Competition in Sierra Leone's Cocoa Markets

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How to upgrade the quality of exports?

Setting: Sierra Leone, West Africa

Product:

- Cocoa, the largest non-mineral export by value
- 8.6% of export value
- But quality is poor; Sierra Leone's cocoa price in international markets is low relative to neighboring countries

Two classes of explanations for poor quality:

- Demand side: No price premium for quality, so farmers have no incentive to invest
- Supply side: Price premium exists, but farmers lack infrastructure/capital required to upgrade quality

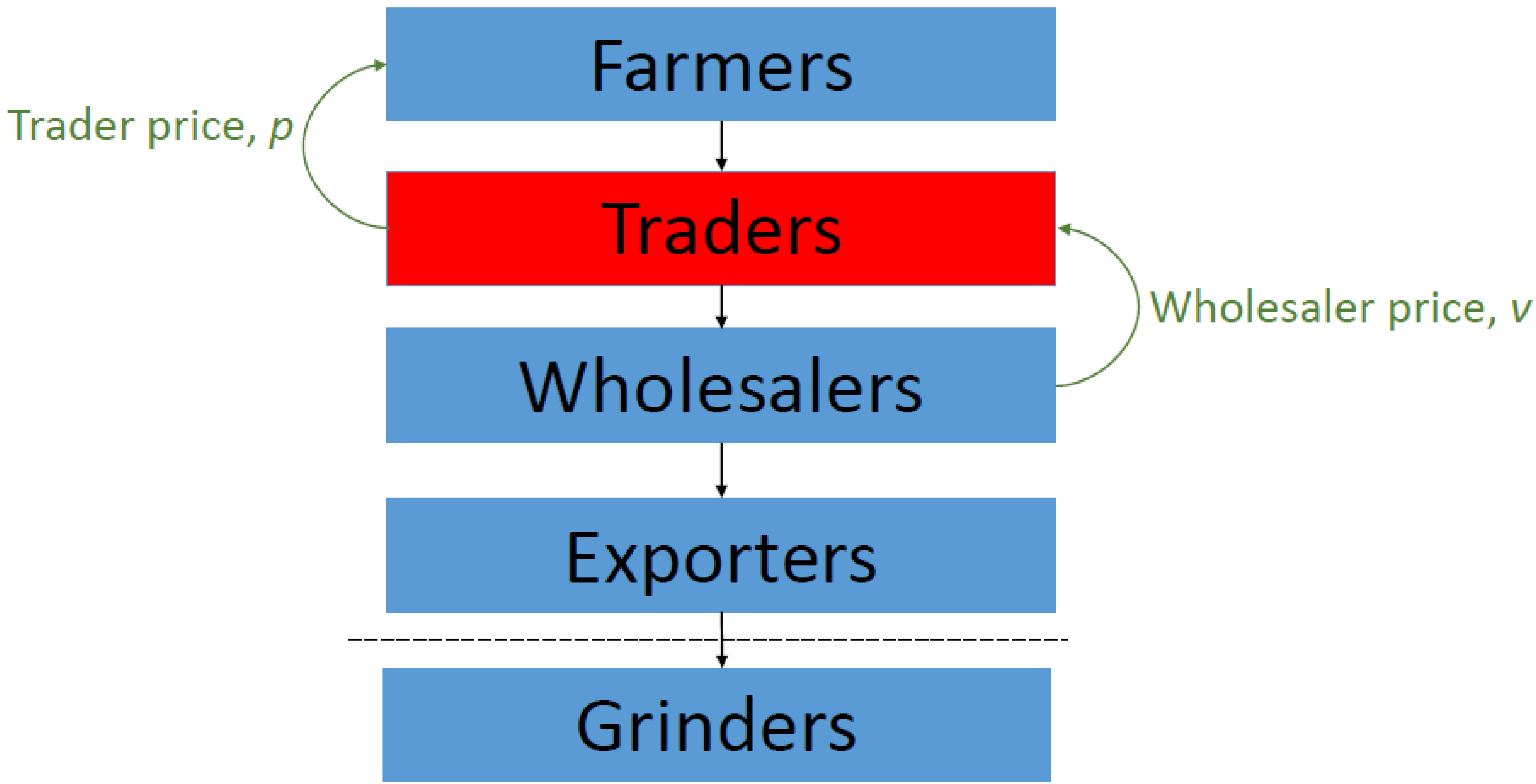
An experiment to test for demand-side constraints

Design:

