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Abstract[1]

Previous studies indicate that Colombian farmers make production decisions based on informal sources of information, such as family and neighbors or tradition. In this paper we randomize recipients of price and weather information using text messages (SMS technology). We find that relative to those farmers who did not receive SMS information, the farmers who did were more likely to provide market price information, had a narrower dispersion in the expected price of their crops, and had a significant reduction in crop loss. Farmers also report that text messages provide useful information, especially in regards to sale prices. We do not find, however, a significant difference between the treated and untreated farmers in the actual sale price, nor changes in farmers' revenues or household expenditures.

JEL codes: D62, Q11, Q12, Q13
Keywords: Randomized evaluation, Price and weather information in agriculture, Bargaining, Spillovers, SMS technology

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1. Introduction

Many agricultural products in Colombia today are not produced, or are commercialized inefficiently due to farmers' lack of information on prices. Access to such information in rural areas is limited and costly. A recent study of information demand and supply in the agricultural sector, conducted by USAID-MIDAS (2007-2008), found that the sources of information are not well known (Perfetti et al., 2007). Small producers usually sell their products on their own farms, knowing only prices in the local area. Our baseline survey assesses farmers' knowledge of prices by asking if they had to sell their product today, at what price would they sell it. We find that 26 percent of farmers do not report any price for their product if someone came to their farm to buy it; 43 percent do not know it for the municipal market; 6 percent do not know it for Bogotá, and 55 percent do not know it for the market of their department (the largest unit of sub-national government in Colombia). In light of these figures, this study randomizes provision of weather and price information to farmers and determines whether this information improved their welfare.

Colombia's mobile phone technology has almost full connectivity coverage across the population and territory. There were 37.8 million activated lines during the period of this study, corresponding to a coverage rate of 96 percent for the population over 5 years of age.[2] Two important reasons why SMS can be a successful tool to disseminate information include the relatively low cost of a SMS (40 percent of the cost of a one-minute cell phone call), and the ability to send information to many farmers at the same time. In this study we exploit the high levels of connectivity in Colombia and the low cost and high use[3] of SMS technology to estimate the improvement in welfare of farmers randomly selected to receive detailed weather and price information via text messages.

We evaluate the impact of the program on three types of outcomes: i) agricultural activities, ii) farmers' welfare, and iii) spillover effects of the program. The first group, agricultural activities, includes the following measures: ability to report a price in different

[2] Population counts in 2008 correspond to the projections reported by Departamento Nacional de Estadísticas (DANE). Number of lines active in the second trimester 2008 comes from the quarterly report from Comisión Regulación Telecomunicaciones (CRT).

[3] In the baseline survey, 78 percent of farmers indicated that they knew how to receive text messages and 34 percent indicated that they knew how to send text messages. This difference is not significant between the treatment and control group.

markets, price differential and dispersion of data reported by farmers relative to officially reported data, crop loss, harvest delay, crop storage, SMS as a substitute of sources of information on planting and selling, change in the crops that are planted or markets where products are sold. The second group of outcomes includes household revenue and expenditures. The third group of outcomes examines externalities of the program by measuring a change in the number of contracts or agreements made with other farmers.

This paper is structured as follows. The next section includes a review of the literature on the relation of technology adoption to welfare and peer effects. In Section 3 we provide a detailed description of the experimental design, and Section 4 describes the data from our two rounds of surveys and other sources of price and weather information that we used. In Section 5 we explain the empirical specification, followed by the results in Section 6. We conclude in Section 7.

2. Previous Literature

2.1 Papers on Technology Adoption and Welfare

Using the roll-out of cell phone coverage as a quasi-experimental design, researchers have looked at cell phones' impact on welfare and price dispersion across markets. These studies found that with the introduction of cell phones, welfare improved and price dispersion diminished (Jensen 2007; Aker, 2008). These improvements appear to be due to a reduction in search costs. Similarly, Beuermann (2010) shows how the introduction of at least one payphone in rural villages in Peru generated great improvements in sale prices and reduction of agricultural production, which in turn reduced the use of child labor for agricultural production. Montenegro and Pedraza (2009) suggest that the improvements in speed and quality of communications in Colombia in the period from 2000 to 2008 due to cell phones may have resulted in welfare improvement because those changes in communications can partly explain the fall in kidnapping rates. Their hypothesis is that mobile phone technology improves communication between the targeted individual and the police.

Unlike the papers cited above, in this study, rather than using the roll-out of cell phone coverage as a quasi-experimental design, we directly test the hypothesis that reductions in search costs affect welfare by randomly selecting farmers to receive price information for their crops in

different markets via text messages. We then test the extent to which this reduction in search costs affects different measures of farmers' welfare.

2.2 Papers on Technology Adoption and Peer Effects/Externalities

Papers that have looked at peer effects on technology adoption include Foster and Rosenzweig (1995) and Oster and Thorton (2009). The first paper finds that imperfect management of new technologies and farmers' experience are barriers for adoption, but own experience and neighbors' experience with technology increases farmers' profitability. The second paper finds that peers provide information about the new technology, but adoption depends on the value given by the individual to the technology. Like these two papers, we also study the influence of technology adoption by neighbors or relatives.

3. Experimental Design of the Project

The study took place in the *departamento* of Boyacá, where two irrigation associations, Usochicamocha and Asusa, provide their services. The irrigation associations provided a complete list of members including their cell phone numbers. Among the users there are (crop) farmers and cattle ranchers, but given that our population of interest is farmers, we used the census of economic activity to determine the proportion of farmers in each unit. We then calculated the proportion of surveys needed in each irrigation unit to have a (15 percent) proportional sample of farmers in each area. Our sample includes 500 surveys, 66 percent (335) of them in Usochicamocha municipalities and 33 percent (165) in Asusa municipality.

We isolate the program effect by using random treatment assignment. Specifically, we randomly assigned farmers who received the information to the treatment group, while the other farmers who signed up for the initiative were in the control group. To participate in the study the farmers needed to fulfill the following conditions: i) cell phone ownership; ii) voluntarily agree to sign a consent form authorizing us to send text messages with relevant agricultural information; iii) be at least half-time employed in commercial farming activities (other than for self-consumption); and iv) belong to one of the irrigation associations.

