Cooperation and Information in the Household

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What is a household

- Dominant approach: the collective model
- Why efficiency?
  - public goods
  - risk-sharing
  - comparative advantages through specialisation and gains from trade
- Allow to estimate sharing rules, individual consumption in the household, individual poverty.
- Silent about actual decision making: **who** decides **what** and **why**.

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- Dominant approach: the collective model which describes the efficient outcomes of household decision-making, given the outside options of each spouse: Browning, Bourguignon, Chiappori, Lechene, De Rock, Cherchye,...
- Why efficiency?
  - public goods
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  - comparative advantages through specialisation and gains from trade

The collective model

- An allocation is efficient if and only if it maximizes:

$$U_1(c_1, Q) + \mu(z)U_2(c_2, Q)$$

  - Under: (1) Budget constraint, and (2) Participation constraint.
  - Participation constraint requires that each spouse is better off than on her outside option, what she would get if she were to exit the cooperative decision process.

The collective model

$$U_1(c_1, Q) + \mu(z)U_2(c_2, Q)$$

- Key feature: the **Pareto weight** $\mu(z)$. It is a direct measure of the bargaining power of each spouse and is determined by the relative importance of their outside options.
- It is a (unique) function of z, a vector which includes prices, household income and the **distribution factors**.
- Distribution factors = all the variables in the economic environment that do not affect the preferences or the budget but influence the decision process, such as the relative income of each spouse, the legal environment, restrictions on labour participations or the sex ratio on the marriage market.

The collective model

- Very important. Led to the rejection of the unitary model, based on full income pooling in the household.
- Large evidence that, for a given household income, a change in the relative income of one spouse affects the pattern of household expenditures or other household decisions.
- Changes in the outside option of the spouse $\rightarrow$ changes in bargaining power $\rightarrow$ changes in the Pareto weight: no inefficiency.

The collective model: critique

- Development literature suggests large household inefficiencies:
  - Productive inefficiencies in the allocation of labour in Burkina Faso (Udry, 1996). Losses amount to 25%.
  - Several field experiments on simple public good games among spouses (Hoel, 2015): Kenya, losses of 16%.
  - Imperfect risk sharing in households (Dercon and Krishnan, 2000).
  - Strategic appropriation of resources (Anderson and Baland, 2000), lying and hiding (Ashraf, 2009, Ashraf et al., 2026), strategic use of violence (Bloch and Rao, 2002).
  - Interaction between transfers of resources in the household and strategic behaviour (Buchmann, Dupas, Ziparo, 2025; Apedo-Amah, Djebbari, Ziparo, 2025)..
  - ...

The collective model: critique

- Revisitation of the collective model with reference to developing economies and investigate:
  - The role of time and uncertainty
  - The bargaining process and the role of commitment
  - The endogeneity of the outside options and the role of irreversible decisions
  - The role of asymmetric information between spouses
  - The role of social norms and the extended households

Today's Talk

- Authority in the household
- Strategic behaviour
  - Does reputation matter?
  - What determines fertility levels?

Roadmap

- Authority in the household
- Strategic behaviour
  - Does reputation matter?
  - What determines fertility levels?

Motivation - how to measure bargaining power?

In empirical literature in development economics: bargaining power often measured with proxies, typically about decision making in surveys:

921	Who usually decides how your (husband's/partner's) earnings will be used: you, your (husband/partner), or you and your (husband/partner) jointly?	RESPONDENT ..... 1 HUSBAND/PARTNER ..... 2 RESPONDENT AND HUSBAND/PARTNER JOINTLY ..... 3 HUSBAND/PARTNER HAS NO EARNINGS ..... 4 OTHER _____ 6 (SPECIFY)
922	Who usually makes decisions about health care for yourself: you, your (husband/partner), you and your (husband/partner) jointly, or someone else?	RESPONDENT ..... 1 HUSBAND/PARTNER ..... 2 RESPONDENT AND HUSBAND/PARTNER JOINTLY ..... 3 SOMEONE ELSE ..... 4 OTHER 6
923	Who usually makes decisions about making major household purchases?	RESPONDENT ..... 1 HUSBAND/PARTNER ..... 2 RESPONDENT AND HUSBAND/PARTNER JOINTLY ..... 3 SOMEONE ELSE ..... 4 OTHER 6

Motivation -2 - how to measure bargaining power?

- Behind this framework, the idea that who decides has the bargaining power.
- Could there be something else that determine authority allocation?
- For instance, some couples may argue and discuss only when their preferences are not aligned; while when they are aligned, it is not so important who decide, and spouses may well delegate the decision power to the spouse who has the lower opportunity cost of time.

Motivation - Descriptive evidence

- In a previous survey conducted in Cameroon some years ago:
- 280 couples were interviewed separately to investigate intra-household income-sharing, extended families and decision making.

	(1) Low actual knowledge of spouse's savings	(2) Perceived knowledge about spouse's savings	(3) spouse's income	(4) Preference for cooperation	(5) Transfers from the husband to the wife
Matched time preference	0.1094**	-0.1325***	-0.1268***	-0.1135**	19.4176***
	(0.0505)	(0.0494)	(0.0436)	(0.0451)	(7.4068)
N	401	404	411	404	217
R^2	0.2059	0.1597	0.0377	0.0657	0.1827

OLS regression; Standard errors in parentheses clustered at the household level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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- Matched/aligned time preferences were found to be associated with:
  - lower knowledge of the other spouse's savings & income
  - lower preference for joint management of household resources
  - higher transfers from husband to wife

→ Pointing towards more *delegation within couples*.

