Web Appendix 1: A Model of Barriers to Product Adoption

As noted in the body of the paper, in well-functioning markets, poor people should be able and willing to purchase cost-saving items, such as stoves that substantially reduce fuel expenditures. In this appendix we lay out an illustrative model of the decision to purchase an improved appliance with perfect information and capital markets. We then model three market imperfections: imperfect information about energy savings, imperfect information about the durability of the new appliance, and liquidity constraints and/or present bias.

We show how a free trial period can overcome the first barrier, while time payments coupled with the right to return the appliance and stop payments can address the remaining barriers. Finally we present a model with all market imperfections and show how a contract combining a free trial period, time payments, and the right to return the product addresses all four barriers.

Although the model is framed in terms of appliances, it also applies to investment goods with uncertain returns and liquidity-constrained firms.

Consumer Behavior with Traditional Appliance

Assume an infinitely lived consumer has income y each period. She has to purchase Q units of energy each period to run her traditional appliance (with the price of energy normalized to unity) and she receives utility from non-energy consumption c_t. She can borrow or save with a gross rate of return $R = 1+r > 1$, and her subjective discount rate is δ (< 1).

The consumer with access to perfect capital markets maximizes the present value of utility

$$\sum_{t=0}^{\infty} u(c_t)\delta^t,$$

subject to a lifetime budget constraint that the present value of consumption is not more than the present value of her lifetime income stream:

$$\sum_{t=0}^{\infty}(Q + c_t)/R^t = \sum_{t=0}^{\infty} y_t/R^t.$$

Without loss of generality normalize her utility without the appliance, $u(y\text{-}Q)$, as zero.

Consumer Behavior with Improved Appliance and Perfect Capital Markets and Information

Assume an improved appliance comes on the market that costs P in the first period and uses φQ of energy each period until the appliance dies, with $0 < \varphi < 1$. The appliance has a per-period exponential death rate ψ, with $0 < \psi < 1$, and upon the appliance's death, the consumer can return to her old technology at zero cost.

With perfect capital markets the consumer's willingness to pay for the new appliance is the expected present value of lower spending on energy during the lifetime of the appliance:

$$p^* \leq \sum_{t=0}^{\infty}((1-\varphi)Q(1-\psi)^t)/R^t = (1-\varphi)QR/(R+\psi-1) \qquad (1)$$

Call the critical price p^*, which defines the efficient willingness to pay (we assume indifferent consumers purchase the appliance). As expected, willingness to pay is higher if the appliance is very efficient (low φ), the household uses a lot of energy without the new appliance (high Q), the appliance usually lasts a long time (low ψ), and if other investment opportunities are poor (low R).

Imperfect Information on Energy Savings

We next consider several market imperfections, starting with consumers who doubt the firm's claims about energy savings.

Assume the consumer is unsure of energy savings and discounts the firm's true claim by a factor $\gamma < 1$. The consumer continues to purchase if price is below the present value of expected savings, but those savings are now discounted by γ. Thus, the highest willingness to pay with uncertain savings is:

$p^{us} = \gamma\, p^*$.

Now assume the consumer is offered a free trial of one period. During this period the consumer observes true savings (that is, that energy use falls to φQ). The consumer will choose to return the appliance if it breaks in the first period or if it does not show sufficient savings to justify the price. The consumer will choose to pay for the appliance after the free trial if the price with the free trial (p^{ft}) is below expected savings of the appliance, but those savings are just what are calculated in equation (1):

$p^{ft} = p^*$.

The cost to the firm of the free trial is receiving the payment one period later and the possibility of not being paid if the appliance breaks during the free trial: $(r+\psi)\, p^*$. Thus, the firm will offer the free trial whenever the consumers "suspicion factor" $\gamma > (r+\psi)$. Over a single week or two for a free trial we expect the interest rate plus rate of product breaking $(r+\psi)$ to be very small, which makes the free trial very appealing when consumers doubt the value of a product that they can quickly evaluate. (We ignore here the firm's cost of returning to the home a second time to receive payment plus the depreciation suffered by appliances that are returned; for example, if consumers have heterogeneous tastes or, for energy-saving appliances, different baseline energy use.)

Although we do not model it here, as noted in the text a free trial can also be a credible signal that the stove will, in fact, save fuel (Moorthy and Srinivasan, 1995; Shieh, 1996).

Imperfect Information on Durability:

Return to the assumption of full information about energy savings, but now assume the consumer expects the new appliance will break at rate ψ' each period, which is above the true rate ψ. With some algebra one can show the consumer's willingness to pay for the appliance with this imperfect information is:

$p^{ii} = p^* (r+\psi) / (r+\psi') < p^*$.

As expected, the consumer's willingness to pay declines, with the decline larger as the relative bias on the failure rate (ψ'/ψ) grows.

A credible promise to make a partial refund if the product breaks quickly can eliminate this bias. Unfortunately, a consumer would not necessarily trust the firm's promise, particularly in areas (as where we study) where consumers do not consider the court system accessible for disputes such as these. Thus, we address solutions to the problem of pessimistic views on durability that do not require this high level of consumer trust below.

Liquidity Constraints and Present Bias

There is evidence many consumers in poor nations find it difficult to come up with a large sum for a lump sum investment (Banerjee, 2003; Mullainathan and Shafir, 2009). We model an extreme version of liquidity constraints in which a liquidity-constrained consumer can neither save nor borrow. Thus, each period the consumer consumes her income after buying energy and perhaps an appliance.

The lifetime utility without the new appliance is the value of income minus energy costs:

$\sum_{t=0}^{\infty} u(y-Q)\delta^t = 0$ (due to our normalization).

A liquidity-constrained consumer is unable to purchase the appliance when her period's disposable income is less than the price charged to liquidity-constrained consumers, p^{lc} (that is, if $y - \varphi Q < p^{lc}$). If the appliance is potentially affordable (that is, $p^{lc} + \varphi Q < y$), then a buyer's initial-period consumption declines by the entire price:

$c_0 = y - \varphi Q - p^{lc}$.

Assume unbiased expectations of the appliance's savings and that the appliance never dies (i.e., $\gamma = 1$ and $\psi = \psi' = 0$). Then the liquidity-constrained consumer buys the new appliance if expected lifetime utility with the new appliance is greater than without it, with her initial period consumption equal to $y - \varphi Q - p$:

$$u(y-\varphi Q-p) + \sum_{t=1}^{\infty} u(y-\varphi Q)\delta^t > 0 \qquad (2)$$

In words: the initial period disutility of purchasing the appliance must be outweighed by the utility gain when the appliance is saving energy.

In most cases willingness to pay is higher without liquidity constraints than with them. For example, if $\delta = 1/R$, a liquidity constraint always decreases demand. Jensen's inequality implies that inequality 2 is not satisfied (that is, the consumer will not purchase the appliance) at the maximum willingness to pay for the unconstrained consumer (p^* from equation 1). Intuitively, a lump-sum payment for the appliance reduces utility more than when the consumer could use savings or borrowing to spread out the cost of the appliance.[1]

[1] An exception holds when the market interest rate is far above the consumer's impatience ($R > 1/\delta$), so:

$$u(y-\phi Q-p^*) - u(y-\phi Q)\,\delta/(1-\delta) < 0,$$

using the definition of p^* from equation 1 (where p^* falls as R rises).

Alternatively, assume the consumer is offered a rental contract where she keeps the appliance until the appliance breaks as long as she makes a time payment equal to energy savings, $(1\text{-}\varphi)Q$. In this case even liquidity-constrained consumers purchase the product when it increases lifetime utility.

Importantly, this rental contract also removes the consumers' risk of the product's uncertain lifetime. Thus, this contact also solves the problem if the consumer has biased expectations of the products' death rate ($\psi' > \psi$). Furthermore, this rental contract does not require the large amount of trust in the firm's honesty that a money-back guarantee requires.

With present bias the consumer maximizes a slightly different utility function (assuming the β-δ formulation of Laibson 1997):

$$u(c_0) + \beta \sum_{t=1}^{\infty} u(c_t)\delta^t$$

Here future benefits in period $t > 0$ are discounted not just by δ^t, but also by an extra term β (< 1).

A consumer with present bias will purchase the appliance if her expectation of her future utility is positive:

$$u(y - \varphi Q - p) + \beta \sum_{t=1}^{\infty} u(y - \varphi Q)\delta^t(1 - \psi)^t > 0.$$

The implied willingness to pay is always lower than without present bias because β (which is less than unity) multiplies the summation of expected future benefits.