At the time of the baseline survey farmers were told that about half of them would be randomly selected to receive the "treatment" (price, weather and administrative information). 255 individual farmers received the treatment. The remaining 245 farmers were assigned to the

"control" group. We conducted an additional randomization at the unit level to capture spillover effects of the information shared among neighbors. Each area of irrigation is divided into 11 units, for a total of 22 irrigation units. The 22 units were paired according to their observable characteristics and we randomly chose 143 farmers in 10 of the 22 units as a source of extra treatment.

The time line for the intervention is given in Figure 1. The baseline was conducted in March-April 2009, before the SMS intervention. The treatment group of farmers received the intervention beginning on July 29. The first day of the intervention we sent text messages giving instructions on how to read and understand the price and weather information that we would be sending by SMS during the following six months. Treated farmers received daily text messages on prices for three markets and eight products grown in their region.[4] They also received weekly weather information for a period of four months, starting on September 20, 2009. Out of the 185 days of the intervention, all farmers received price information every weekday except for 10 days, when information was not provided to us by the primary source.[5] A total of 72,834 SMS were sent, of which 79 percent were on prices, 19 percent on weather, and 2 percent administrative. On average a treated farmer received 144 price messages, 34 weather messages, and four administrative messages.[6] The follow-up survey was conducted in November-December 2009, after the farmers had made their decisions on sales and commercialization of their products. Our experimental design compares the treatment to the control group, before and after the intervention, by using information from the baseline and follow-up surveys.

3.1 Source of Price Data

The *Corporación Colombiana Internacional* (CCI) administers the System of Price Information in the Agricultural Sector (SIPSA—Acronym in Spanish). SIPSA includes information for more than 700 products in 66 markets in 18 *departamentos*. Each day at 9 a.m. we received information provided by the CCI. This price information corresponds to the average prices of transactions made earlier that day. Markets operate from 11 p.m. to 5 a.m. Although the price

[4] The markets and products were chosen according to the reported relevant market of the area, and conditional on availability of information. The main crops grown in this region in order of importance are: onions, potatoes, corn, beans, peas, beet, lettuce, and broccoli. Since certain crops are sold in specific days of the week, the information sent accounted for the seasonality of products sold in markets.
[5] In these 10 day the person from the CCI at Tunja, our source of information, was not able to send daily prices.
[6] Administrative messages were sent by the irrigation associations and typically meeting or payment reminders.

information provided by the CCI is publicly available by internet at 3 p.m.,[7] the farmers have limited internet access at home and in their village. In the survey, 4 percent of farmers reported having home internet access and 15 percent reported access in their village.

3.2 Source of Weather Data

The *Instituto de Hidrología, Metereología y Estudios Ambientales* (IDEAM) provides a weekly report with weather forecasts including minimum and maximum temperatures, probability of rain fall, drought, floods and frost alerts. The IDEAM agreed to include our areas of study within their forecast models, which allowed us to provide accurate information for this intervention.

4. Description of Baseline and Follow-Up Survey Data

We collected baseline characteristics in the first round of surveys prior to the intervention and report these in Table 1. Table 1 also includes some socio-demographic characteristics that we were able to match from the Census of the Poor Survey.[8] The baseline survey includes socioeconomic questions, as well as information on agricultural production and commercialization decisions. As Table 1 reports there is only one significant difference across the treatment and control group, indicating that before the intervention the two groups are very similar.

The average farmer in our sample is 50 years old, and 70 percent of the farmers are male, with 6 years of education and 29 year of experience in farming activities. They spend 34 hours a week working on agricultural activities.

To ensure the quality of the information collected we asked farmers to keep records on the price, quantity, date and location of the products sold. The second round of surveys collected follow-up information on the key outcome variables: sale price, production, transport, crop information shared with neighbors, crop loses and specific questions about the intervention for those who reported receiving SMS information useful for their agricultural activities. We followed 95 percent of the people in the second round. To encourage participation there was a raffle of a pesticide spraying machine.

[7] Available at: http://www.cci.org.co/cci/cci_x/scripts/home.php?men=101&con=192&idHm=2&opc=199

[8] We have personal identifiers in the Census of the Poor and in the baseline survey which enable us to match the information to the whole family. The match rate was approximately 86 percent for Asusa and 75 percent for farmers in Usochicamocha.

Since the price information sent via text messages corresponded to the typical crops grown in the region and not necessarily those grown by an individual farmer, there was variation across farmers on the number of crops for which they received prices that coincided with their particular crops. Some farmers may have received information on all of their crops while others on none. We exploit this variation in our analysis.

5. Empirical Specification

Since we observed the same farmer in two periods to evaluate the effect of the text messages we used a difference-in-differences approach, and a first differences with farmer fixed effects. Our estimating difference-in-differences equation is:

$$Y_{iupt} = \beta_0 + \beta_1 T_{it} + \beta_2 Extra_{iut} + \beta_3 Post_t + \beta_4 \Pr od_{ipt} + \beta_5 T_{it} Post_t + \beta_6 T_{it} \Pr od_{ipt} + \beta_7 \Pr od_{ipt} Post_t + \beta_8 T_{it} \Pr od_{ipt} Post_t + \beta_9 X_{it} + \gamma_u + \gamma_p + \varepsilon_{iupt} \quad (1)$$

And our estimating first difference with farmer fixed effects equation is:

$$Y_{iupt} = \beta_0 + \beta_2 Extra_{iut} + \beta_4 \Pr od_{ipt} + \beta_5 T_{it} Post_t + \beta_6 T_{it} \Pr od_{ipt} + \beta_7 \Pr od_{ipt} Post_t + \beta_8 T_{it} \Pr od_{ipt} Post_t + \beta_9 X_{it} + \gamma_i + \gamma_p + \varepsilon_{iupt} \quad (2)$$

where i denotes the individual farmer; p denotes the product; u denotes the irrigation unit; and t denotes the first or second round of surveys. Y_{iupt} corresponds to the outcome of interest. T_{it} is a treatment indicator which takes the value of 1 if the farmer received text message information. $Post_t$ is an indicator variable which takes a value of 1 after the initiation of the program.[9] $Prod_{ipt}$ is an indicator variable which takes a value of 1 if farmer i received text message information regarding one of his product. $Extra_{iu}$ corresponds to the number of producers who received treatment in the farmer's irrigation unit. X_{it} is a vector of farmers' characteristics including: education, experience, age, gender, percentage of time dedicated to farming, size of the crop, storage capacity, own means of transport, whether the farmer is credit constrained, distance from the farm to markets, γ_u are irrigation unit indicators to capture any characteristics that are common across irrigation units but do not change over time, and γ_p are dummy variables for the

[9] We use different definitions of post depending on the timing of the outcome of interest. We use: *post* to take into account the period after the initiation of the program; *post_crop* takes into account that the farmer planted after the initiation of the program; and *post_sale* takes into account that the farmer sold its product after the initiation of the program.

importance of the product, within the products of the farmer. Equation (2) includes γ_i farmer fixed effects, therefore we do not control for individual characteristics which do not vary much between both rounds of surveys.

