

Incentivizing quality in dairy value chains - experimental evidence from Uganda (registered report)

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Abstract

In value chains where quality of the underlying commodity is hard to observe and track, quality upgrading may be challenging. We test two barriers to the development of a market for quality in Ugandan dairy value chains using a field experiment with treatments at different levels. At the farmer level, we conjecture that farmers are paying attention to the wrong quality attributes and design a video-based information campaign to point out what the quality parameters are that matter for processors. We also provide them with a small incentive to put what they learned into practice. Midstream, at milk collection centers where milk is bulked and chilled, we install technology that enables for quick and cheap testing of the milk that is brought in. We look at impact of both interventions at both farmer and milk collection center level and consider outcomes such as milk quality, prices received and quantities transacted.

JEL: O13, O17, Q13

Keywords: value chain upgrading, dairy, quality assurance, information

1 Data collection

We collected data in 4 districts in the southwestern milk shed (Kazo, Kiruhura, Mbarara, and Ntungamo).

Treatment assignment. Sometimes, there is more than one milk collection center in a particular village or trading center. To avoid issues related to providing one MCC with a milk analyzer and the other not, we group milk collection

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centers that are less than 2 km apart (and associated farmers in catchment areas) into the same treatment group. Doing so, we

2 Baseline Balance

During baseline data collection, we collected information on 10 variables at each level to demonstrate balance. The table below list

(although we may only report a subset - indicated with a star - in the paper for space considerations) At the milk collection center level, we will collect the following characteristics:

1. Is this milk collection center (part of a) cooperative? (yes=1)*
2. Number of people employed (full-time) at this MCC? (number)
3. Number of farmers/traders that supply on an average day during the rainy season. (number)
4. Total Capacity of MCC (in liters)*
5. Capacity use during dry season (percentage)
6. Does the MCC pay a premium for quality (yes=1)*
7. Years Experience in MCC*
8. Number of milk cans owned by the MCC
9. Supplies credit/loans to cooperative members and regularly supplying farmers? (yes=1)
10. Facilitates supply of acaracides to cooperative members and regularly supplying farmers? (yes=1)*

At the level of the farmer household, we will collect information on the following 10 characteristics:

1. Household Members (number)
2. Household Head Age* (years)
3. Current Total herd size (cows+heifers+calves) (number)*
4. Number of improved animals in total herd (share) *
5. Liters Produced Total Per Day (average during rainy season) (liters)
6. Liters milk sold per day (on average in the rainy season) (liters)*
7. Normally during the rainy season sells most of its milk to a milk collection center? (yes=1)

Table 1: Balance table

	mean ctrl	analyzer	video	bundle	nobs
	<i>milk collection centers</i>				
Is this milk collection center (part of a) cooperative? (yes/no)	0.575 (0.496)	0.133 (0.089)			127
Total Capacity of MCC (in liters)	4591.457 (2451.97)	438.445 (426.818)			127
Does the MCC pay a premium for quality (yes=1)	0.244 (0.431)	0.012 (0.076)			127
Years Experience in MCC	9.611 (8.068)	-1.778 (1.571)			126
Facilitates supply of acaracides? (yes=1)	0.543 (0.5)	0.039 (0.092)			127
	<i>dairy farmers</i>				
Household Head Age (years)	54.135 (13.494)	-1.756 (2.632)	-2.665 (2.168)	3.428 (3.189)	2229
Current Total herd size (number)	68.037 (80.139)	-1.157 (16.732)	-9.264 (13.032)	-1.749 (20.318)	1948
Number of improved animals in total herd (share)	75.65 (85.338)	-1.935 (20.749)	7.569 (18.276)	-0.142 (21.414)	2229
Liters milk sold per day (on average in the rainy season) (liters)	63.9 (66.72)	-9.778 (15.64)	-2.473 (11.943)	9.875 (16.063)	2229
Average monthly expense (USD) on chemical purchases	71.811 (113.279)	-31.341 (30.51)	-27.857 (24.601)	-0.611 (55.469)	891

Note: First column reports control group means (and standard deviations below); **, * and + denote significance at the 1, 5 and 10 percent levels.

8. Uses only steel can/bucket during sales transactions in the last 7 days before survey? (yes=1)
9. Member of dairy cooperative? (yes=1)
10. What is your average monthly expense (UGX) on chemical purchases to fight ticks (acaracides)? (average during rainy season)*

3 Appendix

Table 2: Balance table

	mean ctrl	analyzer	video	bundle	nobs
		<i>milk collection centers</i>			
Number of people employed (full-time) at this MCC? (number)	3.094 (1.937)	-0.096 (0.323)			127
Number of farmers/traders that supply on an average day during the rainy season. (number)	51.33 (50.471)	9.798 (9.428)			115
Capacity use during dry season (share)	34.886 (21.444)	0.119 (3.685)			122
Number of milk cans owned by the MCC	21.094 (43.168)	-7.719 (7.442)			127
Supplies credit/loans to cooperative members and regularly supplying farmers? (yes=1)	0.85 (0.358)	0.018 (0.074)			127
		<i>dairy farmers</i>			
Household Members (number)	9.55 (4.566)	-1.063 (0.913)	0.451 (0.793)	0.378 (1.145)	2229
Liters Produced Total Per Day (average during rainy season) (liters)	75.65 (85.338)	-1.935 (20.749)	7.569 (18.276)	-0.142 (21.414)	2229
Normally during the rainy season sells most of its milk to a milk collection center? (yes=1)	0.788 (0.409)	-0.131 ⁺ (0.069)	-0.105 [*] (0.043)	0.148 [*] (0.062)	2229
Uses only steel can/bucket during sales transactions in the last 7 days before survey? (yes=1)	0.781 (0.414)	0.066 (0.089)	-0.041 (0.066)	0.039 (0.093)	2229
Member of dairy cooperative? (yes=1)	0.709 (0.454)	-0.18 (0.111)	0.014 (0.063)	0.042 (0.083)	2229

Note: First column reports control group means (and standard deviations below); **, * and + denote significance at the 1, 5 and 10 percent levels.