



RWANDA

New Tools for Evaluating Gender Impacts of Climate Services for Agriculture Field Experiments in Rwanda

Radisson Blu Hotel and Convention Center, Kigali
December 15, 2021, 3:00-5:00pm

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RESEARCH PROGRAM ON
**Climate Change,
Agriculture and
Food Security**



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Today's program

OPENING REMARKS

David J. Spielman, Program Leader, IFPRI Rwanda Strategy Support Program

SPEAKERS

Chantal Ingabire, Director General of Planning, Ministry of Agriculture & Animal Resources

Desire Kagabo, Research Scientist, Alliance of Bioversity and CIAT

Berber Kramer, Senior Research Fellow, IFPRI

Emerence Kagabo, Project Coordinator, Alliance of Bioversity and CIAT

Samson Dejene, Research Analyst, IFPRI

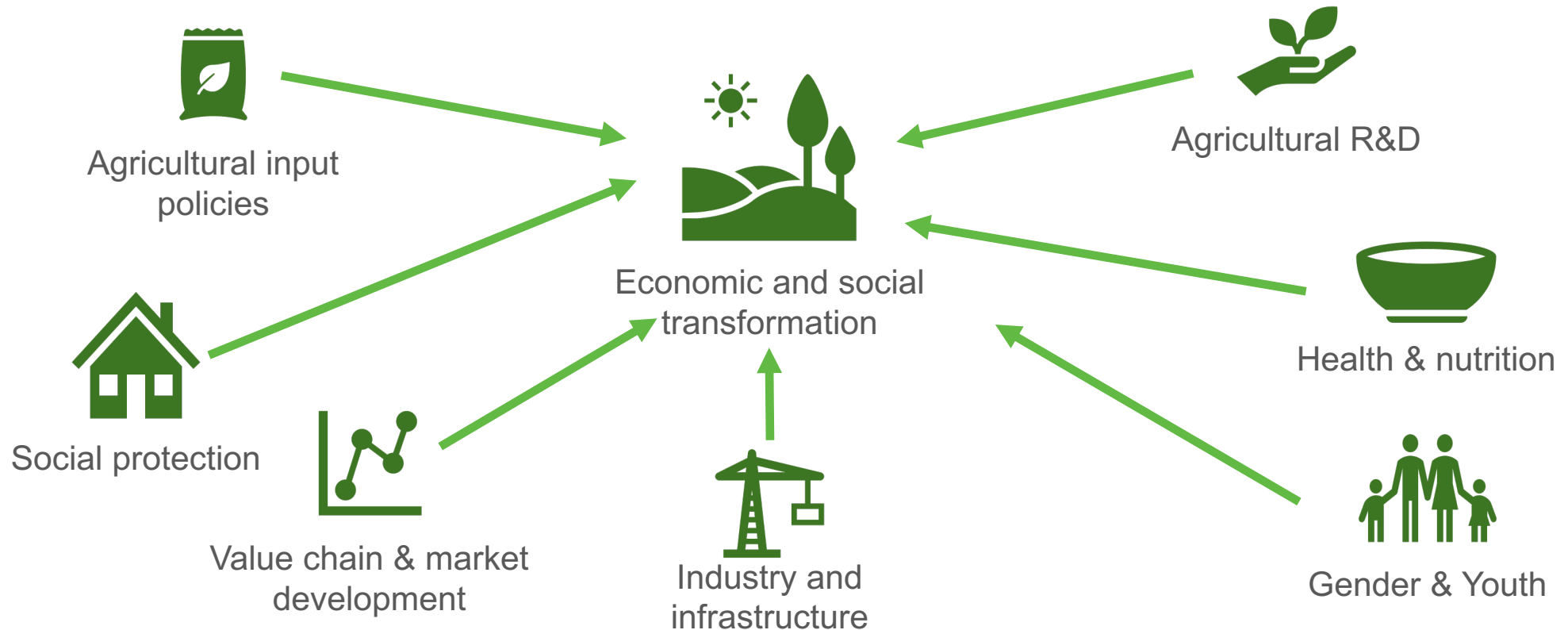
Johanna Mollerstrom, Associate Professor, George Mason University

Tatiana Gumucio, Research Scientist, Clark University

The Rwanda Strategy Support Program

Partnership | Capacity development | Policy analysis

Objective: to support policies for sustainable growth in Rwanda by enhancing national capacity to implement the National Plan for Agricultural Transformation and the National Economic Recovery Plan for COVID-19



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Acknowledgements



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Climate Information Services, description and impacts in Rwanda

Desire Kagabo, Alliance Bioversity and CIAT

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How Climate Information Services evolved in Rwanda

Enhancing National Climate Services initiative
(ENACTS)
(ACPC, 2014-2015)

Rwanda Climate Services for Agriculture
(USAID, 2016-2019)

Weather and Climate
Information Services for Africa:
WISER-Rwanda. (DfID, 2018-
2020)

Rwanda Green Fund: FONERWA
UNDP-Project

Climate Resilient
Post-harvest
Agribusiness
Support (IFAD)