Additionally, we estimate an alternative model where we control for the outcome at baseline as follows:

$$Y_{iupt} = \beta_0 + \beta_1 T_{it} + \beta_2 Extra_{iut} + \beta_3 Y_{iupt-1} + \beta_4 \Pr od_{ipt} + \beta_6 T_{it} \Pr od_{ipt} + \beta_4 X_{it} + \gamma_u + \gamma_p + \varepsilon_{iupt} \quad (3)$$

where the variables are defined the same way as in equation (1). This specification could help to absorb noise and give more flexibility in the parameter β_3 than the fixed effect specification.

Parallel to the three equations presented above, we test for spillover effects by interacting these same specifications with the following measures: number of text messages received (directly from the program or indirectly from a participant), frequency of visits to neighbor farmers, and the number of people the farmer knows who are enrolled in the program interacted with frequency of visits to neighbor farmers. All of these different measures are used as proxies for the amount of contact with information that an individual can have, and we expect to get from them a measure of the externality effect of the program.

6. Results

We are interested in the following outcomes: i) whether the farmer is able to report prices in different markets, ii) whether the farmer is using text messages as a substitute for sources of information to plant or sell, iii) the difference between the officially reported price and the price reported by the farmer at the time of sale; iv) the difference between the expected sale price and the officially reported price, and the dispersion in prices reported by the farmers, and v) the extent of crop loss.

6.1 Reporting Prices in Different Markets

Reporting a price corresponds to the simplest outcome we can test in this experiment. We want to know whether sending price text message information can have an impact on the self-reported knowledge of prices by product and market. The dependent variable is constructed from the question in the survey where we ask the farmer: “If you had to sell your product today, what

would be the price you think you will get after a negotiation in the farm, municipal market, Bogotá and *departamento* market?" Independent of the accuracy of the value reported, we give the value of 1 if there was a price reported and 0 if the respondent answers that he or she does not know.

Tables 2a and 2b include the same empirical specification for the four different markets: farm and municipal market, Bogotá and *departamento* market, respectively. Columns 1 and 2 correspond to the estimation in equation (1), Columns 3 and 4 correspond to the estimation in equation (2), and Columns 5 and 6 correspond to the estimation in equation (3). The difference between each pair of columns is that the second column in each pair includes economic importance of product fixed effect, while the first one does not include this control. On average, according to the specification given by equation (1) farmers receiving text messages corresponding to their crop are between 20 and 30 percentage points more likely to report a price in all markets except for the *departamental* market.

6.2 Text Messages as a Substitute of Sources of Sales Information

We test whether the information received by farmers has been useful for their agricultural activities, specifically for sales. In Table 3 we use four different outcome variables: i) the farmer reported text messages as a source of information in the follow-up survey; ii) the farmer reported changes in the source of information used for selling relative to the sources of information reported in the baseline; iii) an interaction of these two outcomes that captures a change in source of information including text messages as an important source of information; and iv) the farmer reports text messages as a new source of information and there are changes in the importance of sources of information.

The table shows that the coefficient related to the treatment effect is positive and significant at the 1 percent level for all outcomes except for change in source of information (column 2), we also include the treatment interacted with the dummy variable that indicates that the prices sent via text messages coincided with the products that the farmer is planting, but we do not find a differential effect of the treatment for different products.[10]

[10] Our survey also includes data to test whether the information sent affected planting decision or helped in solving problems related to the crop. This hypothesis has not yet been tested.

6.3 Price Differential at the Time of Sale

We construct the difference between the sale price reported by the farmer and the sale price reported by the official data from CCI in a given week in Bogotá and Tunja, two markets where these farmers sell and where we have official data from CCI. Table 4 does not show a significant difference, consistent throughout different specifications, in the sale prices obtained by treated farmers compared to the farmers in the control group. But there is a positive and significant effect of the sale prices of the products reported in the text message information for the whole sample after the intervention, which could be interpreted as a spillover effect of the program.

6.4 Price Differential and Price Dispersion Using Expected Prices

Using the same question as in the first outcome (reporting a price in different markets), we construct the difference between the sale price reported by the farmer at a given market and the sale price from the CCI official data in a given week for the corresponding market (we call this the expected sale price), results are reported in Tables 5a, 5b, 5c. There is some evidence that the treatment group reported a higher sale price in Bogotá, but we do not generally find evidence that treated farmers differ much from the control group in the expected price reported.

We also construct monthly price dispersion of expected prices. The results, presented in Tables 6a and 6b, show that in the four different markets treated farmers have lower price dispersion in the price they report than the control group of farmers. This implies that farmers are able to negotiate and sell their product closer to the market price, which will be a fair price.

6.5 Crop Loss

We constructed the three following measures of crop loss: i) a dummy variable that takes the value of 1 if the farmer had any type of loss in his crop, ii) a continuous variable corresponding to the percentage of crop loss, and iii) a dummy variable that takes the value of 1 if the farmer had weather related loss. The results related to these three variables are reported in Tables 7a, 7b and 7c respectively. All of the specifications in Table 7a consistently show statistically significant differences between treated and control farmers; treated farmers are between 11 and 14 percentage points less likely to suffer a crop loss.

6.6 Additional Outcomes

Other outcomes that we could study in the future include behaviors with respect to harvest delay, crop storage, profits, change in the crops that are planted or markets where products are sold. We did not find significant effects for household revenue and expenditures, which might be due to the short period of the implementation of the program.

We have explored the externality effect of the program and have some preliminary findings that consistently point to a positive and significant effect only when the data are used as a cross-section. Once the individual fixed effect or lagged variable models are used, however, there are no significant effects. Specifically we see positive externality effects in terms of crop loss due to weather. This is consistent with what treated farmers say about the usefulness of the information received, where they give a grade of 4.1 out of 5 to the weather information.