Importantly, the disutility of paying future time payments is also discounted by β. Thus, present bias need not reduce willingness to paying using time payments. Furthermore (though not part of our model), ending payments if the product breaks quickly is similar to a money-back guarantee, which can act as a credible signal of durability (Grossman 1981; Davis, *et al.,* 1995).

Multiple Imperfection:

Without liquidity constraints if there were no appliance for sale the consumer with $R > 1/\delta$ would spend less than current income and save for the future. When the appliance is available for purchase, the presence of the liquidity constraint can raise willingness to pay for the appliance because the consumer has no other means to shift spending power to future periods. Thus, she may purchase the appliance even if the price is above p^* to raise her future non-energy consumption.

When income is lumpy, consumers with high transitory incomes who are liquidity-constrained can also have higher demand for an energy-saving appliance than those who are not liquidity constrained. Intuitively, when income is very high the marginal utility of consumption is low. Purchasing an energy-saving appliance is the only way to move purchasing power from the period of high income to other periods.

In our model, the firm should give a free trial of the appliance just prior to the arrival of the high income (*e.g.*, just prior to harvest) and then sell for a lump sum in the period when income is high.

The previous section showed how a free trial and time payments that cease if the consumer is dissatisfied can each address a market failure for appliances. In this section we combine these elements into a sales offer that addresses all four imperfections: imperfect information on energy savings, imperfect information on durability, liquidity constraints, and present bias. Assume pessimism about energy efficiency ($\gamma < 1$), pessimism about durability ($\psi' > \psi$), liquidity constraints that limit consumption to post-energy income each period, and present bias ($\beta < 1$). Now the consumer's decision rule is to purchase a new appliance if:

$$u(y - \varphi Q(1-\gamma) - p) + \beta \sum_{t=1}^{\infty} u(y - (1-\gamma)\varphi Q)\delta^t(1-\psi')^t > 0.$$

That is, the first-period disutility of the purchase must be less than the (pessimistic) expected savings when the appliance is (pessimistically) expected to be working, all discounted by present bias. Each of the four barriers lowers maximum willingness to pay with four barriers (p^{ab}) relative to that of the well-informed consumer with no liquidity constraints (p^* in equation 1).

Consider a sales offer combining a free trial with time payments that end whenever the consumer would like to return the appliance. If the time payments with the novel contract (p^{nc}) are less than or equal to experienced energy savings (φQ), the consumer's problem is trivial:

1. Accept the free trial.
2. If there are no or low energy savings or the appliance breaks during the free trial period, return the appliance at zero cost.
3. Otherwise, pay the time payment out of the experienced savings each period.
4. When the appliance breaks or quits delivering savings, return the appliance and make no more time payments.

Importantly, at the end of the free trial, the expected present value of these time payments equals the willingness to pay with none of the four listed barriers (p^* in equation 1).

If there are costs to collecting time payments or if ownership increases consumer carefulness maintaining the appliance, ongoing rental payments may not be the privately or socially optimal sales offer. In that case, higher time payments that have a limited duration can be both profitable for the firm and constrained efficient whenever there are heterogeneous energy savings so that at least some consumers can pay for the appliance out of the flow of energy savings. With this offer, a free trial followed by rent-to-own, the consumer continues to use the appliance after it is paid off. Such contracts largely, but not entirely, relax consumer liquidity constraints.

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Web Appendix 2: Pictures of Old and New Stoves for both Study 1 & 2

Study 1: Pictures of Traditional Charcoal stoves and the new fuel-efficient Ugastove


Figure 2A (Left): Traditional Charcoal Stove; Figure 2B (RIght): Ugastove Improved stove

Figure 2C: Two pictures of the traditional three stone fire in a typical kitchen in rural Mbarara


Figure 2D: Picture Envirofit G3300

Web Appendix 3: Study 1 Sales Script

Tell customer <u>about the improved stove</u>:

- This is an improved cookstove, produced by a company called Ugastove.

  [*Present stove*]

- This stove is more durable than clay or metal stoves. In fact, it is expected to last for 4 years if you take good care of it, and comes with a 1-year warranty. This means that it will be repaired for free if it breaks within 1 year of purchase, provided that you have taken good care of it.
- But perhaps best of all, it has a special design and is made with special materials that make it good at retaining heat. For example, the interior is made out of a clay composite that contains mica and sawdust. This means that you can cook the same amount of food with half as much charcoal as you would need if you were to use a traditional clay or metal stove.
- How much money do you currently spend on charcoal for cooking?

  [*Record amount and time interval on survey form*]

- If you use this new stove, and stop using your traditional stove, I would expect that same amount of charcoal to last you [*double the time interval reported for charcoal expenditure*] instead of [*time interval reported for charcoal expenditure*].
- You will save money every time you use this stove instead of your traditional stove…And the more that you use this stove instead of your traditional stove, the more money you will save!
- Furthermore, because this stove uses less charcoal, it produces less smoke, which means that it can prevent health problems from developing in you and your children, such as respiratory and lung failure.
- Finally, by using less charcoal, this stove saves Ugandan trees from being destroyed.
- We have a couple of different sizes of stoves. The best size for you depends on the number of people that you cook for. How many people do you cook for?

  [*record number on survey form*]

  In that case, I recommend this size of stove:

  - [*If 5 or fewer people → recommend size 1*]
  - [*If between 6 and 10 people → recommend size 2*]
  - [*If between 11 and 15 people → recommend size 3*]
  - [*If more than 15 people → recommend size 3 if they currently use a stove of similar size; otherwise, tell them that you do not have a stove that is a good size for them and end the interview*]

  [*Show stove sizes. Allow consumer to choose different size if desired. However, warn the customer that if the improved stove is replacing a stove of a different size, then fuel savings might be lower than advertised. Also, the warranty is only good if customer takes good care of the stove. This means that customer should not mistreat it by using a small stove with a large pot.*]

Tell customer about <u>TRADITIONAL</u> contract (if instructed to offer traditional contract):

- I would like to give you the opportunity to purchase a stove like this, because I think that you will like it.
- If you use this stove and do not use your traditional stove, I predict that you will save about [*half of their weekly fuel expenditure – use chart to estimate (see 4th column)*] shillings every week. This is because you will only need to purchase about half as much charcoal.
- If you use this stove and also continue to use your traditional stove, you are likely to save [*one third of their weekly fuel expenditure – use chart to estimate (see 3rd column)*] shillings each week.
- This stove costs [*size1: 14,000, size2: 18,000, size3: 22,000*] shillings.
- You can purchase it right now or, if you need time to think about your decision or to collect money, I can return next week, and you can purchase it then.

Tell customer about <u>NOVEL</u> contract (if instructed to offer novel contract):

- I would like you to try a stove like this for free for 1 week, because I think that you will like it.
- If you use this stove and do not use your traditional stove, I predict that you will save about [*half of their weekly fuel expenditure – use chart to calculate (see 4th column)*] shillings this week. This is because you will only need to purchase about half as much charcoal.
- If you use this stove and also continue to use your traditional stove, you are likely to save [*one third of their weekly fuel expenditure – use chart to estimate (see 3rd column*] shillings this week.
- I will return next week at the same time.
    - If the new stove has not saved you very much money or you do not like it or it breaks, just return the stove and you owe nothing!
    - If you would like to keep the stove for another week, then I ask that you pay me [*size1: 3500, size2: 4500, size3: 5500*] shillings.
- Again, you can give the stove back to me when I return next week if you don't wish to keep it, and you will owe me nothing.
- After the second week, I will come back again, and you will again have the opportunity to pay me [*size1: 3500, size2: 4500, size3: 5500*] shillings in order to keep the stove for another week. Or, once again, if you decide that you do not want to keep the stove, you can give it back to me and you will not owe me anything.
- If you continue to like the stove and continue to pay me [*size1: 3500, size2: 4500, size3: 5500*] shillings for 4 weeks, then you will get to keep the stove and will not owe me anything else. The stove will be yours!