Optimal delegation in the household (Baland et al. 2026)

We build our model on the model of delegation of authority in firms by Dessein (2002) and Aghion and Tirole (1997).

- Spouses have to decide on the optimal purchase (project) to implement in the household.
- Spouses differ in terms of preferences, and cost of time.
- There are two decisions taken sequentially in this game:
  - acquire information or not
  - put effort in the negotiation, or delegate

We test these predictions through an online experiment among couples in Belgium and France.

The model - Timing of the game

1. Information acquisition: Both spouses decide whether to pay the fixed cost γ_i to learn the true state of the world, m.
2. Information sharing: An informed spouse decides whether to reveal the true state of the world m to the other spouse.
3. Choice of the decision process: Each spouse decides whether she wants to delegate the decision to the other spouse or to enter into contest to have a say by choosing $e_i > 0$.
4. Choice of the investment level: The winner of the contest, or the spouse who received delegation, chooses y. Each spouse receives U_i.

The model - Set-up - 1

- We denote both spouses in a couple: W and H.
- Spouses have to decide on the optimal purchase of a good $y \in \mathbb{R}$.
- The quality of the good m is not known and can be either low or high, $m \in \{-L, L\}$, with equal probability.
- Spouses do not agree on their preferred quality: their preferences differ by a distance $b > 0$.
- Spouses' benefits from the project are modeled by standard quadratic loss functions:

$$\begin{aligned} U_H &= -(y-m)^2 \\ U_W &= -(y-(m+b))^2 \end{aligned}$$

The model - Set-up - 2

- Each spouse decides whether to pay the fixed cost γ_i to learn the true state of the world m.
- To choose the level of investment y, spouses can either:
  - bargain – but it is costly
  - delegate the decision to the other spouse – but preferences differ by b
- Bargaining process determined by a contest function: each spouse i chooses a level of effort e_i
  - which comes at a cost ce_i
  - with probability $\frac{e_i}{e_i+e_j}$ spouse i decides, and with $1-\frac{e_i}{e_i+e_j}$ spouse j

The model - Optimal household decision

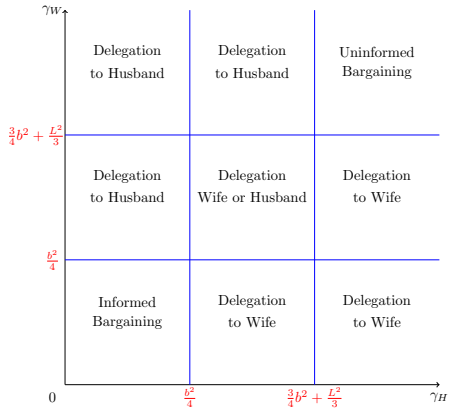
- Typically, an efficient allocation requires that the spouse with the smallest information cost, γ_i, gets the information (if this is worth it, i.e. if γ_i is not too large). Then, decision is taken by one spouse picking a value of y that is anywhere between 0 and b.
- Inefficiency may arise in this setting because, in a non-cooperative equilibrium:
  - Both players – even the one with the higher cost – may want to acquire information depending on how preferences are aligned, b.
  - Players may decide to put in costly effort to decide about the good.

Model resolution

- All decisions are taken non-cooperatively and we focus on the sub-game perfect Nash equilibria of this game.
- We solve this game backwards.
  - Given their information status, how much effort do they exert in the decision or do they delegate?
  - Then, given the payoffs associated with this decision, do they want to acquire information?

Model resolution - Step 1 Information acquisition

SPNE when bias is not too large: $L^2/3 > b$



Some interesting features

- Delegation takes place only if one player is informed and the other is not, and the bias b is not too large.
- Some equilibria are mixed delegation: it is essentially a chicken game, as the person who seeks information is ex post worse off.
- Under delegation, the person who delegates may be better off than the one who decides (since she bears the costs of acquiring information).
- Full delegation is efficient.
- Increasing information cost changes the decision structure from bargaining to delegation, or from delegation to bargaining.

From the model to the experiment

Generalizing, we test:

1. Each agent pays for acquiring information if and only if:
   1. the cost is lower than the expected benefit coming from acquiring info;
   2. the cost is lower than the expected benefit coming from participating.
2. Delegation takes place if and only if:
   1. once the cost of information acquisition has been paid by both, it never occurs;
   2. if the cost of information acquisition has not been paid, the misalignment of preferences is smaller than the expected loss of deciding uninformed.
3. We are going to see how these predictions match with our experimental settings.

The experiments

- Field experiment with 480 couples in Benin collected in May and June 2025.
  - Pineapple producing households
  - Part of a larger RCT
- Online experiment with 338 couples in Belgium and France collected between 2024 and 2025.
  - 4 pools of participants contacted through slightly different recruitment process
  - If interested, they follow a link to an independent platform and respond to few initial information:
  - Eligibility criteria: being more than 18, in couple, and living for more than 2 years together

Structure of the game

1. For each player:
   - We elicit her (hypothetical) WTP for certain goods.
   - Choice between same good as before and a voucher of cash with uncertain value.

   Decision 1 She can pay a fee to know the exact value of the transfer for each good.
   Decision 2 She can delegate the decision or choose to participate in the final decision.

   - Ex-post survey.
2. Each player decides for different goods. $\rightarrow$ Randomized.

General idea of the game

- The general idea is that we introduce experimental variation of γ_i, fixing $\gamma_j = 0$.
- With the different goods, we will estimate different b within couples in the WTP elicitation part.

