Covariates	✓	✓	✓
Observations	1653	1664	1656
Adj. R^2	0.021	-0.001	0.018

HC2 robust standard errors are in parentheses.
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.9: Ordered Logistic Regression Analysis of Outcome 1 Variable

	Sociotropic	Extended Self-interest	Self-interest
Development of Agriculture	0.357*	0.292+	0.318*
	(0.159)	(0.162)	(0.154)
Disaster Prevention	0.288+	0.240	0.592***
	(0.158)	(0.157)	(0.155)
Food Self-sufficiency	0.582***	0.326*	0.207
	(0.161)	(0.158)	(0.159)
Quality of Agriculture	0.335*	0.204	0.266+
	(0.154)	(0.159)	(0.161)
Richer Rural Communities	0.396*	0.120	0.175
	(0.159)	(0.159)	(0.160)
Covariates	✓	✓	✓
Observations	1653	1664	1656
AIC	4135.3	4148.8	4208.7

Standard errors are in parentheses.
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.10: Ordered Logistic Regression Analysis of Outcome 2 Variable

	Sociotropic	Extended Self-interest	Self-interest
Development of Agriculture	0.127	-0.038	0.177
	(0.168)	(0.169)	(0.160)
Disaster Prevention	0.478**	0.004	0.341*
	(0.171)	(0.167)	(0.162)
Food Self-sufficiency	0.207	0.149	0.130
	(0.171)	(0.166)	(0.165)
Quality of Agriculture	0.119	0.136	0.191
	(0.162)	(0.167)	(0.170)
Richer Rural Communities	0.238	-0.020	0.029
	(0.168)	(0.166)	(0.165)
Covariates	✓	✓	✓
Observations	1653	1664	1656
AIC	2974.7	2981.9	3015.6

Standard errors are in parentheses.
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

References

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