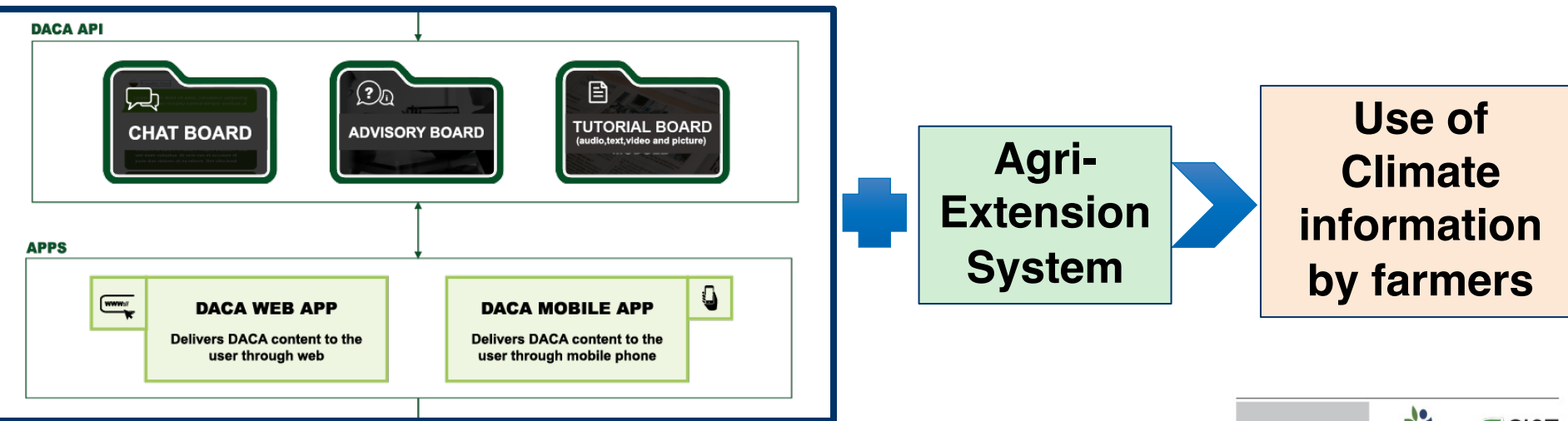
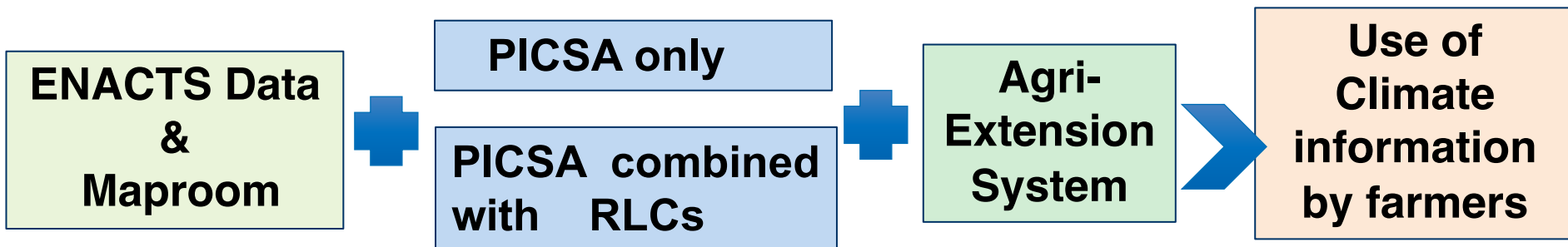
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Addressing key capacity challenges: Rwanda case study

Challenge	Solution
<p>Farmers' capacity to access, understand, act on information</p>	<p>Structured participatory communication and planning process (PICSA), combined with radio</p>
<p>Agricultural extension capacity to communicate and support rural climate services</p>	<p>PICSA training-of-trainers approach for <i>Twigire Muhinzi</i> staff and volunteers, cooperatives, NGOs</p>
<p>Government (national, local) capacity for climate-informed agricultural and Food Security planning</p>	<p>Developing water balance based decision support tools. Training and infrastructure for local government.</p>
<p>Meteo-Rwanda capacity to provide actionable local information at national scale</p>	<p>ENACTS approach to support Meteo-Rwanda to provide of online gridded Maproom information for agriculture</p>

Tools and approaches used to develop and disseminate climate information services