$\rightarrow$ Given γ_i, γ_j, and the estimated b, we want to test how Player i plays.

Part 1 - WTP

- Instructions given through a video.
- The six goods presented are restaurant, bookshop, massage, bowling, supermarket/multi-shop gift card, and cinema vouchers.
- We elicit also for both players their WTP for the good under uncertainty: the good of value 60 Euros or an amount of cash between 20 Euros and 100 Euros.

Main variables

1. (Perceived) b: Difference in WTP.
2. L: (|Extreme-wtp|) where relevant extreme depends on whether good is chosen under uncertainty.
3. Model pay info:
    1. Info price γ_i lower than b.
    2. Info price γ_i lower than L.
4. Model participate:
    1. Payment for information, or
    2. No payment for information and $L > b$.

Results. Probability to acquire information - European experiment

	Pay (1)	Pay (2)	Pay (3)	Pay (4)	Pay (5)	Pay (6)
b	0.001**	-0.000				
	(0.000)	(0.001)				
C	0.001**	0.001**				
	(0.000)	(0.000)				
γ	-0.048***	-0.048***				
	(0.003)	(0.002)				
$b-\gamma$			0.093	-0.026		
			(0.057)	(0.071)		
$C-\gamma$			0.045	0.038		
			(0.040)	(0.050)		
$(b-\gamma)$*$(C-\gamma)$			0.372**	0.808***		
			(0.159)	(0.194)		
$b>\gamma$					0.065***	0.067**
					(0.024)	(0.029)
$C>\gamma$					0.015	0.009
					(0.021)	(0.030)
$(b>\gamma)*(C>\gamma)$					0.054*	0.068**
					(0.030)	(0.034)
Mean Y	0.238	0.238	0.238	0.238	0.238	0.238
Player FE		YES		YES		YES
R-squared	0.084	0.533	0.016	0.468	0.021	0.468
N	3320	3320	3320	3320	3320	3320

$\rightarrow$ The probability of paying for information increases by 14 percentage points when b and C are larger than γ (59% of the sample mean).

Results. Probability to delegate - European experiment

	Delegate (1)	Delegate (2)	Delegate (3)	Delegate (4)	Delegate (5)	Delegate (6)	Delegate (7)	Delegate (8)
b	-0.001***	-0.000						
	(0.001)	(0.001)						
C	0.001**	0.001*						
	(0.000)	(0.000)						
γ	0.013***	0.013***						
	(0.003)	(0.003)						
$b < C$			0.093***	0.063*	0.113***	0.077**		
			(0.028)	(0.033)	(0.028)	(0.034)		
$b - \gamma$			-0.053	0.006				
			(0.061)	(0.074)				
$(b < C)$*$(b - \gamma)$			-0.229*	-0.171				
			(0.117)	(0.127)				
$b > \gamma$					0.017	0.016		
					(0.028)	(0.032)		
$(b < C)$*$(b > \gamma)$					-0.088**	-0.072*		
					(0.035)	(0.038)		
No info							0.341***	0.368***
							(0.025)	(0.030)
$b >= C$							-0.047	0.036
							(0.035)	(0.040)
(No info)*$(b >= C)$							-0.034	-0.110**
							(0.039)	(0.043)
Mean Y	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630
Player FE		YES		YES		YES		YES
R-squared	0.012	0.530	0.011	0.525	0.012	0.526	0.092	0.571
N	3320	3320	3320	3320	3320	3320	3320	3320

$\rightarrow$ Column 5 that indicates that delegation is 11 percentage points (17% of the sample mean) more likely when both constraints ($b < C$ and $b < \gamma$) are satisfied.

Results. Welfare - European experiment

	Player payoff (1)	Player payoff (2)	Difference player-partner (3)	Difference player-partner (4)
delegation	2.336***	2.336***	2.874***	3.913***
	(0.598)	(0.808)	(0.390)	(0.519)
bias	0.013	0.010	-0.039	0.009
	(0.020)	(0.025)	(0.024)	(0.024)
bias*delegation	-0.098***	-0.137***	-0.196***	-0.236***
	(0.028)	(0.031)	(0.031)	(0.030)
Mean Y	50.633	50.633	4.006	4.006
Player FE		YES		YES
R-squared	0.012	0.265	0.118	0.417
N	3320.000	3320.000	3320.000	3320.000

Results. External validity - Beninese experiment

	Index of disagreement (1)	Index of free-riding (2)	Index of conflict (3)	Delegate supervision (4)	Freedom movement (5)	Financial empowerment 1 (6)	Financial empowerment 2 (7)
delegation	-0.142***	-0.180***	-0.097**	0.215***	0.050***	-0.058***	-0.167***
	(0.053)	(0.052)	(0.048)	(0.073)	(0.019)	(0.017)	(0.063)
age husband	-0.001	-0.000	0.002	0.009**	-0.000	-0.001	0.002
	(0.003)	(0.003)	(0.003)	(0.004)	(0.001)	(0.001)	(0.004)
age wife	-0.007*	-0.001	-0.002	-0.011**	0.002**	0.003**	0.000
	(0.004)	(0.003)	(0.003)	(0.005)	(0.001)	(0.001)	(0.005)
any edu husband	-0.050	-0.051	-0.020	-0.026	-0.013	-0.038**	0.053
	(0.052)	(0.054)	(0.050)	(0.075)	(0.017)	(0.019)	(0.067)
any edu wife	-0.031	-0.023	-0.083**	0.089	0.009	0.035*	0.013
	(0.044)	(0.044)	(0.041)	(0.062)	(0.016)	(0.018)	(0.057)
Mean Y	0.270	0.392	0.265	0.743	0.648	0.694	0.486
R-squared	0.061	0.052	0.054	0.118	0.068	0.060	0.027
N	370.000	370.000	369.000	230.000	370.000	370.000	370.000