7. Conclusion and Policy Relevance

In this paper we tested if access to price information via text messages changed farmers' behaviors. In particular, we analyzed whether treated farmers had better knowledge of prices and as a consequence were able to extract higher prices for their products. We found that the information sent indicated a change in the treated farmers' perceptions of prices, but did not seem to affect their actual sale prices. Other results indicate that inexpensive technological interventions quickly become useful sources of price information and reduce the probability of weather-related crop loss. In terms of welfare improvement we did not find an effect on profits or household expenditures, but this might be due to the short-term nature of the intervention.

In the future we plan to study the external effects of SMS technology use in communities when family and neighbors share information. In particular, we will explore whether farmers are transporting their products to other markets as a result of this information.

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Figures and Tables

Figure 1. Time Line

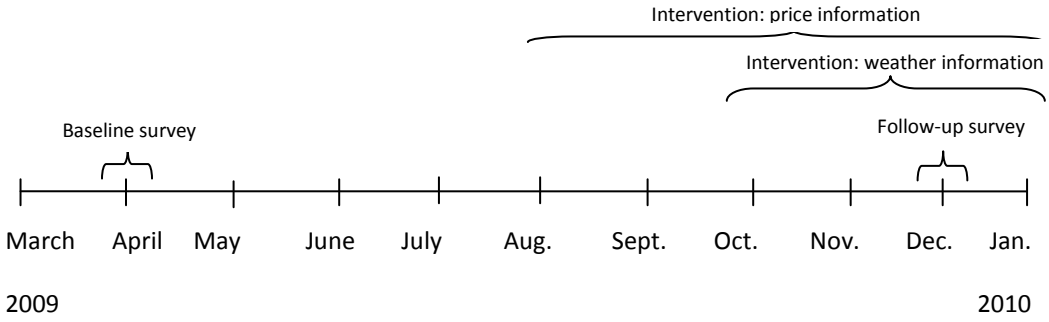

Table 1.Baseline Summary Statistics

Demographic	*Control*	*Treatment*
Producer age	50.36	49.48
Producer is female	0.343*	0.271*
Years of schooling	6.03	5.83
Years of experience	29.59	28.84
Household size	4.22	4.10
Number of hours per week dedicated to farming	34.20	34.29
Income and Poverty indicators		
Finished floors	0.68	0.71
Number of rooms in dwelling	3.05	3.03
Number of people per room	1.55	1.50
Dwelling has permanent electricity	0.99	0.99
Dwelling has land line telephone	0.14	0.11
Dwelling has access to potable water	0.96	0.97
Producer takes public transport to city	0.44	0.43
Cell phone		
Good (or better) quality of cell phone signal	0.97	0.97
Always reads text messages	0.71	0.71
Producer monthly cell phone expenditure (in pesos)	23,762	27,704
Farm		
Household members in agriculture labors	0.80	0.75
Farm area (Ha)	1.40	1.56
Total farm area (Ha)	1.74	2.02
Area - All crops (Ha)	1.10	1.24
Did not store main crop	0.79	0.81
Percent of main crop stored	69.04	62.62
Number of days main crop stored or delayed	27.52	34.06
Loss of any crop	0.49	0.50
Loss of main crop due to weather	0.71	0.77
Number cows and/or horses owned	1.17	1.07
Number of farm equipment (hoses, sprinklers)	5.32	4.79
Farm ownership	0.60	0.61
Number of neighbors or friends mentioned	1.53	1.62
Cost and Prices		
Number of potential buyers that came to the farm	2.07	2.12
Monthly transport costs (in pesos)	128,327	218,414
Neighbors as source of price information	0.10	0.10
No sources of price information	0.07	0.08
Requested credit	0.32	0.29
Denied credit application	0.05	0.06
Distance (Km) nearest department market	17.91	18.31
Road quality	1.96	1.89
Market type		
Collection	0.18	0.18
Department market or Bogota	0.30	0.30
Municipal market	0.18	0.24
Other	0.08	0.08

Note: The unit of observation is the farmer; there are 500 farmers.
* Significant at 10%; ** significant at 5%; *** significant at 1%

Table 2a. Knowledge of Price in the Farm and Municipal Market

Dependent Variable	Knowledge of price in farm						Knowledge of price in Municipality					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.223***	0.201***			-0.08	-0.098	0.218***	0.201**			-0.133	-0.15
	[0.074]	[0.073]			[0.110]	[0.112]	[0.079]	[0.078]			[0.112]	[0.115]
Extra	0.003	0.003	0.002	0.002	-0.002	-0.003	0.003	0.003	0.003	0.003	-0.004	-0.006
	[0.002]	[0.002]	[0.002]	[0.002]	[0.005]	[0.005]	[0.002]	[0.002]	[0.003]	[0.003]	[0.006]	[0.005]
Post	0.039	0.043					0.139*	0.142*				
	[0.073]	[0.072]					[0.076]	[0.076]				
Prod	0.145**	0.097	0.099	0.061	0.133*	0.095	0.221***	0.184***	0.169**	0.143**	0.159**	0.122
	[0.060]	[0.059]	[0.062]	[0.062]	[0.072]	[0.073]	[0.062]	[0.062]	[0.069]	[0.068]	[0.075]	[0.076]
Treatment*Post	-0.310***	-0.305***	-0.256**	-0.249**			-0.339***	-0.336***	-0.214	-0.209		
	[0.106]	[0.106]	[0.110]	[0.109]			[0.113]	[0.113]	[0.132]	[0.131]		
Treatment*Prod	-0.149*	-0.12	-0.115	-0.085	0.065	0.089	-0.174**	-0.152*	-0.152	-0.131	0.114	0.137
	[0.081]	[0.080]	[0.085]	[0.082]	[0.116]	[0.118]	[0.088]	[0.087]	[0.097]	[0.095]	[0.121]	[0.124]
Prod*Post	-0.041	-0.02	-0.053	-0.037			-0.182**	-0.167**	-0.134	-0.123		
	[0.078]	[0.077]	[0.064]	[0.064]			[0.083]	[0.082]	[0.090]	[0.090]		
Treatment*Prod*post	0.211*	0.207*	0.187*	0.18			0.305**	0.302**	0.191	0.186		
	[0.115]	[0.115]	[0.112]	[0.111]			[0.124]	[0.124]	[0.134]	[0.133]		
Lagged dependent Variable					0.076*	0.067					-0.05	-0.053
					[0.042]	[0.043]					[0.043]	[0.043]
Constant	0.775***	0.962***	1.359	1.364	0.790**	0.972***	0.699***	0.841***	-0.132	-0.129	0.775**	0.947***
	[0.195]	[0.206]	[2.030]	[2.025]	[0.353]	[0.343]	[0.205]	[0.210]	[2.858]	[2.855]	[0.366]	[0.356]
Individual fixed effects	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
Importance product fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1813	1813	1813	1813	621	621	1813	1813	1813	1813	621	621
R-squared	0.069	0.085	0.024	0.035	0.126	0.139	0.066	0.073	0.019	0.024	0.076	0.085
Number of farmers			466	466					466	466		