ENACTS: Rwanda Climate Maproom

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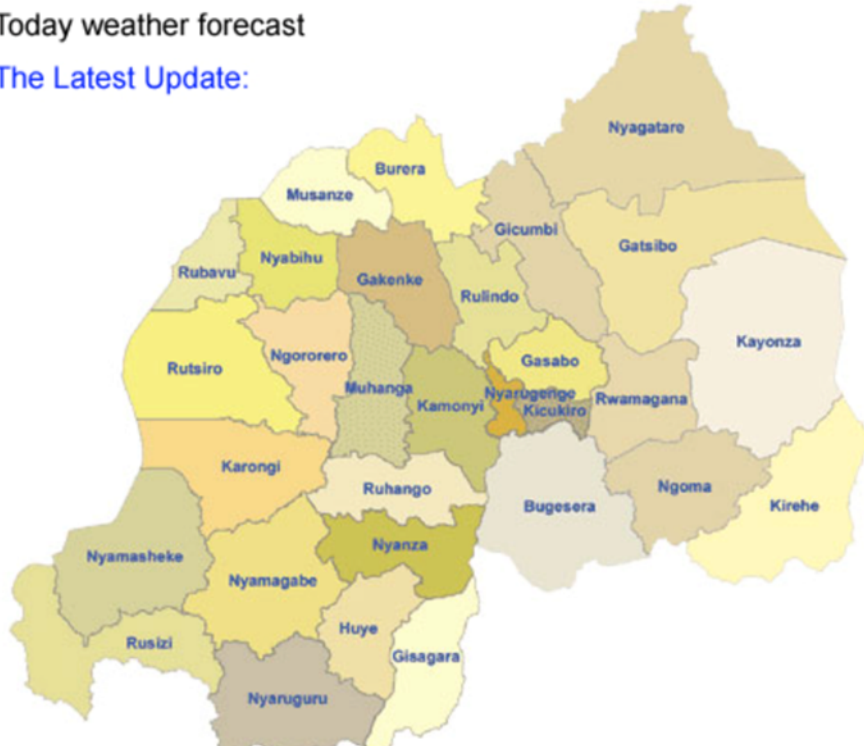
Learning

Map Rooms

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Today weather forecast

The Latest Update:



Latest News



Meteo Rwanda to train Farmers Cooperatives on the application of weather and climate information into agriculture sector

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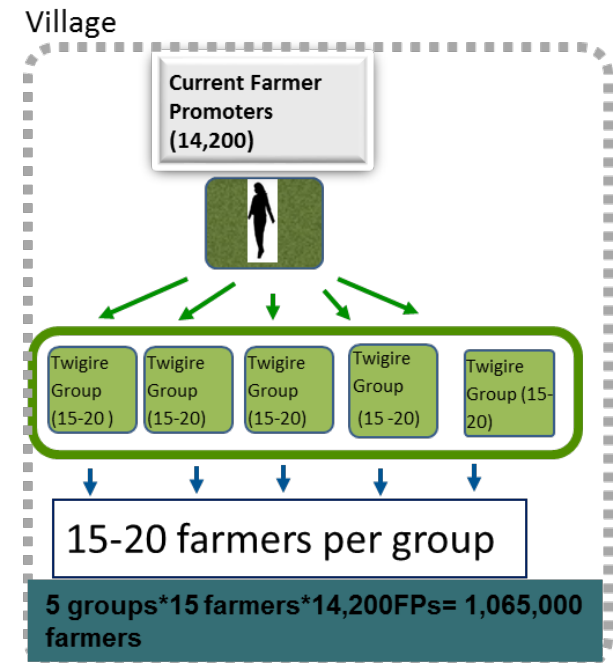


Capacity Building and Climate Provision through ENACTS initiative: Achievements to date

- Filled decade-long gap in historical record, following genocide
- Most advanced suite of online climate information for agriculture in Africa:
 - Historical analysis of seasonal rainfall total; dry/wet spells; extremes; season onset, cessation and duration
 - First national flexible seasonal forecast Maproom
 - Prototype soil water balance tools
 - Automatic generation of graphs formatted for PICSA workshop use
- Nine technical training workshops for Meteo Rwanda
- M.Sc. scholarships for 7 Meteo Rwanda staff and 3 RAB staff

A. Delivery of PICSA through Agricultural Extension

- Adapted Participatory Integrated Climate Services for Agriculture (PICSA) method to *Twigire Muhinzi* decentralized agricultural extension system
- Training-of-trainer approach:
 - Trained professional staff, 4 local NGOs
 - ...who trained field staff and volunteer Farmer Promoters
 - ...who trained and facilitated their farmer groups
- Progressive implementation across all 30 districts, 3 sectors per district



B. Delivery through Radio

- *Radio Huguka* biweekly interactive climate services programming
- Training for journalists
- Weather information sms and interactive voice response
- Radio Listening Clubs: Integrating radio, mobile phone and agricultural extension channels