Baland et al. (2026). Conclusion

- We show both theoretically and empirically that:
  - Preferences alignment matters for deciding on optimal decision structure in the household.
  - (Opportunity) cost of acquiring information matters as well.
  - Decision structure is strongly embedded in information acquisition decision.
  - Delegating agency increases welfare, unless preferences are not aligned.
- We show theoretically that:
  - Receiving agency may reduce welfare.
  - Delegation implies efficiency.
- **Important implications for empirical assessment of female empowerment and well-being.**

Roadmap

- Specialization in the household
- Strategic behaviour

Strategic behaviour and reputation in the household (Buchmann et al., AER, 2025)

- Specialization within the household still widespread equilirbium
  - Women in childrearing and home production vs. men in paid work
- Women must rely on men transferring labor market income share
- What drives the size of such transfers and the discretion women have over how to spend them?
  - Existing household models and their empirical tests have documented the role of outside options
  - What if a woman's access to household resources also depends on her spouse's beliefs about her ability to manage such resources?
- This paper: brings to light reputation dynamics within the household, both theoretically and empirically


kuniokoa

Reputation within the Household

- Purchasing a lemon today damages reputation as a good budget manager
- We show that this can lead do two phenomena:
  - underinvestment in products with uncertain returns
  - overuse of lemons (products that turn out to be bad) to "save face"
    - generates what can look like sunk-cost fallacy
- Not specific to, but more consequential in, low-income countries, where women's labor income is low and overall household budget very tight
  - could explain why previous lit has found women seem to underinvest (e.g., preventive health) and have lower returns to capital (Bernhardt et al., 2018)

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  2. Signaling experiment: Do wives care about their market expertise reputation? Does the possibility to hide bad purchases matter for wives' investment decisions?

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  2. Signaling experiment: Do wives care about their market expertise reputation? Does the possibility to hide bad purchases matter for wives' investment decisions?
  3. Investment experiment: Do wives with different market expertise invest differentially when reputation is at stake, but not when reputation is not at stake?

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Experiment 1 and 2: Two Lab-in-the-Fields with Couples

- 1,093 married couples in 36 villages in Neno district (Southern Malawi)
- Between May and July 2019
- An hour-long survey administered separately to the husband and the wife
- Husband survey embedded the transfer experiment (experiment 1)
- Wife survey embedded the signaling experiment (experiment 2)

Descriptives

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- We randomly increase salience of wife's past investment mistakes: Husband plays game immediately following a mistake recall module ▸ module
  - Create index for wife's *Market Expertise Reputation* (MER)
  - Low-MER negatively correlated with transfers from husband to wife in past 2 months ▸ Results

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Placebo estimates

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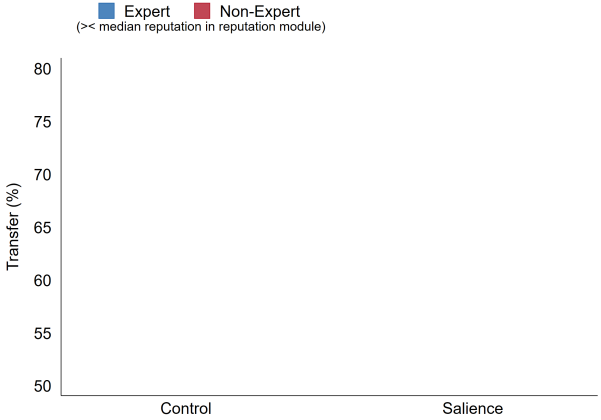

Controls: Enumerator FE; robust to: wife and husband's age, education, income, income variability, risk preferences, ability (math and raven), years married, # children, # hh members, transfers in last 2 months.

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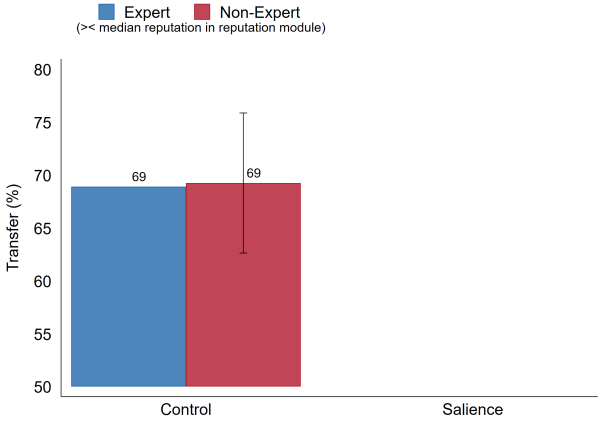

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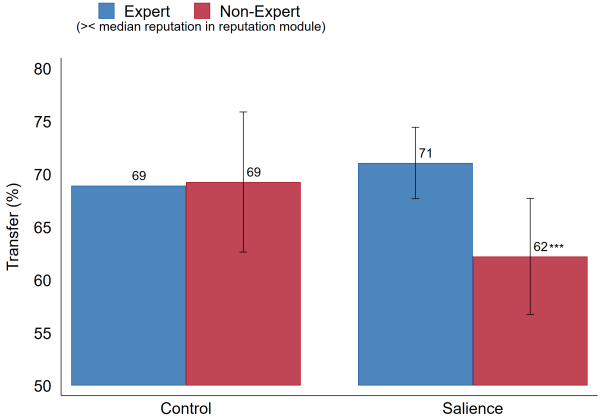

Controls: Enumerator FE; robust to: wife and husband's age, education, income, income variability, risk preferences, ability (math and raven), years married, # children, # hh members, transfers in last 2 months.