Robust Standard errors in brackets

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

Table 2b. Knowledge of Price in Bogotá and *Departamento* Market

Dependent Variable	Knowledge of price in Bogota						Knowledge of price in Department Market					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.223***	0.111*			-0.237**	-0.249**	-0.350**	-0.358**				-1.258***
	[0.074]	[0.061]			[0.095]	[0.097]	[0.173]	[0.173]				[0.195]
Extra	0.003	0.003*	0.003	0.003	-0.003	-0.004	0.006	0.006	0.011	0.011	0.073***	0.073***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.005]	[0.004]	[0.006]	[0.006]	[0.012]	[0.011]	[0.016]	[0.016]
Post	0.039	0.237***					-0.552***	-0.558***				
	[0.073]	[0.066]					[0.168]	[0.169]				
Prod	0.145**	0.203***	0.206***	0.187***	0.133*	0.109	-0.014	-0.028	0.038	0.005	-0.109	-0.109
	[0.060]	[0.048]	[0.057]	[0.056]	[0.077]	[0.079]	[0.125]	[0.129]	[0.094]	[0.097]	[0.126]	[0.127]
Treatment*Post	-0.310***	-0.242**	-0.177	-0.173			0.225	0.24	0.218	0.262	-1.276***	
	[0.106]	[0.097]	[0.115]	[0.114]			[0.294]	[0.295]	[0.346]	[0.340]	[0.176]	
Treatment*Prod	-0.149*	-0.113	-0.123	-0.107	0.189*	0.204*	0.289	0.299	0.07	0.091	1.257***	1.236***
	[0.081]	[0.072]	[0.090]	[0.089]	[0.104]	[0.106]	[0.182]	[0.183]	[0.163]	[0.164]	[0.187]	[0.213]
Prod*Post	-0.041	-0.129*	-0.096	-0.088			0.06	0.074	0.101	0.145		
	[0.078]	[0.073]	[0.085]	[0.084]			[0.180]	[0.181]	[0.162]	[0.166]		
Treatment*Prod*post	0.211*	0.203*	0.133	0.13			-0.117	-0.134	-0.179	-0.223		
	[0.115]	[0.109]	[0.121]	[0.120]			[0.306]	[0.308]	[0.340]	[0.334]		
Lagged dependent Variable					0.031	0.03					0.195**	0.193**
					[0.046]	[0.046]					[0.095]	[0.095]
Constant	0.775***	0.445**	-5.189**	-5.187**	0.614**	0.723**	0.546	0.574	20.224***	21.185***	-0.26	-0.237
	[0.195]	[0.189]	[2.578]	[2.562]	[0.286]	[0.281]	[0.353]	[0.358]	[6.757]	[6.878]	[0.578]	[0.588]
Individual fixed effects	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
Importance product fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,813	1813	1813	1813	621	621	378	378	378	378	140	140
R-squared	0.069	0.118	0.033	0.035	0.143	0.147	0.36	0.361	0.207	0.215	0.385	0.385
Number of farmers			466	466					165	165		

Robust Standard errors in brackets

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

Table 3. Text Messages as a Substitute for Sources of Sales Information

Dependent variable	SMS as a source of info useful for selling in follow-up	Relative to baseline, changes in source of info for selling	Change in source of info and including SMS as an important source of info for selling	Change importance of source of info and including SMS as an important source of info for selling
Treatment	0.382***	0.164	0.411***	0.382***
	[0.134]	[0.143]	[0.126]	[0.134]
Extra	0.003**	0.004**	0.004***	0.003**
	[0.001]	[0.002]	[0.001]	[0.001]
Treatment*Prod	-0.057	-0.162	-0.173	-0.057
	[0.148]	[0.159]	[0.139]	[0.148]
Prod	0.006	-0.094	0.023	0.006
	[0.103]	[0.110]	[0.097]	[0.103]
Constant	0.035	0.827***	0.01	0.035
	[0.092]	[0.099]	[0.087]	[0.092]
Observations	475	475	475	475
R-squared	0.166	0.027	0.129	0.166

Robust Standard errors in brackets

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

Table 4. Price Differential at the Time of Sale in Nearest Department Market

Dependent Variable	Difference in price from Bogotá				Difference in price from Tunja			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Treatment	37.747	32.374			98.004	93.367		
	[77.275]	[80.200]			[187.433]	[189.366]		
Extra	4.517	4.156			-5.442	-5.153		
	[2.928]	[2.735]			[6.672]	[7.169]		
Post_sale	-276.879**	-273.321**	-285.707*	-271.159*	-397.102	-416.161*	-330.174	-351.610*
	[117.382]	[119.825]	[146.442]	[151.612]	[252.011]	[249.813]	[201.154]	[212.389]
Prod	-310.809***	-322.653***	-359.475***	-381.103***	-112.792	-133.947	-222.41	-238.43
	[64.131]	[68.200]	[95.035]	[95.419]	[170.236]	[172.259]	[171.150]	[173.991]
Treatment*Post_sale	312.873*	305.626	214.542	175.254	221.499	247.937	-1.308	35.45
	[189.543]	[191.960]	[332.134]	[338.346]	[364.585]	[371.074]	[400.401]	[419.246]
Treatment*prod	12.278	16.559	163.374	175.687	-88.779	-87.475	-104.839	-95.758
	[88.951]	[92.099]	[155.304]	[155.083]	[193.979]	[195.401]	[274.145]	[277.075]
Prod*Post_sale	284.413**	285.280**	266.348*	260.140*	580.671**	596.095**	452.105**	478.182**
	[127.632]	[130.303]	[146.496]	[149.955]	[259.077]	[256.415]	[185.957]	[206.426]
Treatment*Prod*Post_sale	-388.158*	-386.304*	-250.627	-228.402	-359.277	-377.94	-260.179	-299.645
	[199.116]	[201.489]	[328.981]	[331.275]	[369.596]	[375.185]	[392.133]	[414.580]
Constant	-135.431	-86.876	43.851	63.702	543.921	586.555	279.205	305.912*
	[275.116]	[273.061]	[176.982]	[176.494]	[486.811]	[497.023]	[180.770]	[183.461]
Importance product fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Individual fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Observations	547	547	547	547	347	347	347	347
R-squared	0.217	0.223	0.212	0.235	0.215	0.223	0.191	0.199
Number of farmers			349	349			256	256