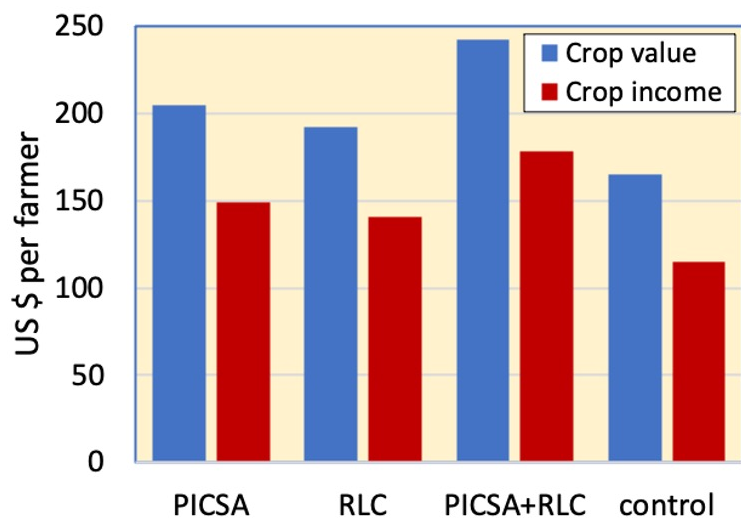


Achievements to date

- >1,600 professionals, *Twigire Muhinzi* field staff and volunteers trained in PICSA process
- Over 110,000 farmers across 30 districts trained and facilitated
 - >90% change management, perceive several benefits
 - ~10:1 multiplier through farmer-to-farmer communication
- Climate service radio programming accessible to 70% of population (~8.9M)
- **225 RADIO LISTENING CLUBS**



Actual productivity and livelihood impacts aggregated across to more than 112,000 people who participated in participatory communication processes of CIS and CSA



- Farmers trained on CIS and CSA through PICSA and participating in Radio Listeners Clubs (RLC) their value of crop production was increased by 47% and their income from crops increased by 56% increase
- The mean impact measured in the evaluation survey translates to an estimated:
 - \$3.87 million per year increase in net income from crops and
 - \$4.54 million per year farmgate value of crop production, aggregated across the 112,767 farmers who participated in PICSA.



EVERYONE FEELS MORE
RESILIENT TO CLIMATE RISKS

Influence beyond Rwanda

- First demonstration that intensive, face-to-face communication processes can be scaled up
- Awarded the first *Climate Smart Agriculture Project of the Year Award* at Africa Climate Smart Agriculture Summit 2018



Rwanda Climate Services for Agriculture project awarded the first ever Climate Smart Agriculture Project of the Year 2018

 AFRICA CLIMATE SMART AGRICULTURE SUMMIT

Project of the Year Award

Recognising outstanding projects that unite stakeholders with the shared goal of establishing and furthering climate smart agriculture initiatives



Africa Climate Smart Agriculture Summit



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Thank you for your attention



RWANDA

Women's empowerment in impact evaluations of climate information services: An introduction to new tools for addressing crucial evidence gaps

Berber Kramer

International Food Policy Research Institute (IFPRI), Nairobi, Kenya



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Project launch workshop
Kigali, December 15, 2021



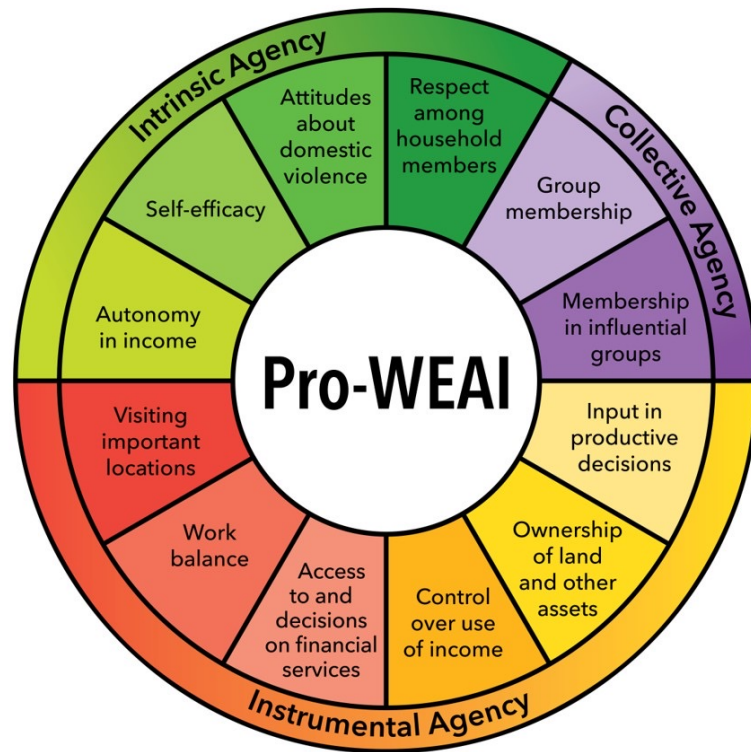
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Some difficult trade-offs for policymakers:

- Introducing a new bean variety increases net household income but replaces a variety for which women used to control the proceeds, reducing their personal income. Roll out this new variety?
- One climate information service helps both women and men save time, whereas another program reduces women's workload more, but doesn't help men save time. In which program to invest in order to maximize total welfare?
- A women's empowerment program creates new job opportunities for women, increasing their income, but also their workload. Can we consider this program to be empowering, and do we want to invest in this program?

