

Material Supplementary to:

Astrid Hopfensitz and Josepa Miquel-Florensa, “Mill ownership and farmer's cooperative behavior: The case of Costa Rica coffee farmers”

Appendix A: Tables

Table A1: Summary statistics by region and study location

	Region: Tarrazú					Region: Turrialba	
	Total for region	Coop 1	Coop 2	Coop 3	Private 2	Total for region	Private 1
Number of 'poligonos'	4940	366	784	735	665	1781	1370
Total extension (ha):	33945	2618	6627	5886	3187	27030	17684
Use of the land:							
Coffee	63%	49%	64%	65%	43%	43%	45%
Yearly crops	1%	< 1%	< 1%	< 1%	8%	1%	1%
Permanent crops	1%	1%	1%	1%	2%	15%	11%
Pasto (grass for animals)	15%	16%	16%	7%	24%	14%	16%
Forest	14%	32%	16%	18%	14%	20%	20%
Other	6%	2%	3%	9%	9%	7%	8%
Principal variety of coffee planted :							
Caturra	87%	57%	81%	90%	89%	89%	88%
Catuai	11%	47%	17%	9%	8%	6%	6%
Costa Rica-95	< 1%	.	< 1%	1%	1%	2%	2%
Other	< 1%	3%	4%
Share of overall coffee planted by farmer's age:							
15 to 24 years	25%	5%	11%	20%	22%	< 1%	< 1%
25 to 59 years	50%	74%	66%	60%	53%	65%	67%
More than 60 years	23%	25%	22%	18%	25%	3%	24%
Age of the plantation:							
0-9 years	13%	14%	13%	20%	14%	19%	21%
10-19 years	40%	35%	38%	38%	46%	44%	43%
20-29 years	22%	17%	28%	20%	17%	23%	24%
30-39 years	8%	13%	9%	5%	8%	9%	8%
40-49 years	4%	6%	3%	2%	4%	3%	2%
more than 50 years	3%	1%	2%	1%	1%	2%	2%
missing	9%	15%	7%	14%	10%	1%	1%
Type of fertilizer (to soil):							
Chemical	92%	94%	97%	94%	88%	69%	72%
Organic	2%	2%	< 1%	< 1%	4%	5%	6%
Both	6%	4%	2%	5%	8%	26%	21%
missing	< 1%	.	< 1%	< 1%	< 1%	< 1%	< 1%
Land tenancy arrangement:							
Owned	96%	100%	100%	99%	98%	95%	94%
Rented	4%	< 1%	< 1%	< 1%	2%	4%	5%
Borrowed	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Other	< 1%	< 1%	.	1%	< 1%	< 1%	1%
Distribution of plots by size:							
less than 1ha	27%	26%	10%	17%	26%	18%	19%
1 to 5 ha	48%	41%	46%	49%	56%	57%	58%
5 to 10 ha	12%	12%	18%	18%	8%	13%	13%
10 to 20 ha	7%	11%	14%	9%	4%	5%	5%
20 to 50 ha	4%	7%	9%	5%	4%	3%	3%
50 to 100 ha	1%	2%	1%	1%	1%	3%	3%
more than 100 ha	1%	1%	1%	1%	1%	.	.

Distributions calculated based on information extracted from Censo Cafetalero Regiones de Turrialba y Coto Brus (2003) and Regiones de Tarrazú, Pérez Zeledón y Zona Norte (2006). Percentages not adding up to 100% due to missing observations.

Appendix B: Experimental procedures

Participants were recruited by announcements from their cooperative or private beneficio to participate in a scientific study. No information about the context of the experiment was made available before hand. Participants were received in meeting rooms of their cooperative or private beneficio and individually seated. Instructions were orally explained by a native Spanish speaker and short written summaries were provided. Contributions to either the private or public good were implemented by allocating small wooden sticks between two envelopes marked private or public good. Different tasks were colour coded to avoid any confusion.

Upon arrival, participants were provided with a random identifier that allocated them to their seat. Each seat had a set of the written instructions. To ensure understanding instructions were read aloud and explained in great detail on a flipchart. Participants had to be able to correctly answer control questions to proceed with the study.

To ensure the understanding of the game structure, in each part participants first played a public good game with other participants in the same session (results of this game are not discussed in this paper). Then the two hypothetical decision situations were presented. In these situations the experimenter showed the envelopes containing the strategies from these previous sessions to ensure that participants understood that these choices were already taken.

Written summary (translated from Spanish):

The result of this study depends on your decisions and on the decisions of 3 other participants in this project. You will never know the identity of these persons, and they will never know that they played with you. All of you will be taking the same type of decisions.

In this game you will accumulate a number of points that at the end will be exchanged into colones with the equivalence of 1 point = 50 Colones.

Part 1:

Game 1a – with participants in same session:

Imagine the situation where **you are playing with three producers in this room.**

You did receive two envelopes:

- In one of the envelopes, the ‘Personal Envelope’, there are 10 points. These points are yours.
- The other envelope, the ‘Group Envelope’, is empty.

You now have to decide how many of your 10 points you want to transfer to the ‘Group Envelope’.

What happens if you transfer points to the ‘Group Envelope’?

1. You will have less points in your ‘Personal Envelope’, but
2. For each point that you add to the ‘Group Envelope’, we will add 0.5 points.

For example:

- If you transfer all 10 points, we will add 5 points and there will be 15 points in the ‘Group Envelope’.
- If you do not transfer any point, we will not add anything to the ‘Group Envelope’

What happens with the points in the ‘Group Envelope’?