Robust Standard errors in brackets

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

Table 5a. Price Differential in Farm Using Expected Prices

Dependent Variable	Expected Price Difference in Farm from price in Bogota						Expected Price Difference in Farm from price in Tunja					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	81.454	58.933			-69.549	-35.809	198.059	186.394			-567.971	-493.268
	[141.442]	[142.644]			[208.455]	[203.531]	[376.130]	[378.427]			[378.115]	[389.272]
Extra	-0.858	-0.956	-0.294	-0.531	1.221	0.783	-5.583	-5.445	-1.874	-1.754	12.289	10.618
	[2.438]	[2.426]	[2.556]	[2.568]	[5.333]	[5.388]	[6.492]	[6.521]	[8.896]	[8.917]	[9.950]	[10.893]
Post	124.247	122.211	60.847	51.699			220.3	211.51				
	[141.731]	[143.350]	[163.638]	[170.928]			[283.188]	[283.475]				
Prod	-118.382	-147.341	-182.832	-230.279	74.587	107.69	-54.852	-66.075	-121.724	-119.838	402.096	471.445
	[119.711]	[123.189]	[150.171]	[159.676]	[161.105]	[154.825]	[218.183]	[221.496]	[272.315]	[273.816]	[361.360]	[359.767]
Treatment*Post	-45.641	-28.786	-228.606	-183.646			-463.238	-426.825	-821.719	-779.922		
	[196.106]	[196.814]	[212.657]	[223.087]			[456.258]	[458.904]	[577.984]	[598.461]		
Treatment*Prod	-17.318	6.834	-84.68	-21.684	13.414	-20.843	-173.007	-161.7	-1,031.447*	-1,020.623*	350.301	274.522
	[152.573]	[153.714]	[198.361]	[209.162]	[217.659]	[212.800]	[380.510]	[383.682]	[544.330]	[554.280]	[398.701]	[416.273]
Prod*Post	-77.488	-65.09	-63.564	-42.096			-11.302	-6.152	137.201	138.859		
	[148.679]	[150.133]	[171.933]	[179.155]			[298.766]	[299.036]	[253.343]	[261.582]		
Treatment*Prod *post	-10.641	-27.533	187.782	145.361			307.817	271.437	828.966	785.468		
	[207.599]	[207.913]	[226.262]	[235.361]			[472.278]	[476.527]	[589.838]	[609.766]		
Lagged dependent Variable					0.037	0.04					0.031	0.04
					[0.026]	[0.027]					[0.064]	[0.069]
Constant	-112.355	-30.966	-128.235	-189.053	-446.394	-459.993	172.554	129.587	1,080.10	1,281.72	302.83	341.822
	[467.786]	[479.635]	[483.738]	[494.879]	[473.402]	[486.114]	[327.843]	[332.864]	[7,576.739]	[7,872.178]	[680.756]	[690.599]
Individual fixed effects	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
Importance product fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1107	1107	1107	1107	270	270	700	700	700	700	163	163
R-squared	0.05	0.056	0.017	0.028	0.157	0.16	0.068	0.073	0.046	0.049	0.316	0.325

Robust Standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

Table 5b. Price Differential in Municipality Using Expected Prices

Dependent Variable	Expected Price Difference in Municipality from price in Bogota						Expected Price Difference in Municipality from price in Tunja					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	189.741	168.783			-431.85	-362.19	-133.32	-134.167			-1,187.237*	-848.363
	[147.097]	[144.603]			[312.537]	[316.902]	[360.343]	[348.718]			[679.695]	[736.000]
Extra	-4.138	-4.643	0.364	-0.009	4.064	2.049	-11.501*	-11.456*	-3.904	-3.883	19.934	18.245
	[3.058]	[3.042]	[3.926]	[3.873]	[5.436]	[5.679]	[6.757]	[6.723]	[11.890]	[11.806]	[12.982]	[13.869]
Post	344.441**	364.494***		333.022			486.421	519.384	617.426*	664.923*		
	[134.172]	[137.116]		[212.384]			[389.788]	[384.695]	[325.984]	[340.736]		
Prod	15.41	-21.554	-49.512	-106.758	-35.633	22.995	-94.168	-107.986	214.241	154.671	30.753	152.64
	[102.854]	[107.890]	[177.388]	[195.619]	[261.938]	[264.591]	[320.689]	[308.614]	[236.453]	[236.647]	[475.664]	[488.139]
Treatment*Post	-339.485	-323.236	-544.515**	-500.546*			-29.746	21.489	-769.780*	-736.46		
	[206.649]	[205.894]	[261.078]	[268.368]			[504.992]	[494.456]	[426.275]	[448.949]		
Treatment*Prod	-47.756	-22.541	-87.052	-35.89	458.891	394.246	231.182	240.601	-1,275.279**	-1,260.148**	995.782	640.169
	[160.267]	[158.405]	[284.983]	[291.208]	[331.214]	[346.959]	[366.520]	[354.495]	[547.990]	[568.646]	[704.694]	[770.827]
Prod*Post	-279.796**	-276.814*	-308.739	-301.312			-136.563	-160.961	-407.682	-431.747		
	[141.059]	[143.746]	[216.084]	[227.812]			[398.477]	[388.967]	[325.203]	[340.583]		
Treatment*Prod*post	237.949	220.084	484.226*	447.131			-236.426	-296.188	781.372*	732.133		
	[220.051]	[219.118]	[282.100]	[288.711]			[521.887]	[509.968]	[455.129]	[477.323]		
Lagged dependent Variable					0.114	0.101					-0.037	-0.046
					[0.101]	[0.106]					[0.200]	[0.212]
Constant	-383.12	-341.971	-6,965.15	-524.681	-306.713	-381.488	-320.889	-297.282	2,043.175**	2,037.595**	539.664	620.121
	[280.972]	[279.618]	[4,524.345]	[484.501]	[692.507]	[745.574]	[424.620]	[435.724]	[966.114]	[988.625]	[1,003.188]	[1,040.711]
Individual fixed effects	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
Importance product fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	865	865	865	865	156	156	550	550	550	550	98	98
R-squared	0.067	0.077	0.027	0.048	0.209	0.226	0.091	0.101	0.055	0.068	0.405	0.411