Existing tools to measure program impacts on women's empowerment

- Project-level Women's Empowerment in Agriculture Index (Pro-WEAI)



- Gender Empowerment Index for Climate Smart Villages (GEI-CSV)
 - **Political:** Independent right to vote, more participation in village level decisions.
 - **Economic:** Improved earning opportunity, improved skill set and capability to work.
 - **Social:** Improved participation in decision to spend money on home expenses, child education, agriculture, etc.
 - **Agricultural:** Better awareness that climate variability can be a risk to agriculture, better access to information to manage agricultural risk, etc.

- Measure changes in levels of empowerment, but how are these changes valued?

A tool to value changes in workload and income autonomy

- Determining whether a program or policy is cost effective in empowering women and is welfare-improving is a major challenge (multidimensional nature, trade-offs across domains)
- Using lab-in-the-field experiments, we aim to help address this challenge by developing and validating tools that measure how respondents value:
 - changes in workload;
 - changes in income autonomy; and
 - how they manage trade-offs between them.
- Field experiment is currently being implemented with 1000 respondents from 500 households spread across 4 cooperatives in Rwanda
- Experiment is repeated ahead of each major agricultural activity until the harvest phase (4 rounds).

Experimental task #1: Valuing control over income

For these scenarios, do you prefer ...

- | | | |
|------------------------------|----|---------------------------------|
| ▪ RWF 3,000 paid to yourself | OR | ▪ RWF 2,500 paid to your spouse |
| ▪ RWF 2,500 paid to yourself | OR | ▪ RWF 2,500 paid to your spouse |
| ▪ RWF 2,000 paid to yourself | OR | ▪ RWF 2,500 paid to your spouse |
| ▪ ... | | ▪ ... |
| ▪ RWF 1,000 paid to yourself | OR | ▪ RWF 2,500 paid to your spouse |

This first task elicits a respondents' valuation of control over income (Almas et al, EJ 2018).

- In the first choice, most participants will choose to be paid RWF 3,000 themselves
- At a later choice, most will switch and choose a higher level of income paid to their spouse

How much income is someone willing to sacrifice in order to be paid him- or herself?

Experimental task #2: Valuing changes in workload

For these scenarios, do you prefer ...

- RWF 2,500 OR ▪ RWF 2,500 + 1 day of labor
- RWF 2,500 OR ▪ RWF 2,000 + 1 day of labor
- RWF 2,500 OR ▪ RWF 1,500 + 1 day of labor
- ... ▪ ...
- RWF 2,500 OR ▪ RWF 500 + 1 day of labor

This second task elicits a respondents' valuation of a change in workload (Agness et al, NBER 2021).

- In the first choice, most participants will opt for the free labor
- At a later choice, as the labor cost goes up, most will switch and choose not to pay for labor

How much is someone willing to pay to reduce his/her workload by a day?

- Does this depend on whether the money is paid to someone him/herself, or to his/her spouse?

Variations in the experiment

- All choices are made with payments being made either in cash or in kind (soap). This is varied across rounds.
- We also vary whether participants choose which day the labor is provided (flexibility), versus whether we assign the labor on a fixed day.
- Experiment is incentivized to elicit revealed instead of hypothetical preferences.

Variations of the experiment



Respondents (or their spouses) are paid based on respondents' choice in a randomly selected task and scenario.



Labor is hired for respondents willing to pay a randomly selected labor cost. Half of respondents could choose which day they hired labor; others did not have this flexibility.

Cash may be valued differently than in-kind goods. In 2 of the 4 rounds, choices are made knowing that payments will be in soap rather than in cash.

Thank you!



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SURVEY OVERVIEW

Valuing Control over Income and Workload for Climate Information Services in Rwanda, 2021



By Emerence Mukangabo and
Samson Dejene Aredo

Outline

1. *Introduction*
2. *Survey sites and sample*
3. *Enumerators training and data collection*
4. Survey Participation Reward
5. Labor hiring for farmers
6. Insights and Recommendation

1. Introduction

- ✓ The project worked with farming cooperatives
- ✓ Partnering cooperatives – from 17 cooperatives – CCAFS project
- ✓ Crop for season A 2022 (from September to February 2022) – Maize & Common land.



2. Survey Sites and Sample



- ✓ **Districts** – Kamonyi, Nyanza, Gatsibo and Rubavu
- ✓ **4 Cooperatives** – recruited study participants
- ✓ **Members** – 240 - 824
- ✓ **250 farmers** per each cooperative; 125 members and 125 spouses

3. Enumerators training & Data collection

40 Enumerators & 4 Supervisors – 4 teams.

Farmers – 10 sessions per cooperative – 2 sessions/ day (1 session= 12& 13 couples)

- ✓ **Round 1 – Weeding 1-** General information& hypothetical questions& experimental part – 1000 farmers
- ✓ **Round 2 – Weeding 2& urea application –** First part of pro WEI& experimental part – 1000 farmers
- ✓ **Round 3 – Weeding 3 –** second part of pro WEI & experimental part –1000 farmers
- ✓ **Round 4 – GEI- CSV& Experimental part**



4. Survey Participation Reward



Reward in cash or in kind(soap)