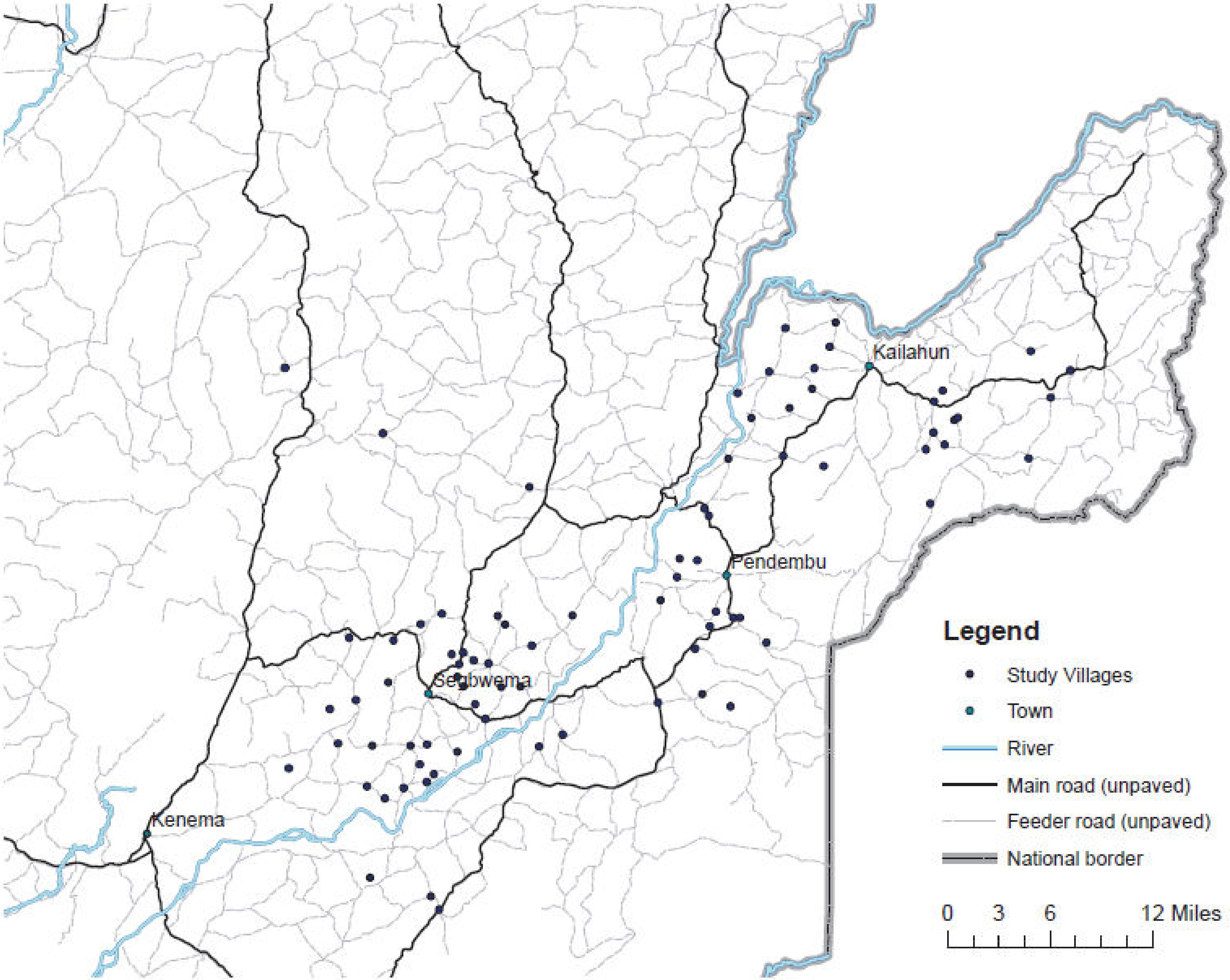
- Treatment: Pay a bonus (per kilogram) to randomly selected set of traders who bring “grade A” cocoa
- Control: Measure quantity of “grade A” cocoa, but don’t pay bonus
- Outcomes: Quantity delivered by quality grade (A, B, C); prices paid to farmers; credit given to farmers

Unique Challenge: How to interpret treatment and control differences when traders operate in the *same market*?