Tell customer <u>how to care</u> for the improved stove:

- Crush charcoal *before* placing it inside of the stove.
    - Crushing charcoal inside of stove can damage stove.
- Fill the stove with charcoal up to the marked line.
    - The stove will weaken if pot is resting on charcoal rather than the stove's rim.
    - Adding too much charcoal prevents proper airflow, causing poorer performance.
- Use paper/sticks/paraffin to light stove.
- Use stove's doors to regulate fire.
- After cooking, the stove is still hot enough to boil 5 liters of water without adding additional charcoal.
    - Take advantage of this heat by boiling water.
- Remove ash with a broom/brush.
    - Shaking or hitting the stove on ground can cause the metal exterior to separate from the clay interior.
- Keep the stove dry.
    - Do not leave stove out in the rain.
    - Clean with a broom/brush; do not use water.

Web Appendix 4: Study 1 Household Survey

NOVEL STOVE CONTRACT: Pre-Trial Visit

1a. Date (e.g. 27/Mar/2009):	1b. Start time (e.g. 12:50pm):	1c. Enumerator's name:

2a. Household Name:		2b. Household ID (DDMMYY-EnumeratorCode-HHNumber)	2c. Gender
2d. Telephone contact: Phone # of: Respondent Household Neighbor		2e. District:	
2f. Division/Town:		2g. Parish:	
2h. Zone (or village if zone is unknown):		2i. Cluster ID:	
2j. Primary language 1. Luganda 2. English 3. Swahili 4. Runyankole	2k. Interview language 1. Luganda 2. English 3. Swahili 4. Runyankole	2l. How are you related to the head of household? 1. Head of household 2. Wife of head of household	

3a	**How did the consumer's interaction with the sales team begin?** 1. *Sales team approached* the consumer today (randomly selected for visit). 2. *Consumer approached* the sales team when not near any household 3. *Consumer approached* the sales team/ joined in their conversation, or was invited to join discussion by another consumer when sales team was in neighborhood for *initial visits* today. Household ID of *randomly selected* respondent:_____ 4. Sales team found consumer at home of randomly selected consumer. Randomly selected consumer cooks separately and gets a separate form. (If they cook together, use only 1 form for the 2 of them.)

	Household ID of *randomly selected* respondent:_____
3 g-3i	**Did the consumer know about the contract being offered <u>before</u> this current direct interaction with the sales team began?** (Answer question for each of the contract's elements) 3g. Installments? 1. Yes 2. No 3. Unable to determine 3h. Free-trial? 1. Yes 2. No 3. Unable to determine 3i. Right-to-return? 1. Yes 2. No 3. Unable to determine [*Skip to 4a if 'no' or 'unable to determine' for all of the above 3 questions.*]
3 j	[*If knew about at least one element of contract <u>before</u> direct interaction with sales team*] **How did consumer hear about <u>our contract</u>?** 1. Overheard previous presentation 2. Told about the contract by another consumer 3. Did not respond/ cannot determine 4. Other (please specify):

4a	**What types of stoves do you *use* on a weekly basis?** **How many of each type do you *use*?** **What type of fuel do these stoves use?** [*If consumer does not respond to these questions, indicate the number of stoves that you observe in use and also circle "did not respond*.]	a. Number of clay stoves using charcoal: ____ b. Number of metal stoves using charcoal: ____ c. Number of metal stoves using wood: ____ d. Number of improved stoves using charcoal: ____ e. Number of improved stoves using wood: ____ f. Number of 3-stone stoves (open fires) using wood: ____ g. Number of kerosene stoves: ____ h. Number of gas stoves: ____ i. Number of electric stoves: ____ j. Did not respond: ____ k. Other (specify type and quantity): _____ *[If household does not use wood or charcoal for cooking, end interview here.]*	
4b-4c	**Which of your stove(s) do you use most often?** **What is its current condition?**	4b. Stove(s) used <u>most</u> often a – k: _____	4c. Current condition of stove(s)

	1=new or almost new 2=good 3=ok 4=poor	a – k: (_____) -------*from Question 4a*--- ----	1 – 4: _____ 1 – 4: (_____)

4d	**Do you *own* a working improved stove?**	1. Yes 2. No [*Skip to 4i*] 3. Unsure or did not respond [*Skip to 4i*]

IF IMPROVED STOVE IS OWNED [Ask 4e – 4h and then skip to 5a]:

4e	**Do you know how long you have had your improved stove?**	1. Yes 2. No [*Skip to 4g*] 3. Did not respond [*Skip to 4g*]	
4f	[*If yes*] **How long have you had the improved stove?**	Length of time: _____	Unit of time: 1. Day(s) 2. Week(s) 3. Month(s) 4. Year(s)
4g	**How often do you use your improved stove?**	1. Always [*Skip to 5a*] 2. Sometimes [*Skip to 5a*] 3. Rarely 4. Never 5. Do not know [*Skip to 5a*] 6. Did not respond [*Skip to 5a*]	

4 h	[*If rarely or never*] **Why don't you use the improved stove more often?**	a. Not the proper size [*Skip to 5a*] b. Does not cook well [*Skip to 5a*] c. Too heavy [*Skip to 5a*] d. Do not know [*Skip to 5a*] e. Did not respond [*Skip to 5a*] f. Other: _____ [*Skip to 5a*]

IF IMPROVED STOVE IS NOT OWNED (or ownership is unknown), ask 4i – 4l:

4 i	**Have you seen or heard about an improved cookstove like this one before today?**	1. Yes 2. No [*Skip to 5a*] 3. Do not know if s/he had seen/heard about improved stove like ours [*Skip to 5a*] 4. Did not respond [*Skip to 5a*]
4 j	[*If yes*] **Where have you seen or heard about cookstoves like this?** [*Circle all answers that consumer mentions*.]	a. In supermarket/ hardware store/ cages b. Being sold from truck c. Sold by Living Goods or health promoter d. Friend/ neighbor/ relative has one e. Television f. Trade show g. From when CIRCODU visited previously h. Used to own such a stove i. Do not know j. Did not respond k. Other: _____
4 k	[*If yes*] **What do you know about cookstoves like this?** [*Obtain knowledge about cookstove before sharing information about the stove*.] [*Circle all answers that consumer mentions*.]	a. Expensive b. Saves fuel/ money c. Retains heat d. Cooks well / works well e. Long-lasting f. Attractive color g. Good design / materials/ weight/ sits well h. Produces less smoke (good for health) i. Good for the environment (saves trees) j. Good but do not know why k. Nothing l. Did not respond m. Other: _____

4l	[*If yes*] **Why do you not own a cookstove like this?**	a. Expensive / could not afford it b. Do not need it c. Had no opportunity to purchase d. Had not thought about it e. Heard that they are not good f. Purchasing decisions made by spouse or other: _____ g. Do not know h. Did not respond i. Other:_____

**********Tell consumer about the stove and explain the novel sales contract ***********

5a	**Do you know how much money you spend on <u>charcoal</u> for cooking?**	1. Yes 2. Does not cook with charcoal [*Skip to 5c*] 3. No, do not know [*Skip to 5c*] 4. Did not respond [*Skip to 5c*]		
5b	[*If yes*] **How much money do you spend on <u>charcoal</u> for cooking?** (e.g., 1000 UGX *per* 3 days)	<u>Amount spent</u>: (eg. 1000) _____ /=	<u>Time quantity</u>: (eg. 3) _____	<u>Time unit</u>: 1. Day 2. Week 3. Month
5c	**Do you know how many people you regularly cook for?**	1. Yes 2. No, cooks for a restaurant [*Skip to 6a*] 3. No, does not cook [*Skip to 6a*] 4. Did not respond		
5d	[*If yes*] **For how many people do you regularly cook?**	_____ people *If <u>1-5</u> people, recommend size 1.* *If <u>6-10</u> people, recommend size 2* If <u>11-15</u> people, recommend size 3. <u>If >15</u>,		

		recommend size 3 if s/he currently uses a stove of similar size; otherwise, tell them you don't have a stove of good size for them and end interview.
6i	**Are you willing to try a free trial today?**	1. Yes – I would like to start trial today [*Skip to 6o*] 2. No 3. Did not respond

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If customer is *NOT willing* to try a free trial today:

6j	**Why are you <u>not</u> willing to try a free trial?** [Circle all reasons that customer mentions.]	a. Do not need it b. Do not like stove's color c. Too heavy d. Do not believe it will cook well e. Think it will break easily/ poor quality f. Need to ask spouse g. Need time to think about decision h. Do not like debts [*Re-explain contract before accepting this answer*] i. Too expensive – thinks they can get it for cheaper j. Too expensive -- will not want to or will not be able to pay later [*Re-explain contract before accepting this answer*] k. Will not be home/ in area for payment collections (shifting soon, or will not be at home for some other reason) l. Did not respond or difficult to determine m. Other (please specify):
6k-6m	**Had the contract been <u>explained</u> to the consumer by the end of the sales team's interaction with her/him?** (Answer question for each of the contract's elements)	