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Experiment 2: The Signaling Experiment - 1,093 wives

- *Do non-experts invest as much as experts when the price of hiding is low?*
- *Do non-experts invest less than experts when the price of hiding is high or intermediate?*
- *Do non-experts hide more than experts?*

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  - *Self-identified non-experts* ($<$ median score prior, 39%) vs. *experts* ($\geq$ median score prior)

Experiment 3: The Investment Experiment

- *Do non-experts invest as much as experts without uncertainty about the risky good?*
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Descriptives Goods Stickers

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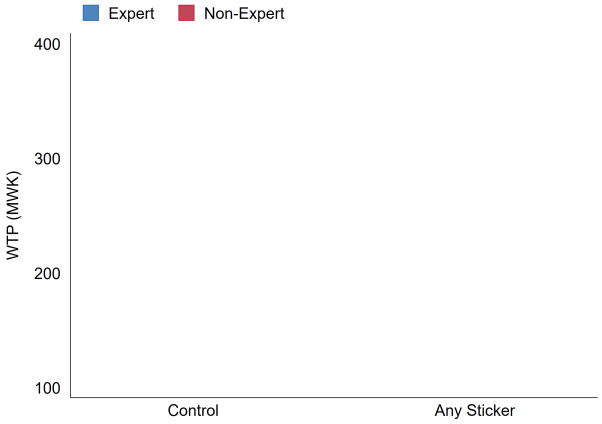
  - *Household position salient* (BDM before/after transfer/budget decision-making module)

▸ Descriptives ▸ Goods ▸ Stickers

Pred 3:Non-experts invest no less than experts wo reputation concerns



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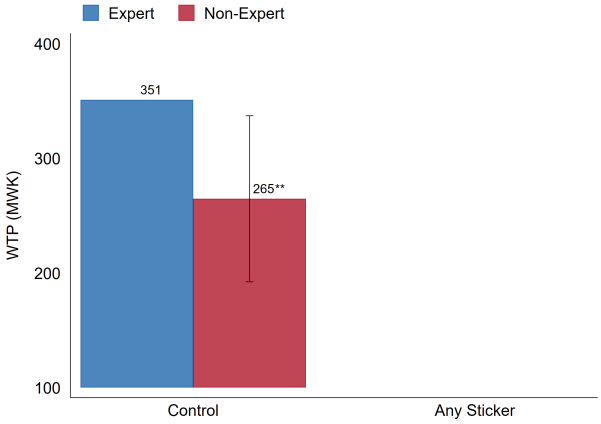

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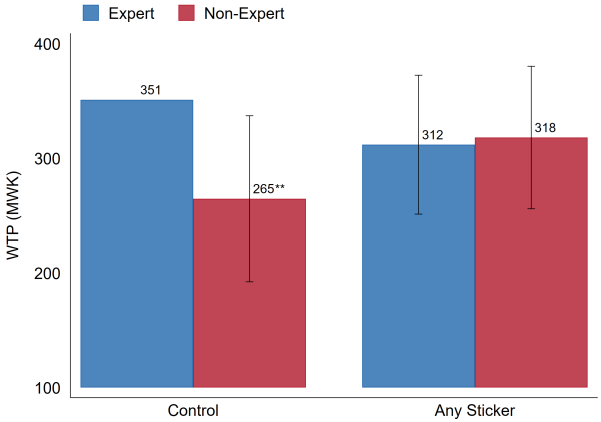
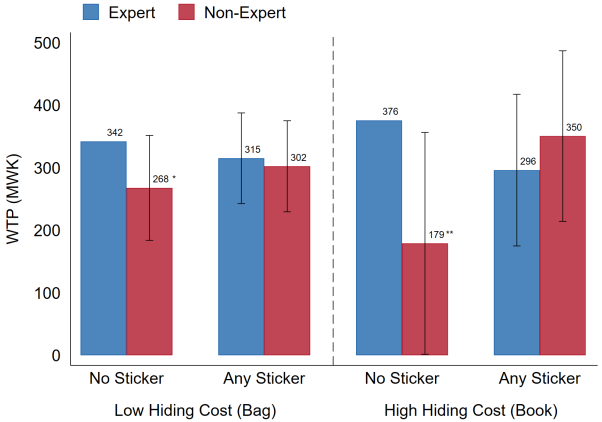
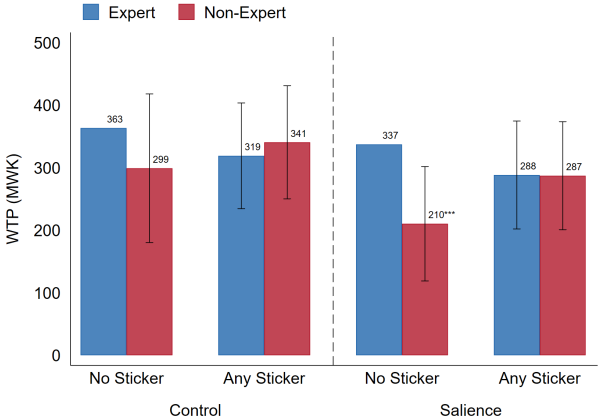


Pred 3: Investment Gap Larger for High-Cost Good



Controls: Enumerator and Market FE; robust to: wife's age, education, ability (math), wife and husband's income, years married, # children, # hh members, transfers in last 2 months.