- ➢ Stable unit treatment variable assumption (SUTVA) is violated due to competition between treatment and control
- ➢ Need a model to interpret treatment/control differences



SOURCE: Casaburi and Reed (2019)



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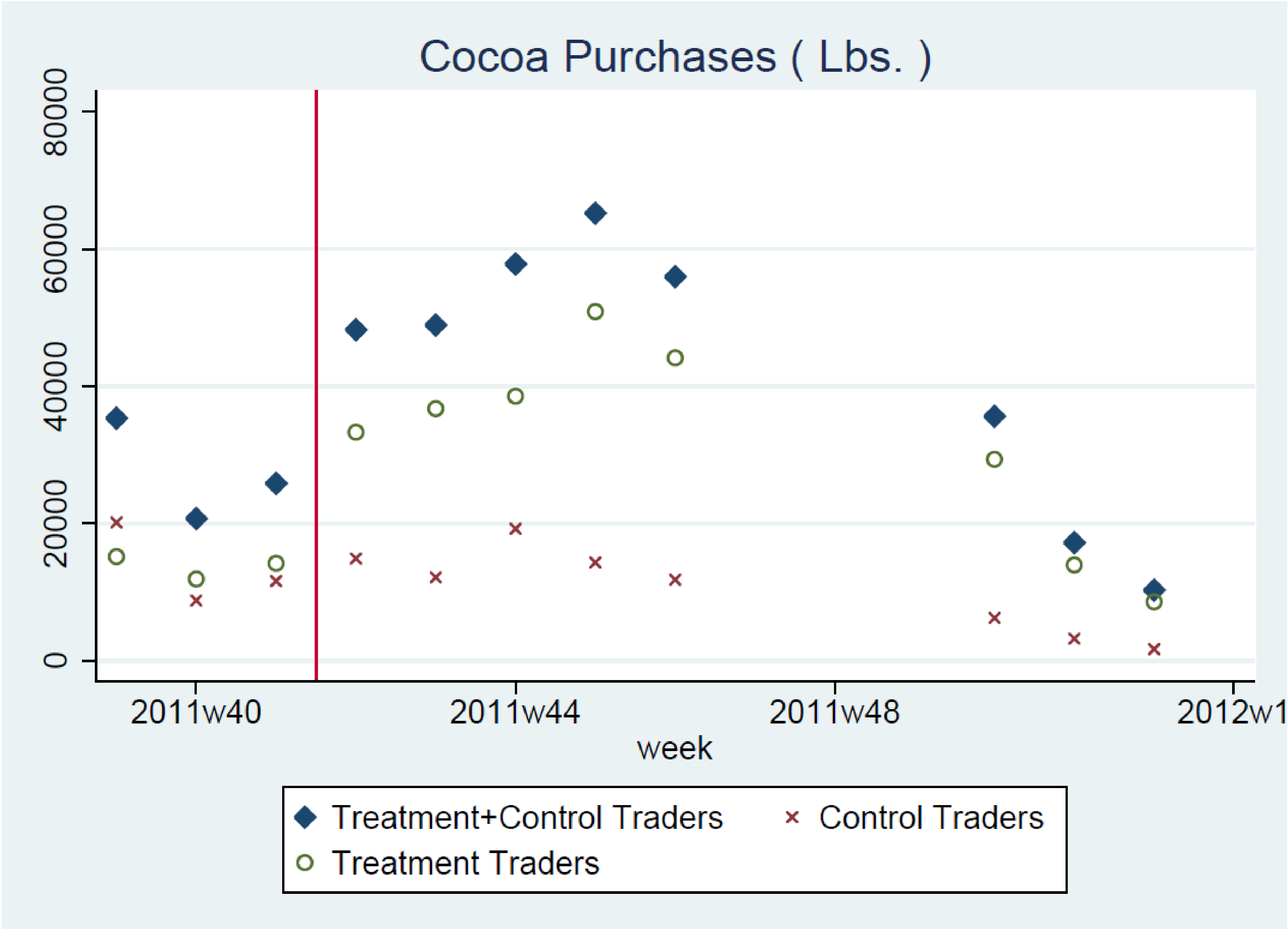