	6k. Installments? 1. Yes 2. No 3. Unable to determine	6l. Free-trial? 1. Yes 2. No 3. Unable to determine	6m. Right-to-return? 1. Yes 2. No 3. Unable to determine

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If customer *IS* willing to try a free trial, starting today:

6o	**What are the main attractions of this new stove?** [*Circle all reasons that customer mentions*.]	a. Saves fuel/ money b. Retains heat c. Cooks well/ works well d. Long-lasting e. Attractive color f. Good design/ materials/ weight/ sits well g. Produces less smoke (good for health) h. Good for the environment (saves trees) i. Good / likes stove but did not specify why j. Did not respond k. Other (please specify):

If customer is starting free trial today:

7e. Date of next scheduled visit:	7f. Time of next scheduled visit: Morning Afternoon Anytime

7g. Size of stove taken:	7h. Total price of stove:	7i. Amount paid on this visit (payment is optional):	7j. Amount owed at next visit:

1 2 3			

8a	**Do you believe that this stove will save you half of your current charcoal expenditures?**	1. Definitely yes 2. Maybe yes 3. Unsure 4. Maybe no 5. Definitely no 6. No reply 7. Did not understand question
8b	**Do you agree or disagree that that this stove will probably last 3 years or more?**	1. Strongly agree 2. Agree 3. Neither agree nor disagree 4. Disagree 5. Strongly disagree 6. No reply 7. Did not understand question
9	**What share of products you buy break soon after you purchase them?**	1. All 2. Most 3. Few 4. None 5. Not sure 6. No reply 7. Did not understand question
10a	**Have other salesperson(s) in the past visited your home selling a product door-to-door?**	1. Yes 2. No [*Skip to 11*] 3. Not sure [*Skip to 11*] 4. No reply [*Skip to 11*]

10b	[*If yes*] **How much would you say you trusted that/those salesperson(s)?**	1. Completely trust 2. Somewhat trust 3. Never trust 4. Not sure 5. No reply 6. Did not understand question
10c	[*If yes*] **Out of 10 salespersons, how many would you say that you would trust?**	*Answer must range between 0-10* _____
11	**In your experience, do most salespersons promise more than their products deliver?**	1. Yes, all overpromise 2. Yes, most overpromise 3. No, few overpromise 4. No, none overpromise 5. Not sure 6. No reply 7. Did not understand question
12	**Generally speaking, would you say that most people can be trusted, OR that you need to be very careful when dealing with people?**	1. Most people can be trusted 2. You need to be very careful when dealing with people 3. Not sure 4. No reply 5. Did not understand question
13	**Which one of the following statements reflects best your view?** **I will not trust a person until there is clear evidence that he or she can be trusted.** **OR** **I will trust a person until I have clear evidence**	1. I will not trust a person until there is clear evidence that he or she can be trusted. 2. I will trust a person until I have clear evidence that he or she can't be trusted. 3. Not sure 4. No reply 5. Did not understand question

	that he or she can't be trusted.	
14a	**If a trusted relative wanted to give you a gift, would you choose <u>6,000/= now</u> or <u>36,000/= in 1 month</u>?**	1. 6,000/= now 2. 36,000/= in 1 month 3. Not sure 4. No reply 5. Did not understand question
14b	**If a trusted relative wanted to give you a gift, would you choose <u>6,000/= in 3 months</u> or <u>36,000/= in 4 months</u>?**	1. 6,000/= in 3 months 2. 36,000/= in 4 months 3. Not sure 4. No reply 5. Did not understand question
15a	**In the last 3 months, have you wanted to borrow money?**	1. Yes 2. No [*Skip to 16a*] 3. Unsure [*Skip to 16a*] 4. No reply [*Skip to 16a*] 5. Did not understand question [*Skip to 16a*]
15b	[*<u>If yes to 15a</u>*] **In the last 3 months, did you try to get a loan?**	1. Yes 2. No [*Skip to 15d*] 3. Unsure [*Skip to 15d*] 4. No reply [*Skip to 16a*] 5. Did not understand question [*Skip to 16a*]
15c	[*<u>If yes to 15b</u>*] **Did you get the loan?**	1. Yes [*Skip to 16a*] 2. No [*Skip to 16a*] 3. Not sure [*Skip to 16a*] 4. No reply [*Skip to 16a*] 5. Did not understand question [*Skip to 16a*]
15d	[*<u>If no to 15b</u>*] **In the last 3 months, have you decided not to ask for a loan for fear you would get refused?**	1. Yes 2. No 3. Not sure 4. No reply 5. Did not understand question
16a	**Do you have any loans on which you pay interest?**	1. Yes 2. No [*Skip to 16c*] 3. Not sure [*Skip to 17a or 19a*] 4. No reply [*Skip to 17a or 19a*] 5. Did not understand question [*Skip to 17a or 19a*]

16b	[*If yes*] **What is the highest monthly interest rate you pay on a loan?**	_____%
16c	[*If no*] **If you wanted to borrow 10,000/=, would you expect to pay more, less, or exactly 5% (500/=) of interest each month?**	1. Expects to pay less than 5% (500/=) 2. Expects to pay exactly 5% (500/=) 3. Expects to pay more than 5% (500/=) 4. Not sure 5. No reply 6. Did not understand question

17a	**If you could have paid 4 weekly payments of [3,500 / 4,500 / 5,500], would you have wanted to purchase the new stove?**	1. Definitely yes 2. Maybe yes 3. Unsure [*Skip to 17e*] 4. Maybe no [*Skip to 17e*] 5. Definitely no [*Skip to 17e*] 6. No reply [*Skip to 17e*] 7. Did not understand question [*Skip to 17e*]	
17 b	[*If yes*] **Would you have wanted to pay the first payment today or in 1 week?**	1. First payment today 2. First payment in 1 week 3. Not sure 4. No reply 5. Did not understand question	
17e	**<u>If you had accepted the stove</u>, do you think *WE* would *allow you* to return the stove in a week……** **(Ask ALL options)** Circle corresponding number for each option: 5 if <u>definitely sure</u> they can return the stove 4 if think they <u>probably</u> can return the stove 3 if <u>unsure</u> whether or not they can return the stove	5 4 3 2 1 0	…if stove breaks?
		5 4 3 2 1 0	…if do not like stove?
		5 4 3 2 1 0	…if *no* fuel savings?
		5 4 3 2 1 0	…if *not enough* fuel savings?
		5 4 3 2 1 0	…if have no money to pay installment?
		5 4 3 2 1 0	…if finds a better stove?

	2 if think they probably cannot return the stove 1 if think they definitely cannot return the stove 0 if did not respond		
17f	**If you had accepted the stove and we let you return the stove under all conditions, would *YOU* decide *to* return the stove in a week……(Ask ALL options)** Circle corresponding number for each option: 5 if definitely sure they can return the stove 4 if think they probably can return the stove 3 if unsure whether or not they can return the stove 2 if think they probably cannot return the stove 1 if think they definitely cannot return the stove 0 if did not respond	5 4 3 2 1 0	…if stove breaks?
		5 4 3 2 1 0	…if do not like stove?
		5 4 3 2 1 0	…if *no* fuel savings?
		5 4 3 2 1 0	…if *not enough* fuel savings?
		5 4 3 2 1 0	…if have no money to pay installment?
		5 4 3 2 1 0	…if finds a better stove?

18	**If I had been able to offer you a week-long free trial, would you have accepted the free trial?** *With a free trial, I would have returned in a week and either asked for the stove back or the payment of [14,000 / 18,000 / 22,000] /=.*	1. Definitely yes 2. Maybe yes 3. Unsure 4. Maybe no 5. Definitely no 6. No reply 7. Did not understand question	

(The following two questions appear on later versions of the "installments" and "novel" contract survey forms. Note: Some versions of the form contained only options 0 – 4.)