Robust Standard errors in brackets

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

Table 5c. Price Differential in Bogota Using Expected Prices

Dependent Variable	Expected Price Difference in Bogota from price in Bogota						Expected Price Difference in Bogota from price in Tunja					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	353.579*	305.313			6.189	14.328	-637.024	-650.267			-33.611	-22.709
	[204.056]	[212.477]			[110.517]	[113.538]	[618.723]	[608.069]			[220.743]	[193.179]
Extra	-4.11	-4.3	-0.467	-0.99	5.341	5.551	9.332	9.581	25.570*	28.601**	17.397	0.045
	[3.286]	[3.275]	[4.557]	[4.887]	[7.059]	[8.167]	[9.669]	[9.885]	[13.196]	[13.371]	[11.182]	[12.955]
Post	518.011**	472.708*	369.883	330.072			43.144	47.306	97.248			
	[245.085]	[243.372]	[360.757]	[384.941]			[663.903]	[672.434]	[296.260]			
Prod	181.837	144.9	11.561	-35.746	407.968*	432.313*	-615.211	-650.334	-195.972	-268.044	613.667	914.837**
	[199.887]	[206.723]	[350.255]	[386.202]	[237.803]	[258.111]	[563.951]	[559.493]	[284.691]	[276.487]	[397.152]	[448.067]
Treatment*Post	-551.530*	-495.991	-877.852*	-772.901			-158.355	-168.971	-398.544	-299.875		
	[327.410]	[320.640]	[449.870]	[479.337]			[853.182]	[848.891]	[737.528]	[817.440]		
Treatment*Prod	-249.53	-203.498	-568.066	-453.462			883.489	906.009	-358.335	-242.172		
	[220.575]	[228.448]	[408.143]	[451.299]			[653.031]	[648.627]	[746.193]	[791.486]		
Prod*Post	-504.110**	-457.986*	-515.229	-472.512			144.759	157.743	-375.837	-326.351		
	[252.156]	[249.902]	[371.277]	[397.458]			[675.728]	[676.071]	[341.754]	[365.040]		
Treatment*Prod*post	457.904	409.757	948.184**	853.255*			-269.45	-259.816	473.969	378.444		
	[343.253]	[336.028]	[459.958]	[489.255]			[874.011]	[871.068]	[780.409]	[869.399]		
Lagged dependent Variable					-0.01	-0.012					-0.036	-0.052
					[0.019]	[0.021]					[0.052]	[0.048]
Constant	-355.934	-370.304	46.213	-186.136	-188.331	-257.29	666.172	773.703	4,422.173***	2,962.52	-132.505	118.711
	[349.978]	[353.403]	[724.397]	[796.178]	[537.488]	[579.126]	[793.387]	[780.680]	[1,118.928]	[9,392.038]	[842.429]	[851.320]
Individual fixed effects	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
Importance product fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	714	714	714	714	114	114	416	416	416	416	61	61
R-squared	0.071	0.088	0.045	0.077	0.327	0.332	0.147	0.152	0.053	0.062	0.572	0.652

Robust Standard errors in brackets

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

Table 6a. Price Dispersion Using Expected Prices

Dependent variable:	Expected price per kilogram standard deviation in: Farm						Municipality					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	-102.695*	-111.588*			-221.443	-197.022	41.514	68.318*			-304.460***	-278.426***
	[60.769]	[61.587]			[179.719]	[186.915]	[38.041]	[41.097]			[91.851]	[92.623]
Extra	-7.937***	-7.928***	-7.240**	-7.254**	3.79	5.657	-2.359	-2.485	-1.537	-1.601	1.64	4.024
	[2.993]	[2.988]	[3.062]	[3.063]	[8.065]	[7.154]	[2.250]	[2.263]	[1.936]	[1.924]	[4.398]	[4.060]
Post	420.073***	420.111***	501.428***	502.161***			306.782***	300.591***	320.867***			
	[77.719]	[78.020]	[85.119]	[85.090]			[52.301]	[52.264]	[63.087]			
Prod	339.588***	325.162***	308.593**	282.242**	470.052**	522.976**	478.883***	510.640***	467.875***	502.284***	37.536	100.374
	[58.667]	[61.152]	[132.697]	[133.081]	[225.143]	[218.305]	[45.656]	[49.225]	[55.057]	[59.314]	[75.370]	[74.561]
Treatment*post	6.364	10.94	-40.93	-28.783			104.718	82.181	97.6	60.356		
	[104.446]	[104.541]	[117.387]	[119.125]			[133.369]	[133.214]	[160.448]	[159.380]		
Treatment*prod	557.976***	569.157***	400.681**	430.503**	-343.791	-380.313	195.367***	162.818**	26.591	-18.195	329.480***	291.399***
	[85.828]	[87.901]	[164.828]	[168.506]	[249.898]	[253.363]	[62.310]	[66.276]	[112.329]	[112.926]	[100.457]	[100.246]
Prod*post	-72.307	-64.887	-144.928	-131.442			-425.787***	-437.357***	-440.175***	-453.544***		
	[110.993]	[115.145]	[111.553]	[115.300]			[64.259]	[64.904]	[70.703]	[73.314]		
Treatment*prod*post	-773.940***	-778.782***	-746.434***	-758.751***			-304.989**	-281.705*	-311.366*	-273.794		
	[153.197]	[155.371]	[162.521]	[166.502]			[146.177]	[146.721]	[169.294]	[169.172]		
Lagged dependent variable					0.253***	0.256***					0.213***	0.213***
					[0.049]	[0.049]					[0.045]	[0.043]
Constant	-282.04	-224.689	-267.099	-206.08	-468.04	-711.808	-172.858	-308.895	-838.880***	-10,233.520***	124.904	-163.772
	[308.324]	[313.929]	[604.474]	[621.099]	[752.775]	[737.510]	[267.674]	[270.787]	[176.674]	[1,949.891]	[287.840]	[282.134]
Importance product fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Individual fixed effects	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
Observations	1684	1684	1684	1684	531	531	1632	1632	1632	1632	507	507
R-squared	0.074	0.074	0.043	0.044	0.137	0.139	0.11	0.114	0.07	0.076	0.229	0.254
Number of farmers			489	489					485	485		