- ✓ Choices – 4 tasks – 7 scenarios
- ✓ The tablet – randomly pick a fixed reward of 1000 or reward based on 1 of 4 tasks.
- ✓ Reward after interview on the same day – by Supervisors – confidential.
- ✓ Fixed reward – farmers did not like it

5. Labor hiring for farmers

Flexible timing & fixed timing treatment

- ✓ **Flexible** – Farmers can pick a specific date for the labor to come.
- ✓ **Fixed** – Farmers can not pick a specific date for which day we hire labor.
- ✓ **Labor gap** – covered if less than 1000 rwf



6. Insights from data collection & Recommendation

Farmers are constraints with time

- ✓ having laborers hired for them was much appreciated
- ✓ Farmers enjoyed the experimental part

In the future:

- ✓ Programs which might help farmers to save time
- ✓ Provide information to farmers at the right time(planting,..)
- ✓ Tricks for planting & weeding in a short time
- ✓ Use of agricultural technologies – time saving
- ✓ Use of improved varieties- short time



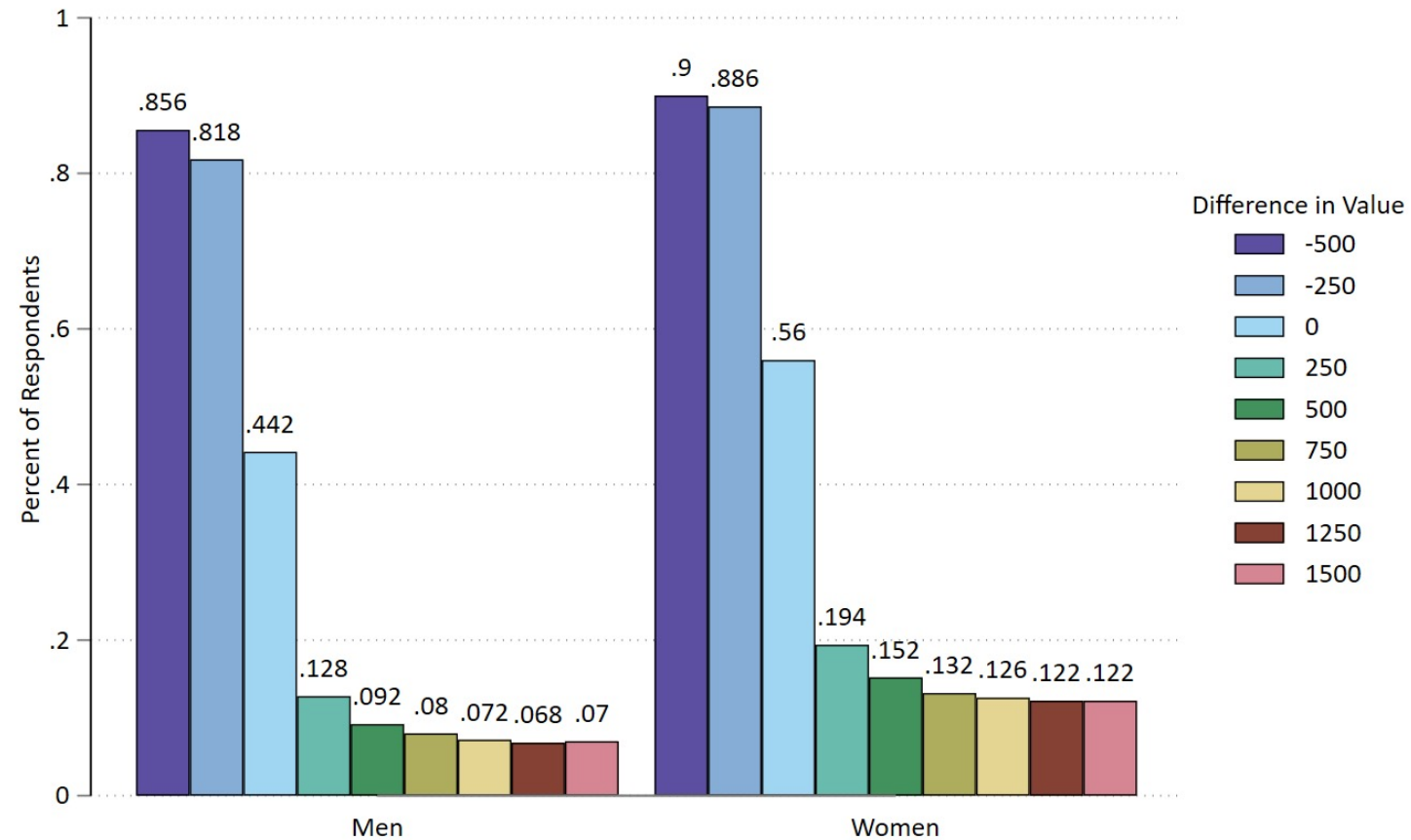
Some Initial (and Preliminary!) Results

Johanna Mollerstrom, George Mason U

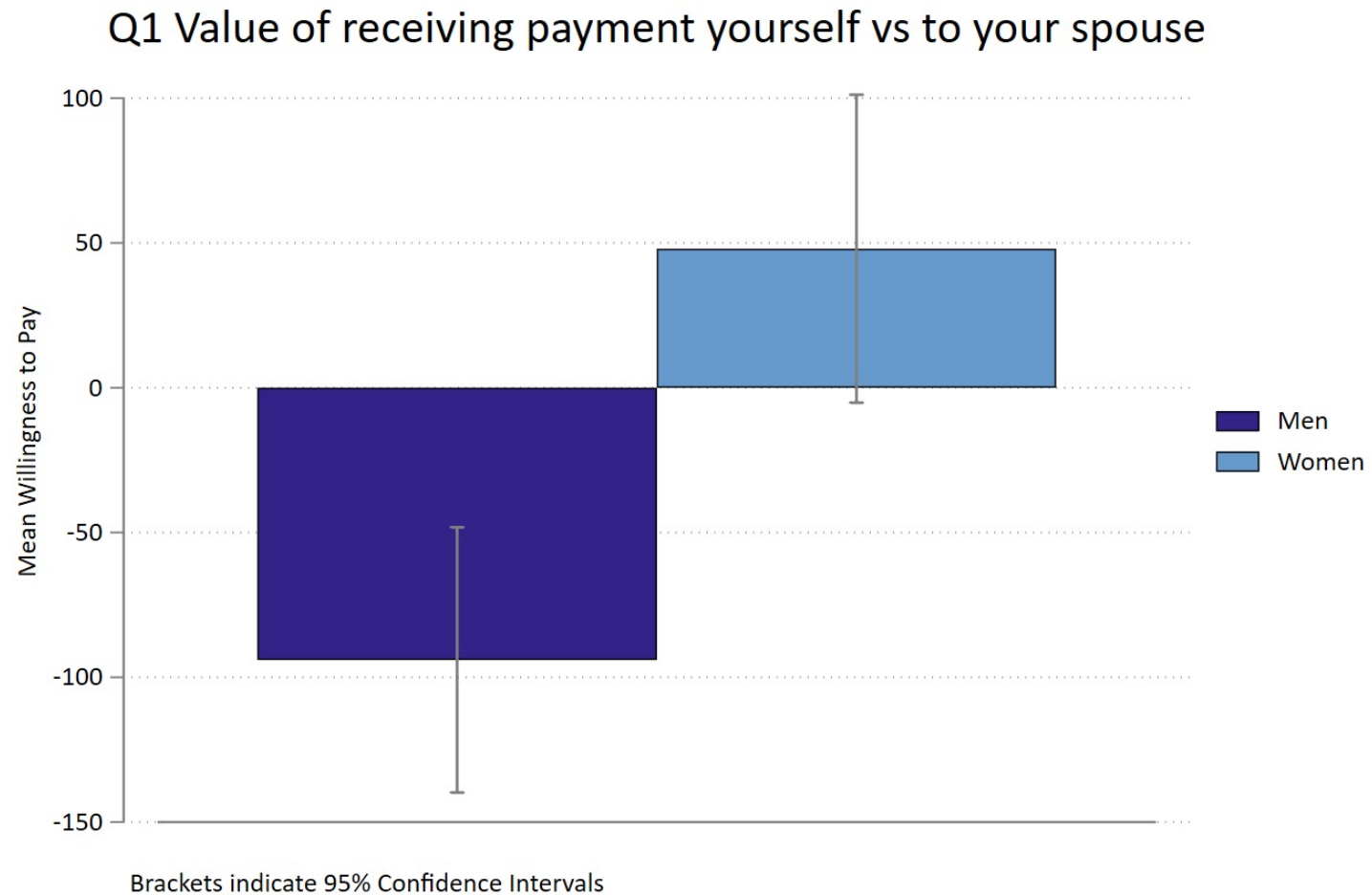
December 2021

Women Value Control over Income

% Receiving Payment to Themselves rather than to their Spouse



Women Value Control over Income, ctd



Women Value Control over Income, ctd

Binary Outcome - Money always goes to self				
	Q1: Always receiving payment yourself vs your spouse			
Women	0.054	0.054	0.054	0.087
	(0.017)***	(0.018)***	(0.017)***	(0.030)***
Cash		0.056		0.058
		(0.023)**		(0.029)**
Flexible			-0.011	0.033
			(0.03)	(0.03)
Women*Cash				-0.004
				(0.03)
Women*Flexible				-0.065
				(0.035)*
Constant	0.068	0.006	0.038	-0.01
	(0.014)***	(0.05)	(0.05)	(0.05)
Mean Y	0.1	0.1	0.1	0.1
R-squared	0.008	0.03	0.021	0.033
N	1000	1000	1000	1000
Note: Clustering at the cooperative session level				
* p<0.1, ** p<0.05, *** p<0.01				