19c	**Do you think *WE* will *allow you* to return the stove in a**	5 4 3 2 1 0	…if stove breaks?

	week……(Ask ALL options) Circle corresponding number for each option: 5 if definitely sure they can return the stove 4 if think they probably can return the stove 3 if unsure whether or not they can return the stove 2 if think they probably cannot return the stove 1 if think they definitely cannot return the stove 0 if did not respond	5 4 3 2 1 0	…if do not like stove?
		5 4 3 2 1 0	…if *no* fuel savings?
		5 4 3 2 1 0	…if *not enough* fuel savings?
		5 4 3 2 1 0	…if have no money to pay installment?
		5 4 3 2 1 0	…if finds a better stove?

19 d	**Assuming we let you return the stove under all conditions, will *YOU* decide to return the stove in a week……(Ask ALL options)** Circle corresponding number for each option: 5 if definitely sure they can return the stove 4 if think they probably can return the stove 3 if unsure whether or not they can return the stove 2 if think they probably cannot return the stove 1 if think they definitely cannot return the stove 0 if did not respond	5 4 3 2 1 0	…if stove breaks?
		5 4 3 2 1 0	…if do not like stove?
		5 4 3 2 1 0	…if *no* fuel savings?
		5 4 3 2 1 0	…if *not enough* fuel savings?
		5 4 3 2 1 0	…if have no money to pay installment?
		5 4 3 2 1 0	…if finds a better stove?

(The following question appears on the "installments" contract survey form.)

20	**The offer today had two unusual features:** - **Time payments** - **The right to return the stove and stop future time payments** **Which of these features were important in your decision to accept the stove and which were unimportant?** -	MOST LEAST Time Payments _____ _____ Right to Return _____ _____

(The following question appears on the "novel" contract survey form.)

20	**The offer today had three unusual features:** - **A free trial** - **Time payments** - **The right to return the stove and stop future time payments** **Which of these features were important in your decision to accept the stove and which were unimportant?**	MOST LEAST Free Trial _____ _____ Time Payments _____ _____ Right to Return _____ _____

Online Appendix 5: Follow-Up Survey (Novel Contract)

NOVEL STOVE CONTRACT: Post-Trial Visit

Information to be filled ahead of time (at CIRCODU's office):

1a. Household Name:		1b. Ten-Digit Household ID (DDMMYY-EnumeratorCode-HHNumber):	
1c. Telephone contact:		1d. District:	
1e. Division/Town:		1f. Parish:	
1g. Zone (or village if zone is		1h. Cluster ID:	
2a. Size of stove taken:	2b. Amount owed on this visit:	2c. Total amount already paid, prior to this visit:	2d. Follow-Up Number (first post-trial = 1; second post-trial= 2):

Information to be filled once in field:

3a. **Date** (e.g. 27/Mar/2009):	3b. **Start time** (e.g. 12:50pm):	3c. **Enumerator's name**:

4a	[*Observe*] **Is anyone at home?**	1. Yes 2. No [*try phone; else, skip to 12a*]
4b	[*If yes*] **Is the respondent the same as when the stove was provided on the**	1. Yes 2. No [*try phone; else, skip to 12a*]

	initial visit?	

If no, collect money if original customer has left it to be taken [fill out 12d] and follow-up with interview questions over the phone with original customer if possible. If a phone interview is not possible, arrange follow-up for following week [Q13].

5a	**Is original customer willing to talk to you about the stove?**	1. Yes 2. No
5b	[*If no*] **Why not?**	1. Busy [*Skip to 6a*] 2. Didn't want to answer our questions [*Skip to 6a*] 3. Other (please specify): _____ [*Skip to 6a*]

6a	**Do you still have the stove?**	1. Yes *[skip to 7a]* 2. No 3. Other (please specify):
6b	[*If no*] **What happened to the stove?**	1. Gave the stove away (as a gift) 2. Sold the stove 3. Stove was stolen 4. Did not respond/ was not asked 5. Other (please specify):
	In the last week, how often did you use the improved stove?	7. Always *[skip to 7c]*

7a		8. Sometimes *[skip to 7c]* 9. Rarely 10. Never 11. Do not know *[skip to 7c]* 12. Did not respond *[skip to 7c]*
7b	*[If rarely or never used the new stove]* **Why didn't you use the new stove (more)?**	1. Did not do any cooking this week 2. Did not want to ruin the stove 3. Gave the stove away/ sold the stove/ stove was stolen 4. Did not respond/ was not asked 5. Other (please specify):
7c	**What type of cooking did you do with the improved cookstove?** (Circle all responses given.)	1. Main foods (matooke, beans, meat, rice etc.) 2. Boiled water/ prepared millet porridge or tea 3. Prepared sauce 4. Cooked maize porridge 5. Did not respond 6. Other (please specify):
8a	**How often in the last week did you use your non-improved stove(s)?**	1. Always 2. Sometimes 3. Rarely 4. Never [*Skip to 9a*] 5. Do not know 6. Did not respond
8b	[*If always, sometimes, or rarely*] **What type of cooking did you do with your non-improved stove(s)?**	1. Main foods (matooke, beans, meat, rice etc.) 2. Boiled water/ prepared millet porridge or tea 3. Prepared sauce 4. Cooked maize porridge 5. Did not respond 6. Other (please specify):
9a	**Do you know how much money you spend on charcoal for cooking now that you have the**	5. Yes 6. No, do not know; buys charcoal in a bag [*Skip to 9c*]

	improved stove?	7. No, do not know; did not used the stove [*Skip to 9c*] 8. No, do not know; reason unspecified [Skip to 9c] 9. Did not respond [*Skip to 9c*]		
9b	[*If yes*] **How much money did you spend on <u>charcoal</u> for cooking this week?**	<u>Amount spent</u>: (eg. 1000) _____ _ /=	<u>Time quantity</u>: (eg. 3) _____	<u>Time unit</u>: 4. Day 5. Week 6. Month
9c	[*If no or did not respond*] **Have you felt like you have been using more than, less than, or the same amount of charcoal now that you have the improved stove?**	1. Using a lot less charcoal than before stove purchase 2. Using somewhat less charcoal than before stove purchase 3. Using the same amount of charcoal as before stove purchase 4. Using somewhat more charcoal than before stove purchase 5. Using a lot more charcoal than before stove purchase 6. Did not respond		
10a	*[If 1st follow-up]* **What aspects of the new stove, if any, do you like?**	l. Saves fuel/ money m. Retains heat n. Cooks well/ works well o. Long-lasting p. Attractive color q. Good design/ materials/ weight/ sits well r. Produces less smoke (good for health) s. Good for the environment (saves trees) t. Good / likes stove but did not specify why u. Did not respond/ was not asked v. Other (please specify):		
11	*[If 1st follow-up]*			

0b	**What aspects of the new stove, if any, do you dislike?**	1. Nothing 2. Heavy 3. Takes a long time to get hot/ does not cook well 4. Front door does not close properly 5. Stove's color 6. Did not respond/ was not asked 7. Other (please specify):
1 0c	*[If 1st follow-up]* **Would you suggest to a friend that s/he purchases an improved stove?**	1. Yes 2. No 3. Did not respond/ was not asked
1 1a	**Are you still interested in owning the stove?**	1. Yes *[skip to 11c]* 2. No
1 1b	[*If no*] **Why not?** [*Retrieve stove and skip to 13*]	1. Stove broke and does not want a replacement 2. Do not have the money to start/finish payments 3. Thinks h/she could find it cheaper somewhere else 4. Do not like debts 5. Other (please specify):
1 1c	[*If yes*] **You owe** _____.	1. Yes 2. No

	Are you ready to pay this amount?	
1d	**Actual amount paid:**	_____/=
1e	*[If the amount paid is LESS than the set installment]* **Why are you not paying the agreed-on amount?**	1. Do not have the money --- forgot to get it 2. Do not have the money --- unable to save amount 3. Do not have the money --- no reason provided 4. Did not respond/ was not asked 5. Other (please specify):
1f	*[If the amount paid is MORE than the set installment]* **Why are you paying more than the agreed-on amount?**	1. Likes the stove and want to own it as soon as possible 2. Not sure if will have money next week 3. Do not like debts and wants to finish paying as soon as possible 4. Do not want us continuing to come to their house 5. Other (please specify):

If this is the first or second time customer refuses to pay anything, offer them a chance to pay at the next payment period. Otherwise, request that they return the stove and then terminate the visits.

Tell customer:

I will return in 1 week for the next payment or. If you do not like the stove, I can retrieve it and you will owe nothing.