- The points in the ‘Group Envelope’ will be distributed equally among the members of the group, including yourself.

Example:

- If there are 20 points in the ‘Group Envelope’, you and each of the other 3 members of the group will receive 5 points.

You will not know how many points the other participants did transfer to the ‘Group Envelope’, and the other participants will never know how many points you did transfer. All participants will decided how many points to transfer before knowing the choices of the other members of the group.

You have one minute to transfer the number of points you want from one envelope to the other.

When done, please leave the envelopes in front of you.

Game 2a – hypothetical scenario with members of a cooperative:

Now let's repeat the previous situation and imagine that you are playing with **three producers who belong to a cooperative.**

You did receive two envelopes:

- In one of the envelopes, the 'Personal Envelope', there are 10 points. These points are yours.
- The other envelope, the 'Group Envelope', is empty.

You now have to decide how many of your 10 points you want to transfer to the 'Group Envelope'.

Game 3a - hypothetical scenario with members from the free market:

Now let's repeat the previous situation and imagine that you are playing with **three producers who sell to the private market.**

You did receive two envelopes:

- In one of the envelopes, the 'Personal Envelope', there are 10 points. These points are yours.
- The other envelope, the 'Group Envelope', is empty.

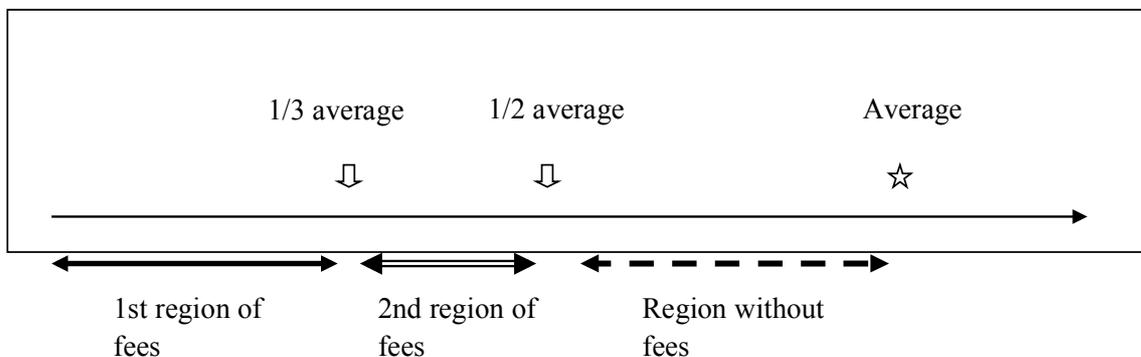
You now have to decide how many of your 10 points you want to transfer to the 'Group Envelope'.

Part 2.

Imagine now that in the game you just played there is the possibility to establish a **Coordination System**: a person from outside the group will be able to decide whether to penalize the players depending on their contribution to the 'Group Envelope'.

More in detail: The 'Coordinator' will look at the average contribution of the group, and he will establish a penalty to the players that contributed below this average. In other words, the 'Coordinator' will charge a fee from the players that contribute relatively little but received the benefits from other's effort. The fees will vary with the distance between the player's contribution and the average of the group.

For example:



<i>Contribution</i>	0	<i>Average</i>	<i>Less than half the average</i>	<i>Less than one-third of the average</i>
		☆	2 ^a Region of fees	1 ^a Region of fees
<i>Fees</i>		0		

To have a 'Coordinator' is costly:

- Each member of the group has to pay 1 point to the 'Coordinator' for his work.
- The 'Coordinator' receives the payment from the players (4 points), that we multiply by 1.5 (= 6 points), and has to return ¼ of the fees to the 'Group Envelope'. Imagine now that you are the coordinator of a group (Cooperative/Free market):

In the following table, state the contribution to the 'Group Envelope' that you consider minimal, and the punishment to the players as function of the deviation from the average.

Minimal contribution: ____ points.

Player's contribution	0	Average	Less than half the average	Less than one-third of the average
Fee				

Now we will repeat the sequence of games we did at the beginning, but before that we give you the possibility to choose if you want a coordination mechanism of not. The 'Coordinator', in case you choose one, will be a private market seller/cooperativist. The presence of a 'Coordinator' has a cost of 1 point, which will be paid by each member of the group.

Do you want to add a Coordinator (from coop / free market) to your group for game 1 (with producers in this room)?

Do you want to add a Coordinator (from coop / free market) to your group for game 2 (with members of a cooperative producers)? _____

Do you want to add a Coordinator (from coop / free market) to your group for game 3 (with producers selling to private market)? _____

Game 1b – with participants from same session:

Imagine now the situation where you're playing with **three producers in this room**.

- Depending on your response to the previous question, a coordinator will oversee the game.

Please decide how many of the 10 points you will transfer to the 'Group Envelope'. Please make your decision now.

Game 2b – hypothetical scenario with cooperative farmers:

Imagine now the situation where you're playing with **three producers that are part of a cooperative.**

- Depending on your response to the previous question, a coordinator will oversee the game.

Please decide how many of the 10 points you will transfer to the 'Group Envelop'. Please make your decision now.

Game 3b – hypothetical scenario with farmers selling to free market:

Imagine now the situation where you're playing with **three producers that are selling to free market.**

- Depending on your response to the previous question, a coordinator will oversee the game.

Please decide how many of the 10 points you will transfer to the 'Group Envelop'. Please make your decision now.

Thank you for your participation!