Pred 3: Investment Gap Larger when Husband Relationship Salient



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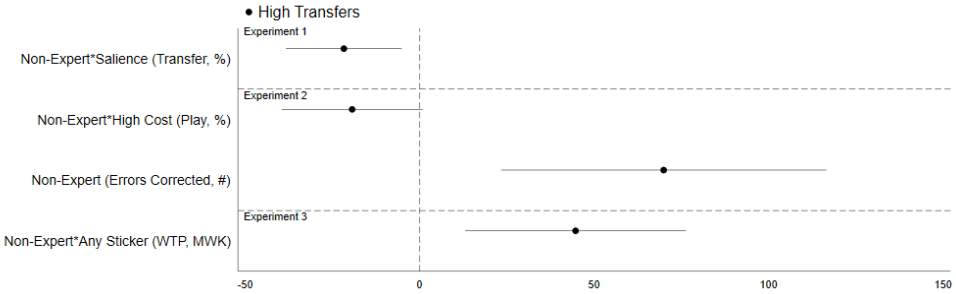
Pred 4: All- experiments - Results Driven by Wives whose Reputation is Still at Stake



Coefficients = ppt deviations from the control means. Controls: Enumerator (and market) FE; robust to: wife and husband's age, education, income, income variability, risk preferences, ability (math and raven), years married, # children, # hh members, transfers in last 2 months, reputation in experiment 1.

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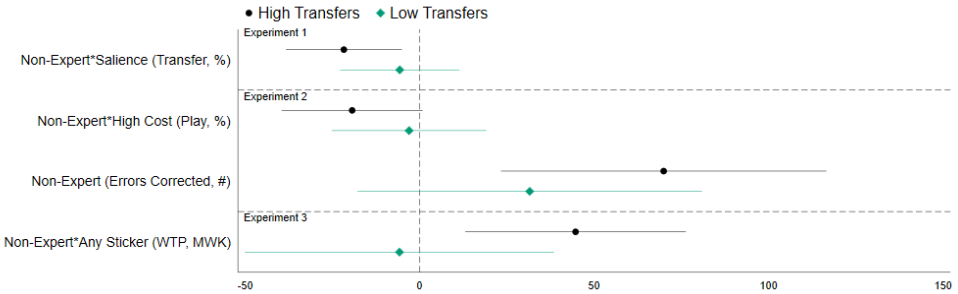

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Buchmann et al. (2025). Conclusions

- Women are willing to pay substantial welfare costs in order to maintain their reputation, both by forgoing profitable investment and paying hiding cost
- Similar strategic issues when wife has private information on risk or investment returns (Apedo et al, 2025; Ashraf et al, 2026).
- Implications for policy design

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- Similar strategic issues when wife has private information on risk or investment returns (Apedo et al, 2025; Ashraf et al, 2026).
- Implications for policy design
  - Many well-intentioned [development] programs target female household members, but asking them to experiment with uncertain investments may create undue strain/burden given reputation concerns
  - Consider involving husbands, or at least ensure wives can credibly convey benefits of new technologies to husband (also matter for fertility)

Roadmap

- Specialization in the household
- Strategic behaviour

What determines how many children a family has?

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- Total fertility $= f$(Desired fertility, Ability to reach desired fertility)

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- Total fertility = f(Desired fertility, Ability to reach desired fertility)
- So to think about determinants of fertility in developing countries, we need to think separately about:
  - What determines the number of children a family *wants* to have
  - What prevents them to stop there (barriers to family planning)

Determinants of desired fertility

What determines how many children a family wants?

Determinants of desired fertility

What determines how many children a family wants?

- Opportunity cost of child rearing (so more educated women likely to want fewer children)
- Importance of children support in old age
- Probability that children survive to provide support in old age (that's where the death rate comes in)
- Need for family labor on the farm, extra worker outside the home (child labor)
- Relative bargaining power of the wife/husband in the family, in case they have divergent preferences for kids
  - In some countries, men report larger ideal family sizes than their wives on average
  - Note: This need not be a problem in countries where polygamy allowed

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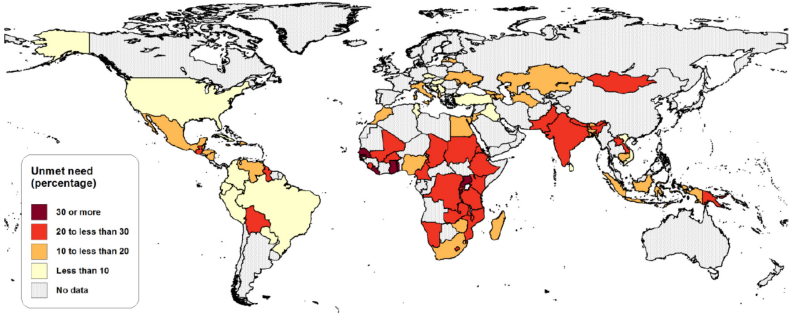
  - E.g. According to the 2007 Zambia Demographic Health Survey (ZDHS), 41% of births in the previous five years were unwanted at the time of conception. Similar figures in other countries.

Unmet Need

Figure 1: Percentage of women with an unmet need for family planning (any method) among those aged 15 to 49 who are married or in a union: most recent data available



Source: World Contraceptive Patterns 2013 (United Nations, 2013), available from www.unpopulation.org.
Note: The boundaries on this map do not imply official endorsement or acceptance by the United Nations.