12a. Date of next	12b. Time of next	12c. Total amount already paid, including current visit (=2c +	12d. Amount owed at next visit (see below for

scheduled visit:	scheduled visit (approximate is fine):	12d, above):	calculation):

13	Notes/Observations [optional – fill out if there is relevant information not written elsewhere]:

14	Visit End Time:_____

The following people have verified that this survey is:

- Complete (all questions that should have been answered were answered)
- Easy to read (handwriting is clear)
- Sensible (sentences can be understood)
- Consistent (there are no contradictions)

15a	Signature of enumerator who filled this form: _____ Signature
1	

5b	Other sales team member in field: _____ _____ Name Signature
15c	Field supervisor: _____ _____ Name Signature
15d	Data typist #1: _____ _____ Name Signature
15e	Data typist #2: _____ _____ Name Signature

[If survey was subjected to random audit by field supervisor, then this section should be filled]

16a	First question selected for audit:	Response provided by consumer:	Was recorded response accurate? 1. Yes

			2. No 3. Approximately 4. Unable to determine
16b	Second question selected for audit:	Response provided by consumer:	Was recorded response accurate? a. Yes b. No c. Approximately d. Unable to determine
16c	What was consumer's overall impression of the survey team?		

Web Appendix 5: Study 2 Feasibility Report and Marketing Messages

http://impactcarbon.org/wp-content/uploads/2012/06/TRAction-Project_Impact-Carbon_Feasibility-Report.pdf

Web Appendix 6: Study 2 Household Survey (Total No. of Questions:78)

==========

1:ENUMERATOR READS INFORMED CONSENT: Agrees to Informed Consent (multi) (multi)

Data Field Name : consent

Possible responses:

- Yes

- No

2:Color (multi)

Data Field Name : color

3:Select household id. (multi)

Data Field Name : hhid_discrete

4:Record respondent's gender (multi)

Data Field Name : gender

Possible responses:

- Male

- Female

5:Respondent's First Name Eizina ryawe eryokubanza (text)

Data Field Name : fname

6:Respondent's Last Name Eizina ryawe erykabiri (text)

Data Field Name : lname

7:Are you known by other names? Oyine amazina agandi? (multi)

Data Field Name : other_names

Possible responses:

- Yes

- No

8:What other names are you known by? (text)

Data Field Name : names

9:Does he/she live in this parish? (Noruga omumuruka ogu? (multi)

Data Field Name : thisparish

Possible responses:

- Yes

- No

10:If he/she is not from this parish (Omuluka), what is the name of his/her parish? (Noruga omumuruka guha) (text)

Data Field Name : diffparish

11:What is the name of this parish where the meeting is taking place? (Omuruka ogu nibagweta guha) (multi)

Data Field Name : parish

Possible responses:

- Bitsya

- Kacerere

- Kakiika

- Kakoma P

- Kariro

- Katzyo

- Kishasha

- Nyabuhaama

- Nyakinengo

- Nyamiriro
- Nyarubanga
- Ruhunga
- Rushozi
- Rwemigina P
- Rwenjeru
- Biharwe
- Bunenero
- Bunusya
- Kabare
- Karweshanga
- Mabira
- Ruburara
- Rutooma
- Rwamuhingi
- Rwebishekye
- Other

12:Press Continue. (multi)

Data Field Name : continue

Possible responses:

- Continue
- Continue

13:For the Rushozi parish, which LC 1 are you from? (multi)

Data Field Name : Rushozi_LC1s

Possible responses:

- MUKO

- RWENKANJA
- RWABARANGA
- KANGA
- KANONO
- BYANTUNGU
- KYAMATAMBARIRE 1
- KYAMATAMBARIRE 2
- Other

14:For the Nyabuhaama parish, which LC1 are you from? (multi)

Data Field Name : Nyabuhaama_LC1s

Possible responses:

- NYARUHANGA
- RUGARAMA
- KAKUKURU
- KIGANDO
- KATOJO
- KANYARA
- Other

15:For the Kakoma parish, which LC1 are you from? (multi)

Data Field Name : Kakoma_LC1s

Possible responses:

- KYAGWABUGANDA
- KAKOMA
- KATEBE
- KEMPUNGU
- Other

16:For the Kishasha parish, which LC1 are you from? (multi)

Data Field Name : Kishasha_LC1s

Possible responses:

- KYEMPISI
- KINYAZA
- NYAKANENGO
- NYAMABARE
- RWABUKWIRE
- RWONUYENJE
- Other

17:For the Bitsya parish, which LC1 are you from? (multi)

Data Field Name : Bitsya_LC1s

Possible responses:

- BITSYA
- KYEKURIRA
- RUBARE
- NYAKWEBUNDIKA 1
- NYAKWEBUNDIKA 2
- RWEMIYENJE
- RWABACWEGU
- RUNYAKAROMA
- RWAKIGANDO
- RWEMINAGO
- Other

18:For the Nyamiriro parish, which LC1 are you from? (multi)

Data Field Name : Nyamiriro_LC1s

Possible responses:

- NYAMIRIRO
- NYAKATOKYE
- AKACENCE
- KABIRIZI
- KANDEHERE
- KANYABUYE
- RUKANJA
- KATAMUTIJA
- TIBWIJO
- MBARAMA
- KIZINDA
- OMUGYERA
- KATAGATA
- RUBANDA
- BUGORORA
- Other

19:For the Katyazo parish, which LC1 are you from? (multi)

Data Field Name : Katyazo_LC1s

Possible responses:

- NYAKAZINGA
- GWISHAMIRO
- KARUKUSHU
- KARUNDO
- NYABUGANDO
- KYASHAMIRE
- RUNENGO

- KATYAZO
- KYAKAZIZI
- RWENTOJO
- Other

20:For the Ruhunga parish, which LC1 are you from? (multi)

Data Field Name : Ruhunga_LC1s

Possible responses:

- KAIHO
- KEIVOSHORA
- NYAKIBUNGO
- GEITEMBA
- KAGUHAMBYA
- RUBUNGA 1
- RUBUNGA 2
- RUBUNGA CENTRAL
- RUGERERA
- EKIYAYO
- KATETE
- KASHENYI
- Other

21:For the Rwemigina parish, which LC1 are you from? (multi)

Data Field Name : Rwemigina_LC1s

Possible responses:

- RWEBIHURO
- RWEMIGINA
- KABINGO

- BUREMBA 1
- BUREMBA 2
- KEKOMBE
- Other

22:For the Nyakinengo parish, which LC1 are you from? (multi)

Data Field Name : Nyakinengo_LC1s

Possible responses:

- KATAMBA
- RWEMINYU
- KIBWERA
- RWAGAJU
- MIGAMBI
- NYAKINENGO
- Other

23:For the Nyarubanga parish, which LC1 are you from? (multi)

Data Field Name : Nyarubanga_LC1s

Possible responses:

- KAFUNJO
- NYARUBANGA
- Other

24:For the Kacerere parish, which LC1 are you from? (multi)

Data Field Name : Kacerere_LC1s

Possible responses:

- RWEISHAKA
- NYAKAYOJO A

- NYAKAYOJO B
- KARUYENJE A
- KARUYENJE B
- RWANYAMAHEMBE
- RUTOMA
- KACERERE
- Other

25:For the Rwenjeru parish, which LC1 are you from? (multi)

Data Field Name : Rwenjeru_LC1s

Possible responses:

- RWENJERU SOUTH
- RWENJERU NORTH
- AKAKO
- RWENDAMA
- KATENGETO
- RWATERERE
- KAMATARIZI
- KABUCEBEBE
- KATERANANGA
- Other

26:For the Kakiika parish, which LC1 you are from? (multi)

Data Field Name : Kakiika_LC1s

Possible responses:

- RWOBUYENJE
- KACERERE EAST
- KACERERE WEST

- MAKENKE
- NYAKIZIBA
- NYAKABUNGO
- BUTAGASI
- Other

27:Do you have a mobile phone? (Oyine esiimu) (multi)

Data Field Name : havephone

Possible responses:

- Yes and I know the number
- Yes but don`t know number
- No

28:Mobile Number. Enamba eyesimu (number)Enamba yawe yesiimu neha (number)

Data Field Name : mobilenum

29:What is the present marital status of (NAME)? Wagiziire amaka? (multi)

Data Field Name : status

Possible responses:

- Married (monogamous)
- Married (polygamous)
- Divorced or Separated
- Widow or Widower
- Single (never married)

30:Spouse's First Name. Eiziina eryokubanza erya nyine eka (text)