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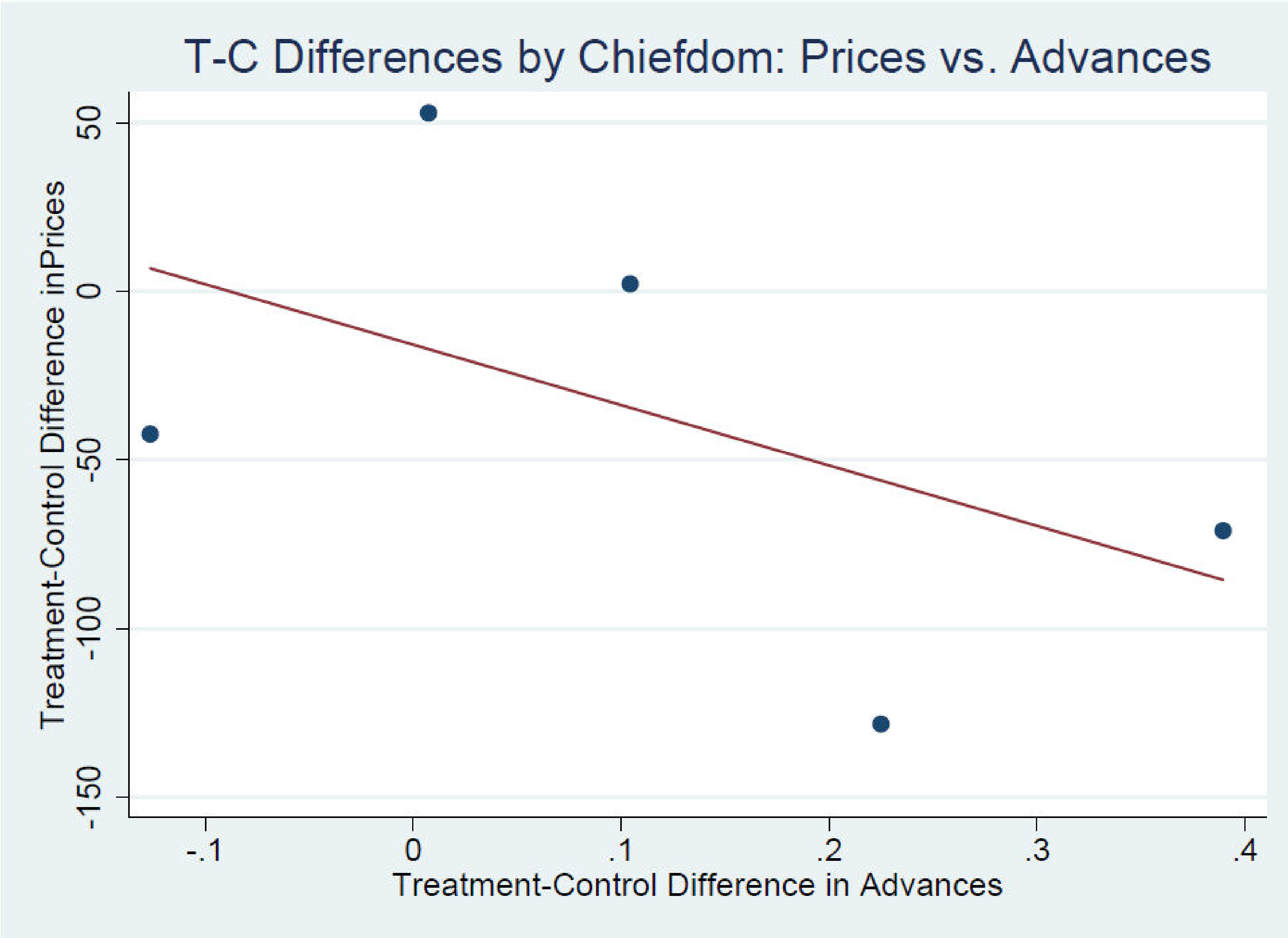
Table 3: Treatment-Control Differences in Advance Payments

	(1)	(2)	(3)	(4)
Treatment Trader	0.14***	0.14***	0.13***	0.14***
	(0.03)	(0.02)	(0.03)	(0.02)
Control Group Mean	0.11	0.11	0.11	0.11
Trader Controls		X		X
Village Controls			X	X
Observations	1837	1825	1837	1825

SOURCE: Casaburi and Reed (2019)



SOURCE: Casaburi and Reed (2019)

Using theory of industrial organization to interpret results

- Treatment and control interact in one market
  - Treatment traders “steal” quantity from control by offering credit or higher prices

- Treatment and control price differences imply traders are *differentiated*, in that one is able to charge a lower price while others charge higher prices (weak competition)

$$P_{Treatment} - P_{Control} = \frac{Bonus \ * D}{(1 + D)}$$

- If D = 1, traders are perfectly differentiated
- If D = 0, they are homogenous; the “law of one price” holds

- Combining price and credit differences → **D = 0.18**

Conclusions

- **Farm-gate market appears to work well**
  - Traders deliver high quality cocoa in response to bonus
  - Traders are a source of credit for farmers; some of quality premium is paid in credit, rather than price
  - Low differentiation implies traders are not able to charge substantially different prices from one another

- **Demand-side constraints (at the farm gate) likely not the problem**
  - <u>Gov't should focus on supply-side interventions</u>

- **Caveat: Potential demand side issues in *international* market**
  - Cocoa processing oligopoly (Barry Callebaut, Olam, Cargill)