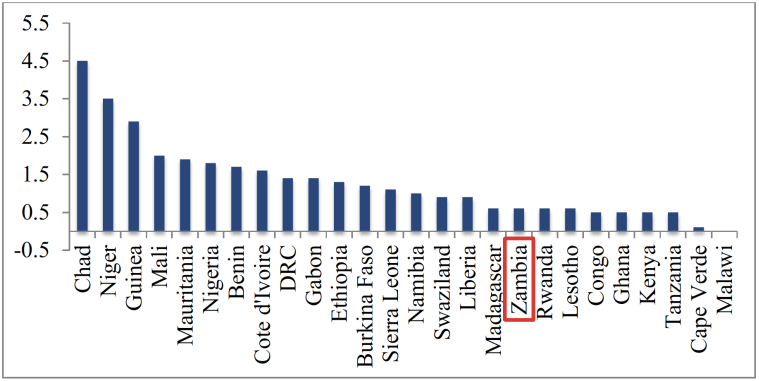
Is it a problem of access?

- A number of studies have looked at the effect of introducing family planning programs on fertility.
- Access has been increasing rapidly in Sub-Saharan Africa, but take-up has not been as pronounced.

Gender gap in fertility preferences I

- (Desired) fertility has steeply declined around the world
- This transition has stalled in much of sub-Saharan Africa (Bongaarts, 2008)
  - Women's demand for children has fallen rapidly
  - Men's preferences remained relatively constant
  - Widening gender gap in desired number of children

Gender gap in fertility preferences II



Source: Westoff (2010)

Why the gender preference gap matters

- Strong implications for intra-household decision-making: Ashraf, Field and Lee (AER, 2014)
  - Field experiment with 800 couples: randomly varied whether women given access to contraceptives alone (standard NGO model) or with their husbands (spousal veto).
  - Women given access with their husbands 19% less likely to seek family planning services, 25% less likely to use concealable contraceptives, 27% more likely to give birth.
  - Effects concentrated among couples where husband wanted more kids than wife did.

Is bargaining power a problem?

- Women receiving the voucher with their husbands report being significantly happier and more satisfied with their lives.
  - Individual treatment: 54% report feeling "Happy and Content" or "Very Happy and Content" compared to women in their community of the same age
  - Couples treatment: 69% report this high level of happiness
- Results are driven by couples where the husband desires more children than his wife.

Understanding the Gender Gap in the Demand for Children

- Many possible reasons for a gender gap
- Is the gender gap in fertility demand partly determined by a difference in **beliefs** about cost?
  - Health risks of childbirth: maternal mortality and morbidity
- Can targeted information align the gap?
  - (open question re: why information doesn't spread in the household to facilitate efficient decision making, and why wrong beliefs could be sustained over time.)

Ashraf et al., REStud (2026)

- Conceptual framework and supporting descriptives
- Experimental design: three arms
  1. Husband receives maternal mortality training & wife receives family planning training
  2. Wife receives maternal mortality training & husband receives family planning training
  3. Both receive family planning training (separately)
- Outcomes
  - Changes in realized fertility after the intervention
  - Mechanisms: maternal health knowledge, communication, intra-household transfers.

Conceptual framework: Fertility decision in the household

- Spouses have different preferences.

$$U_j^H(n,t) = -\left(\alpha^H - \delta\theta - n\right)^2 - \gamma t$$

$$U_j^W(n,t) = -\left(\alpha^W - \theta - n\right)^2 + t$$

Information about Risk in the Household

- Woman has more precise information about the risk realization θ.
  - Information updating may have been more salient to her
  - She may have been exposed to information updating more frequently
  - Husband may have more sticky priors

Communication and Information in the Household

- Woman sends signal about such risk to her husband.
- Husband only updates partially, and contraception use is not his optimal choice.
- If preference gap is large enough, communication can be completely uninformative (Crawford and Sobel, 1982).

Differences in preferences at baseline I

Fertility Outcomes, Preferences, Beliefs and Attitudes at Baseline

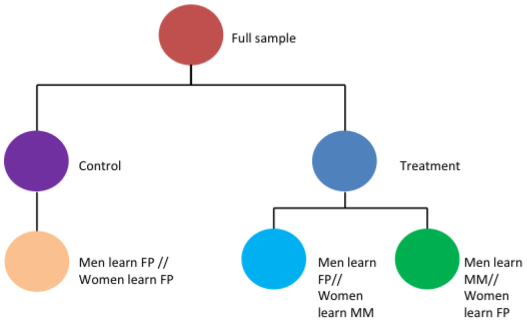
	Women	Men	Diff. SE	p-value
Panel A: Maternal Health Experience and Communication				
Past maternal and birth complications or difficulties	0.138	0.175	(0.019)	[0.055]
Past maternal complications or difficulties	0.113	0.114	(0.017)	[0.918]
Immediate family member died from complications	0.039	0.032	(0.010)	[0.470]
Close relative died from complications	0.067	0.049	(0.012)	[0.147]
Close friend died from complications	0.110	0.068	(0.015)	[0.006]
Distant friend died from complications	0.108	0.050	(0.014)	[0.000]
Heard someone experienced complications last year	0.363	0.324	(0.025)	[0.123]
Heard someone died in childbirth last year	0.352	0.246	(0.024)	[0.000]
Discussed family planning with healthcare provider	0.474	0.194	(0.024)	[0.000]
Communicated info about future possibility of complications	0.534	0.276	(0.025)	[0.000]
Total observations	715	715		