Data Field Name : spousefname

31:Spouse's Last Name. Eiziina erya hamuheru erya nyine eka (text)

Data Field Name : spouselname

32:Does your husband (wife) have a mobile phone? Omusheija/Omukazi wawe aine esiimu? (multi)

Data Field Name : spousemobile

Possible responses:

- No

- Yes but I don`t know the phone number

- Yes I can enter the phone number

33:Husband (wife's) mobile number. Enamba yesiimu ya nyineka. (number)

Data Field Name : husbnum

34:How many other mobile phones are there in your HH? Esiimu ezindi ezimwine omuka yanyu nizingahi? (multi)

Data Field Name : numotherphones

Possible responses:

- 0

- 1

- 2

- 3

- 4

- 5

35:What is another phone number? Enamba yesiimu endijo eyimwine omuka yanyu neha (number)

Data Field Name : othernumber

36:Who is the primary cook in your HH? Noha orikukira kuteka omuka yawe? (multi)

Data Field Name : primarycook

Possible responses:

- Respondent

- Spouse

- Maid

- Children

- Other

37:How old are you? Oine emyaka engahe? (number)

Data Field Name : age

38:Did you guess the person's age or did the person tell you his/her age? Watebereza emyaka yomuntu nanga yagikugambira (multi)

Data Field Name : guessage

Possible responses:

- Told age

- Enumerator guessed age

39:What fuel does your household use to cook with the most? Eka yawe nimutekysa ki burijo? MARK ONE ANSWER, BUT IF THEY USE TWO EQUALLY, THEN MARK BOTH (multi)

Data Field Name : fuel

Possible responses:

- Wood

- Charcoal

- Gas

- Kerosene

- Animal dung

- Other

- No one cooks

40:Do you know how many people ate lunch at your house yesterday? Nomanya nabantu bangahi abarire kyamushana owawe nyomwabazo? (multi)

Data Field Name : knowlunch

Possible responses:

- Yes

- No

41:How many people ate lunch at your house yesterday? Nabantu bangahe abarire kyamushana owawe? (number)

Data Field Name : lunchyesterday

42:Is that a typical number of people eating at your house? Abo nibo orikukira kurisa burijo? (multi)

Data Field Name : typicalnumeating

Possible responses:

- Yes

- No we had more than usual

- No we had less than usual

43:Which is the main meal cooked daily in your house? Niryari obu mukurya mwena neka yawe? (multi)

Data Field Name : largestmeal

Possible responses:

- Breakfast

- Lunch

- Dinner

- Snack

- We never cook at our house.

44:Given the largest meal cooked daily in your house, how many people typically eat that meal at your house? Nabantu bangahi abarikukira kurya ahakihuro ekyo (number)

Data Field Name : typicallargemeal

45:Did you and/or your family buy wood or a tree for cooking last week? Iwe nabeka yawe muguzire enku zokutekyesa ensande ehweire? (multi)

Data Field Name : woodlastweek

Possible responses:

- Yes

- No

- I don`t know

46:Did you and/or your family buy wood or a tree for cooking last month? Iwe nabeka yawe muguzire enku zokutekyesa okwezi okuhweire? (multi)

Data Field Name : woodlastmonth

Possible responses:

- Yes

- No

- I don`t know

47:Did your household gather wood for cooking last week? Abeka yawe bashenyire enku zokutekyesa esande ehweire? (multi)

Data Field Name : gatherwoodweek

Possible responses:

- Yes

- No

- I don`t know

48:Did your household gather wood for cooking last month? Abeka yawe bashenyire enku zokutekyesa okwezi okuhweire? (multi)

Data Field Name : gatherlastmonth

Possible responses:

- Yes

- No

- I don`t know

49:Do you earn your own income? Oyine entastya? (multi)

Data Field Name : income

Possible responses:

- Yes

- No

50:If so, how were you paid for your work? Kukirabe kiri kityo, okashashurwa ota? (multi)

Data Field Name : howpaid

Possible responses:

- Cash only

- Cash and in-kind

- In-kind only

- Not paid

51:Who is your main employer? Noha orikukukozesa? (multi)

Data Field Name : mainemployer

Possible responses:

- Family member

- Non-family member

- Self-employed

52:Last year what length of time were you employed? Omwaka oguhweire, omaziire obwire burikwigana ki orikukora? (multi)

Data Field Name : timeemployed

Possible responses:

- All year
- Seasonal
- Occasional

53:Does your household own any cows? Ekayawe, eine ente? (multi)

Data Field Name : cows

Possible responses:

- Yes
- No
- I don`t know

54:If so about how many cows do you own? Kumurabe muzeine, mwine zingahe? (multi)

Data Field Name : howmanycows

Possible responses:

- 0-5 cows
- 6-10 cows
- 11-15 cows
- 16 or more
- I don`t know

55:Does your household own any sheep? Eka yawe eyine entaama (multi)

Data Field Name : sheep

Possible responses:

- Yes
- No
- I don`t know

56:If so about how many sheep do you own? Kumurabe muziine nizingahe (multi)

Data Field Name : howmanysheep

Possible responses:

- 0-5 sheep
- 6-10 sheep
- 11-15 sheep
- 16 or more
- I don`t know

57:Does your household own any pigs? Eka yawe eine empunu? (multi)

Data Field Name : pigs

Possible responses:

- Yes
- No
- I don`t know

58:If so about how many pigs do you own? Kumurabe muzine nizingahe? (multi)

Data Field Name : howmanypigs

Possible responses:

- 0-5 pigs
- 6-10 pigs
- 11-15 pigs
- 16 or more
- I don`t know

59:Does your household own any goats? Eka yawe eine embuzi? (multi)

Data Field Name : goats

Possible responses:

- Yes

- No

- I don`t know

60:If so about how many goats do you own? Kumurabe muzine nizingahe? (multi)

Data Field Name : howmanygoats

Possible responses:

- 0-5 goats

- 6-10 goats

- 11-15 goats

- 16 or more

- I don`t know

61:Does your household own a television? Ekayawe eine TV? (multi)

Data Field Name : TV

Possible responses:

- Yes

- No

- I don`t know

62:Does your household own a radio? Ekayawe eine radio? (multi)

Data Field Name : radio

Possible responses:

- Yes

- No

- I don`t know

63:Do you own a solar lamp or cell phone recharger? Oine solar ninga battery? (multi)

Data Field Name : solar

Possible responses:

- Yes

- No

64:Do you have a mechanism which collects rain water from your roof? Oine ekyorikozesa ku rembeka amaizi? (multi)

Data Field Name : collectrain

Possible responses:

- Yes I have a water tank

- Yes I use a drum

- Yes I use sauce pans or some type of pot

- No

65:Do you usually boil your water before drinking it? Nokira kuteka amaizi gokunywa? (multi)

Data Field Name : boil

Possible responses:

- Always

- Usually

- Sometimes

- Rarely

- Never

66:What means of transport do you own? Oine entambura omuka yawe? MARK ALL THAT APPLY (multi)

Data Field Name : vehicle

Possible responses:

- None

- Bicycle

- Car

- Motorcycle

- I don`t know

67:Do you already own any stove other than a 3 stone fire. Oine esigiri endijo gatari mahega? MARK ALL THAT APPLY (multi)

Data Field Name : stoves

Possible responses:

- None

- Built-in Mud Stove

- Charcoal Stove

- Kerosene Stove

- Other type of fuel efficient wood stove

- Other stove (NOT using wood)

68:Who usually makes decisions about purchasing major household items? Noha arikusharaho mwaba nimuza kugura ebintu byahaka? MARK ONE ANSWER (multi)

Data Field Name : decisions

Possible responses:

- Respondent

- Spouse

- Respondent & Spouse Jointly

- Grandparents

- First Wife

- Father or Mother

- Other- DO NOT SPECIFY

69:Do you farm for subsitence or commercial purposes? Notunga narishi nohinga ebyo kuguza nari ebyo kurya omuka yawe? (multi)

Data Field Name : farm

Possible responses:

- Yes I farm mainly for subsistence

- Yes I farm mainly for commercial purposes

- No I don`t do either

70:When you grow crops do you use artificial fertilizer? Kworikuhinga no kozeza orwezo? (multi)

Data Field Name : fertilize

Possible responses:

- Yes

- No

71:Do you use genetically modified seeds? Nohinga embibo ezo murembe nka eza NAADS? (multi)