Robust Standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

Table 6b. Price Dispersion Using Expected Prices

Dependent variable:	Expected price per kilogram standard deviation in:											
	Bogotá						Department Market					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	-185.624	-176.42			-218.014*	-188.886	278.207	283.796			-2.435	-4.545
	[182.819]	[199.199]			[114.087]	[170.892]	[171.391]	[184.279]			[27.715]	[28.110]
Extra	1.763	1.58	2.455	2.36	5.361*	4.638*	-20.903	-20.991	-7.239	-7.462	2.643	3.268
	[3.158]	[3.161]	[2.838]	[2.812]	[2.768]	[2.704]	[17.806]	[17.946]	[22.138]	[22.501]	[5.349]	[5.425]
Post	16.446	-21.734					375.355*	376.635*				
	[181.558]	[197.599]					[193.879]	[195.120]				
Prod	400.004**	421.466**	202.769	207.452	103.398	132.249	464.786***	469.008***	219.345***	237.664***		
	[182.386]	[199.406]	[125.024]	[143.904]	[87.037]	[150.374]	[134.647]	[143.507]	[6.271]	[52.167]		
Treatment* post	-108.794	-88.402	136.338	152.074			-1,310.250***		-1,762.097***	-1,760.427***		
	[193.668]	[208.847]	[177.364]	[188.640]			[177.848]		[241.679]	[243.351]		
Treatment* prod	599.436***	580.668***	651.620***	622.492***	146.99	105.071	1,010.100***	1,003.695***	1,567.777***	1,548.562***		
	[198.588]	[214.437]	[201.466]	[211.517]	[117.146]	[173.016]	[236.451]	[251.379]	[247.016]	[258.222]		
Prod*post	-273.981	-266.12	-61.933	-36.409			-539.322***	-542.232***	-211.691	-231.727		
	[196.326]	[210.351]	[141.641]	[158.018]			[198.914]	[201.886]	[155.411]	[160.432]		
Treatment* prod*post	-313.972	-333.052	-600.844***	-615.529***				-1,309.457***				
	[213.530]	[225.841]	[198.397]	[207.995]				[178.832]				
Lagged dependent variable					0.152***	0.153***					0.019	0.017
					[0.027]	[0.026]					[0.016]	[0.016]
Constant	255.414	88.064	2314.482	5702.301	55.526	-63.597	0	10.078	98.369	40.663	66.117	76.042
	[500.920]	[513.068]	[2,797.904]	[4,579.557]	[215.139]	[242.671]	[0.000]	[65.130]	[61.541]	[89.251]	[101.464]	[105.480]
Importance product fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Individual fixed effects	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
Observations	1553	1553	1553	1553	454	454	301	301	301	301	109	109
R-squared	0.138	0.143	0.112	0.118	0.307	0.333	0.579	0.579	0.602	0.603	0.197	0.206
Number of farmers			485	485					151	151		

Robust Standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

Table 7a. Dummy Crop Loss

Dependent Variable	Loss Dummy					
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.028	0.026			-0.173**	-0.175**
	[0.035]	[0.035]			[0.071]	[0.070]
Extra	-0.004**	-0.004**	-0.003	-0.003	-0.011***	-0.011***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.004]	[0.004]
Post weather	0.141***	0.144***	0.103*	0.106*		
	[0.039]	[0.039]	[0.055]	[0.055]		
Treatment*Post weather	-0.097*	-0.093*	-0.131**	-0.129**		
	[0.050]	[0.050]	[0.058]	[0.058]		
Constant	0.234	0.218	2.648	2.645	0.313	1.327***
	[0.200]	[0.203]	[1.663]	[1.672]	[0.301]	[0.340]
Individual fixed Effects	No	No	Yes	Yes	No	No
Importance product fixed effects	No	Yes	No	Yes	No	Yes
Observations	1435	1435	1435	1435	202	202
R-squared	0.067	0.068	0.049	0.052	0.356	0.374
Number of farmers			487	487		

Robust Standard errors in brackets

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

Table 7b. Percentage of Crop Loss

Dependent Variable	Loss Percentage*100					
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	2.01	1.928			-1.593	-1.545
	[2.247]	[2.236]			[3.517]	[3.474]
Extra	-0.179	-0.184*	-0.075	-0.077	-0.589***	-0.580***
	[0.110]	[0.111]	[0.114]	[0.114]	[0.180]	[0.181]
Post weather	2.305	2.951	0.707	1.367		
	[2.345]	[2.340]	[3.299]	[3.304]		
Treatment*Post weather	-6.554**	-6.453**	-7.715**	-7.554**		
	[2.974]	[2.969]	[3.375]	[3.357]		
Constant	-11.527	-13.905	174.347*	178.416*	-26.051	3.845
	[9.561]	[9.619]	[98.969]	[100.030]	[17.117]	[16.772]
Individual fixed Effects	No	No	Yes	Yes	No	No
Importance product fixed effects	No	Yes	No	Yes	No	Yes
Observations	1435	1435	1435	1435	202	202
R-squared	0.059	0.062	0.021	0.025	0.237	0.255
Number of farmers			487	487		

Robust Standard errors in brackets

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

Table 7c. Percentage of Crop loss Due to Weather

Dependent Variable	Loss Percentage due to weather*100					
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.432	0.461			-3.52	-3.566
	[1.693]	[1.689]			[2.312]	[2.331]
Extra	-0.02	-0.02	0.059	0.058	-0.077	-0.066
	[0.078]	[0.078]	[0.088]	[0.089]	[0.076]	[0.082]
Post weather	4.822**	4.696**	4.496*	4.419		
	[1.964]	[1.986]	[2.726]	[2.746]		
Treatment*Post weather	-6.333***	-6.316***	-7.298***	-7.206***		
	[2.385]	[2.388]	[2.650]	[2.655]		
Constant	-11.228*	-10.634*	75.372	73.847	-31.828**	-33.169**
	[6.240]	[6.364]	[74.606]	[74.922]	[14.763]	[13.852]
Individual fixed Effects	No	No	Yes	Yes	No	No
Importance product fixed effects	No	Yes	No	Yes	No	Yes
Observations	1435	1435	1435	1435	202	202
R-squared	0.061	0.062	0.017	0.019	0.256	0.259
Number of farmers			487	487		

Robust Standard errors in brackets

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