Differences in preferences at baseline

Fertility Outcomes, Preferences, Beliefs and Attitudes at Baseline II

	Women	Men	Diff. SE	p-value
Panel B: Maternal Mortality and Morbidity				
Ideal space between children (m)	41.142	36.636	(0.955)	[0.000]
Months woman should give body to recover post-birthing	27.058	26.132	(0.975)	[0.343]
Women with more kids at same or lower risk of complications	0.223	0.280	(0.023)	[0.013]
Older women at same or lower risk of complications	0.154	0.257	(0.021)	[0.000]
Likelihood of complications if immediately pregnant	8.000	7.880	(0.127)	[0.343]
Likelihood of complications if pregnant 12 months after delivery	4.722	4.686	(0.137)	[0.793]
Likelihood of complications if pregnant 24 months after delivery	2.400	2.155	(0.124)	[0.048]
Likelihood of complications if less than 4 kids	3.076	2.933	(0.121)	[0.238]
Likelihood of complications if more than 4 kids	5.805	6.014	(0.136)	[0.123]
Likelihood of complications if younger than 40	3.721	3.261	(0.130)	[0.000]
Likelihood of complications if older than 40	7.930	7.451	(0.118)	[0.000]
Reports that infidelity increases risk of complications	0.420	0.555	(0.026)	[0.000]
Relative infidelity weight	0.304	0.328	(0.009)	[0.009]
Total observations	715	715		

Study design



- **Identification**: we required both spouses to come to the meetings, regardless of which spouse was treated.

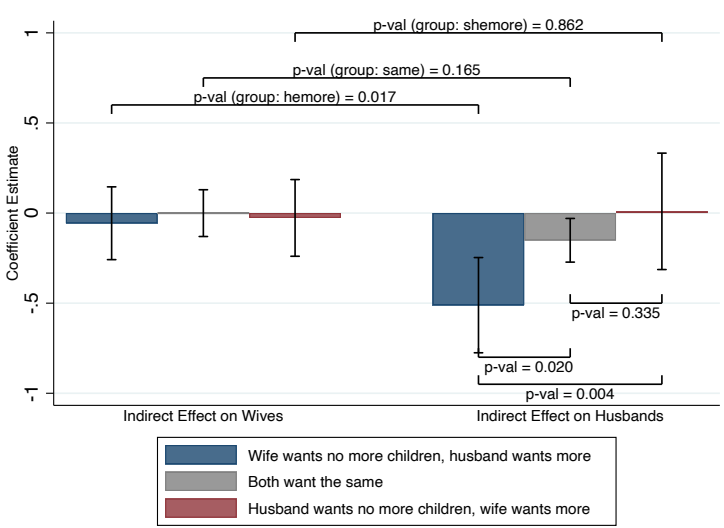
Intervention

- Family Planning Community Meeting.
- Maternal Mortality + Family Planning Community Meeting.
- Minimize spillovers by having same treatment all weekend.
- All community meetings in same location.

Outcome Measurement

1. Fertility preferences, attitudes toward family planning.
2. Beliefs/knowledge of maternal health issues, household communication.
3. Husband's demand for a family planning voucher.
4. Voucher take-up and contraceptive use.
5. Fertility outcomes.

Main Outcomes: Communication



Main Outcomes: Fertility

	(1) Fertility index	(2) Currently pregnant	(3) Likelihood have more children
Husband treated (β_H)	-0.192	-0.053	-0.823
	(0.079)	(0.030)	(0.361)
	[0.018]	[0.076]	[0.025]
Wife treated (β_W)	-0.142	-0.041	-0.587
	(0.082)	(0.031)	(0.375)
	[0.088]	[0.185]	[0.122]
F-test p-value (β_H=β_W)	0.484	0.688	0.477
Mean of control group		0.120	6.450
Observations	534	534	534

Main Outcomes: Transfers

	(1) Transfers index	(2) Any gift in past month	(3) Value of gifts past month	(4) Emotional support	(5) Wife happy with marriage
Husband treated (β_H)	0.029	0.012	-9.989	0.055	0.071
	(0.055)	(0.052)	(16.525)	(0.182)	(0.038)
	[0.597]	[0.811]	[0.547]	[0.765]	[0.061]
Wife treated (β_W)	-0.161	-0.132	-38.891	-0.036	-0.059
	(0.059)	(0.057)	(15.435)	(0.190)	(0.048)
	[0.008]	[0.024]	[0.014]	[0.849]	[0.227]
F-test p-value (β_H=β_W)	0.001	0.002	0.026	0.624	0.006
Mean of control group		0.490	93.830	5.630	0.750
Observations	503	502	502	515	515

Determinants of Fertility: conclusion

- If we think that it's important for family size to decrease in poor countries, we need to work on the determinants of desired fertility, in addition to increasing access to contraceptives

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  - help bring about modernization of agriculture to reduce need for child labor? water and electricity and appliances to reduce chores?
  - e.g. increase education / economic opportunity for women (to increase opportunity cost of children, also their bargaining power within household)
  - expand schooling opportunities so that parents can better substitute child "quality" for quantity...

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  - expand schooling opportunities so that parents can better substitute child "quality" for quantity...
- But are we sure it's important for family size to decrease?

Conclusion

- Very strong son preference in South Asia and China
- Decrease in poverty means fewer women die prematurely
- But availability of ultrasound technology means that many more women never get to be born

Final thoughts

- Opportunity cost determines who specialises in what.
- Once one equilibrium emerges, women try to maximise their welfare given the constraints.
- How to change equilibria?
- How to measure empowerment and welfare more broadly?

THANK YOU