Data Field Name : geneticallymodified

Possible responses:

- Yes

- No

72:If you had a choice between getting 20,000 UGX today, or 40,000 UGX a year from now, which would you choose? waba oine omugisha gwokusharaho okutwara emitwaro ebiri erizoba narishi emitwaro ena ahanyima yo mwaka noyihamu ki? (multi)

Data Field Name : ugxyear

Possible responses:

- 20000 UGX Today

- 40000 UGX a year from now

73:If you had a choice between receiving 20,000 UGX today or 30,000 UGX in a month from now? waba oine omugisha gwokusharaho okutwara emitwaro ebiri erizoba narishi emitwaro eshatu ahanyima yo mwezi noyihamu ki? (multi)

Data Field Name : ugxmonth

Possible responses:

- 20000 UGX Today

- 30000 UGX in a month from now

74:Now what if you had a choice between receiving 20,000 UGX today or 25,000 UGX in a week from now? waba oine omugisha gwokusharaho okutwara emitwaro ebiri erizoba narishi emitwaro ebiri nekicweka ahanyima ye sande emwe noyihamu ki? (multi)

Data Field Name : ugxweek

Possible responses:

- 20000 UGX Today

- 25000 UGX in a week from now

75:Does your family have any money set aside in case of an emergency? Eka yawe eine sente eze kubika aharubaju kweyambisa nka mwagira ekizibu kyahonaho? (multi)

Data Field Name : emergency

Possible responses:

- Yes

- No

76:Do you participate in a ROSCA, or a rotating saving group such as a woman's saving group? Oyiine ekigombe ekimukushukirana ninga ekimurikubika mu sente? (multi)

Data Field Name : savinggrou

Possible responses:

- Yes

- No

77::Please write any important notes / observations. Handiika ebintu ebiwashanga omu field ebitari kugambwa ho aharuguru (text)

Data Field Name : notes

78:What is the enumerator's name? Eizina ry'omukyondozi (multi)

Data Field Name : enumeratorid

Web Appendix 7: Study 2 Asset Index and Early Technology Adopter Indices

Asset Index

To assess the relative wealth of participants we ask a series of questions related to asset ownership. Given time constraint of participants in our sample we could ask only a limited number of questions on our surveys. To ensure we generated a sample of relevant assets to assess household wealth, the team consolidated lessons learned from the DHS Uganda survey and pre-tested asset questions during our sixth month feasibility stage. The following questions were determined to be the optimal set of questions given our constraints:

1. Livestock ownership- including cows, goats, pigs, and sheep

2. Durable Goods- radio, cell phone, television

3. Transportation- Bicycle, Car, and Motorcycle

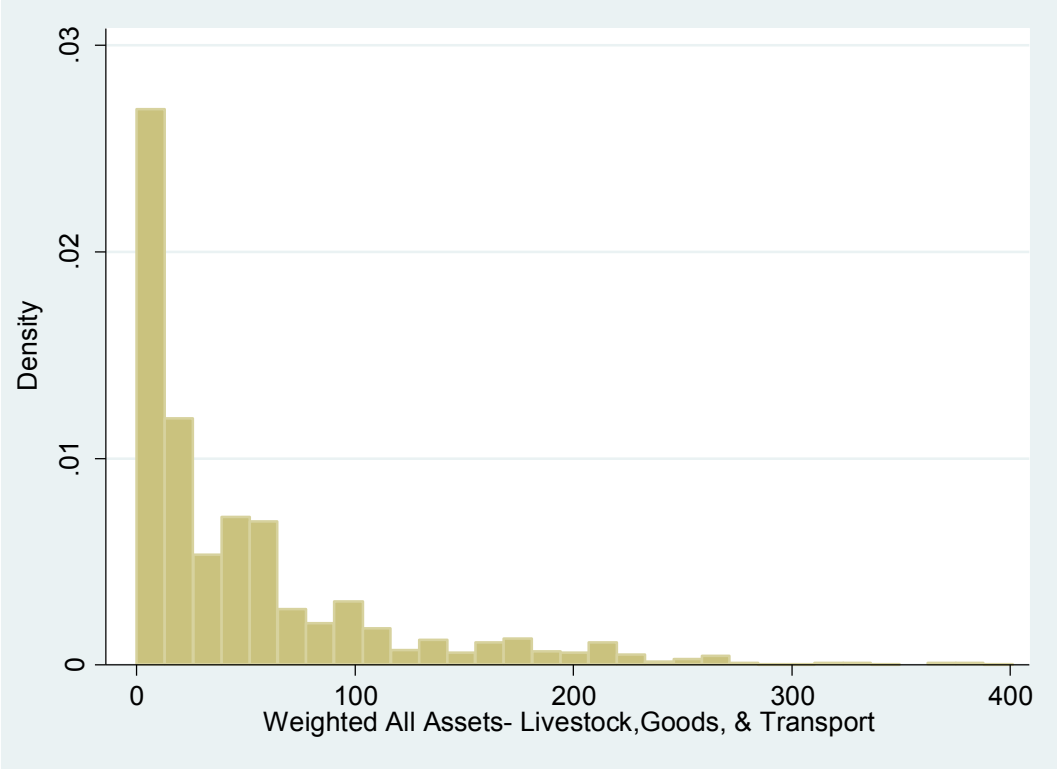
The number and type of animals owned by a household and by the individuals within that household is essential information for characterizing household wealth, and for calculating other indicators such as productivity and income. Livestock ownership is also an important welfare measure because in many regions livestock are an important asset through which households are able to store their wealth (Baltenweck et. al., 2011). Ownership of assets is considered a better measure of welfare than income since it reflects a household's long-term capacity to manage risk and meet its consumption requirements.

Building on existing best practice we identified the household domestic asset index from the International Livestock Research Institute's 2011 work (Baltenweck, et. al., 2011). Their asset index is adapted from analyses recommended for all Bill and Melinda Gates funded projects (BMGF, 2010). We utilize the same core weights but adapt them to the format of our questions, particularly we asked participants about animal ownership in the following groupings: 1-5, 6-10, 11-15, or 16 or more. To fit this data collection method, we took the median of each grouping and multiplied the weighting by the median.

Table 1: Household domestic asset index					
	ILRI original*	Median adjusted weighting			
Asset (g)	Weigh of Assets (wg)	1-5	6-10	11-15	16+
Animals					
Cattle	10	30	80	130	160
Sheep/goats	3	9	24	39	48
Pigs	2	6	16	26	32
Domestic assets					
Radio	2				
Television	4				
Cell Phone	3				
Transportation					
Car	160				
Motorcycle	48				
Bicycle	6				

*The ILRI original asset valuation also adjusts by product or animal age, information we do not adjust for.

Figure 1: Study 2 Total Sample Distribution of Asset Weighted Index



Early Technology Adopter Index

Early Technology Adopter. Following Everett (2003) and the Diffusion of Innovation theory we also measure whether participants who have adopted other relatively new technologies, or are early technology adopters relative to their peers, are more likely to purchase an improved cookstove. To test this we ask:

- Do you own a solar lamp or cell phone recharger?
- Do you have a mechanism that collects rain water from your roof?
- When you grow crops do you use artificial fertilizer?
- Do you use genetically modified seeds?
- Do you usually boil your water before drinking it?

We generate Early Technology Adopter Bias as a count of the five responses which are 'yes'. For the questions 'Do you usually boil water before boiling it?' there is a five point response: 'Always'; 'Usually'; 'Sometimes'; 'Rarely'; and 'Never'. It is possible due to the hawthorne effect, or the alteration of behavior by subjects of a study because they are being observed, that subjects over/estimate the amount of time they boil their water prior to drinking it. As a result, we count only the response 'Always' as the

equivalent of 'yes'. Finally, only households which report collecting water with a water tank do we count households with a specific technology for collecting rain water.

Baltenweck, Isabelle.; Nancy, Johnson; Zaibet, Lokman; Samuel, Mburu; Jemimah Njuki; and Jane Poole. 2011. "Gender Livestock and Livelihood Indicators." International Livestock Research Institute.http://mahider.ilri.org/bitstream/handle/10568/3036/Gender%20Livestock%20and%20Livelihood%20Indicators.pdf

United Nations Food and Agricultural Organization (FAO). 2005. “Livestock Sector Brief Uganda.” Rome, Italy. http://www.fao.org/ag/againfo/resources/en/publications/sector_briefs/lsb_UGA.pdf