Women Value Control over Income, ctd

	Q1: WTP to receive payment yourself vs to your spouse			
Women	142	144.088	142.99	231.149
	(31.465)***	(31.070)***	(30.731)***	(68.581)***
Cash		106.167		137.313
		(47.604)**		(58.512)**
Flexible			-62.009	8.378
			(49.45)	(59.22)
Women*Cash				-78.439
				(65.12)
Women*Flexible				-101.37
				(65.23)
Constant	-94	-221.088	-133.152	-228.069
	(29.431)***	(81.504)***	(93.45)	(99.453)**
Mean Y	-23	-23	-23	-23
R-squared	0.016	0.044	0.038	0.048
N	1000	1000	1000	1000
Note: Clustering at the cooperative session level				
* p<0.1, ** p<0.05, *** p<0.01				

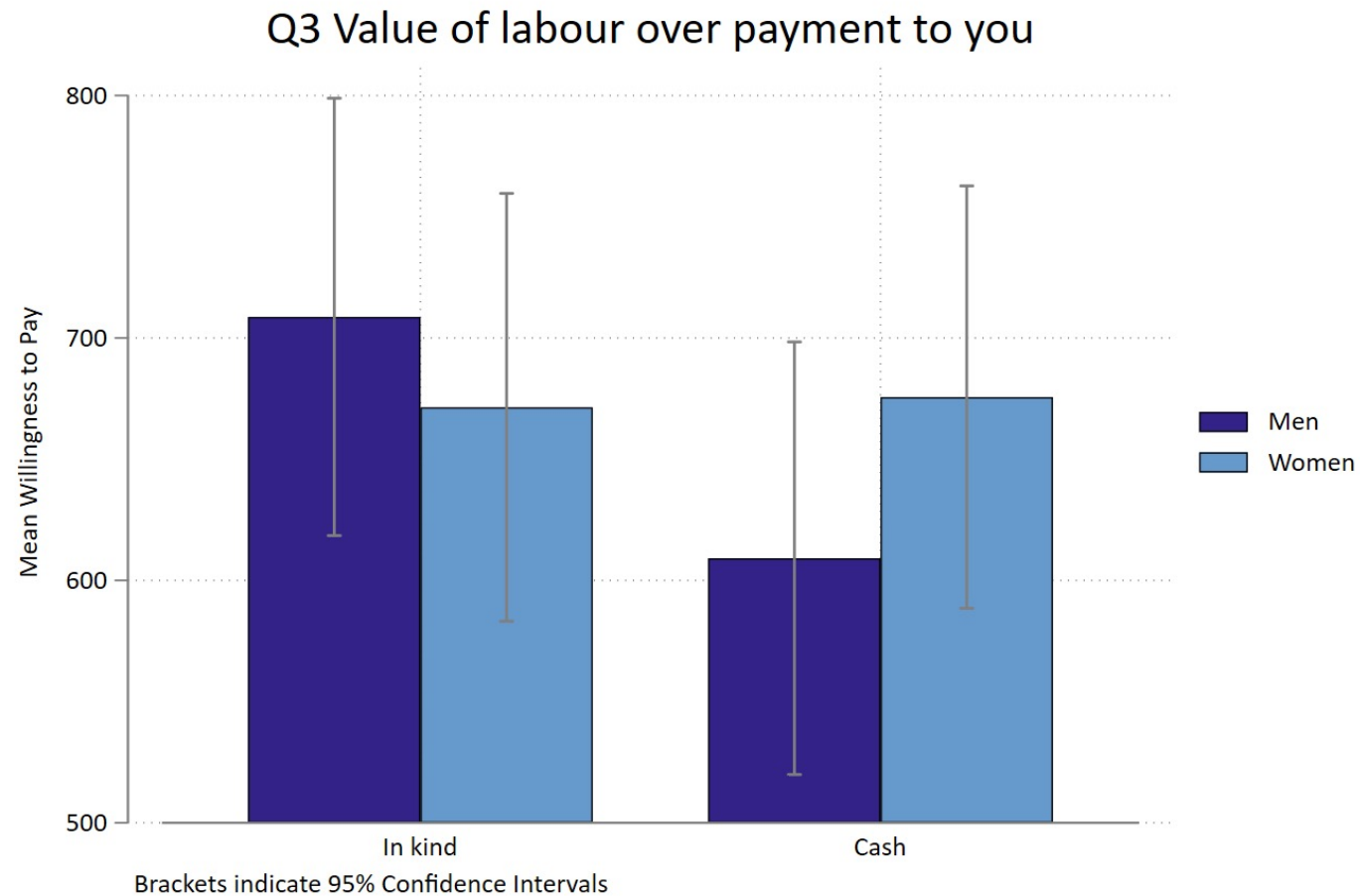
What About the Men?

- It is in line with our hypothesis that women value control over money
 - So that they have control over what the money is used for
- But why are men so willing to give up control?
 - Political correctness about stability of relationship that is more important for men to signal?
 - Or do they also prefer that the wife has control (e.g. as a commitment device)

Women and Men have the Same Valuation of Changes in Workload



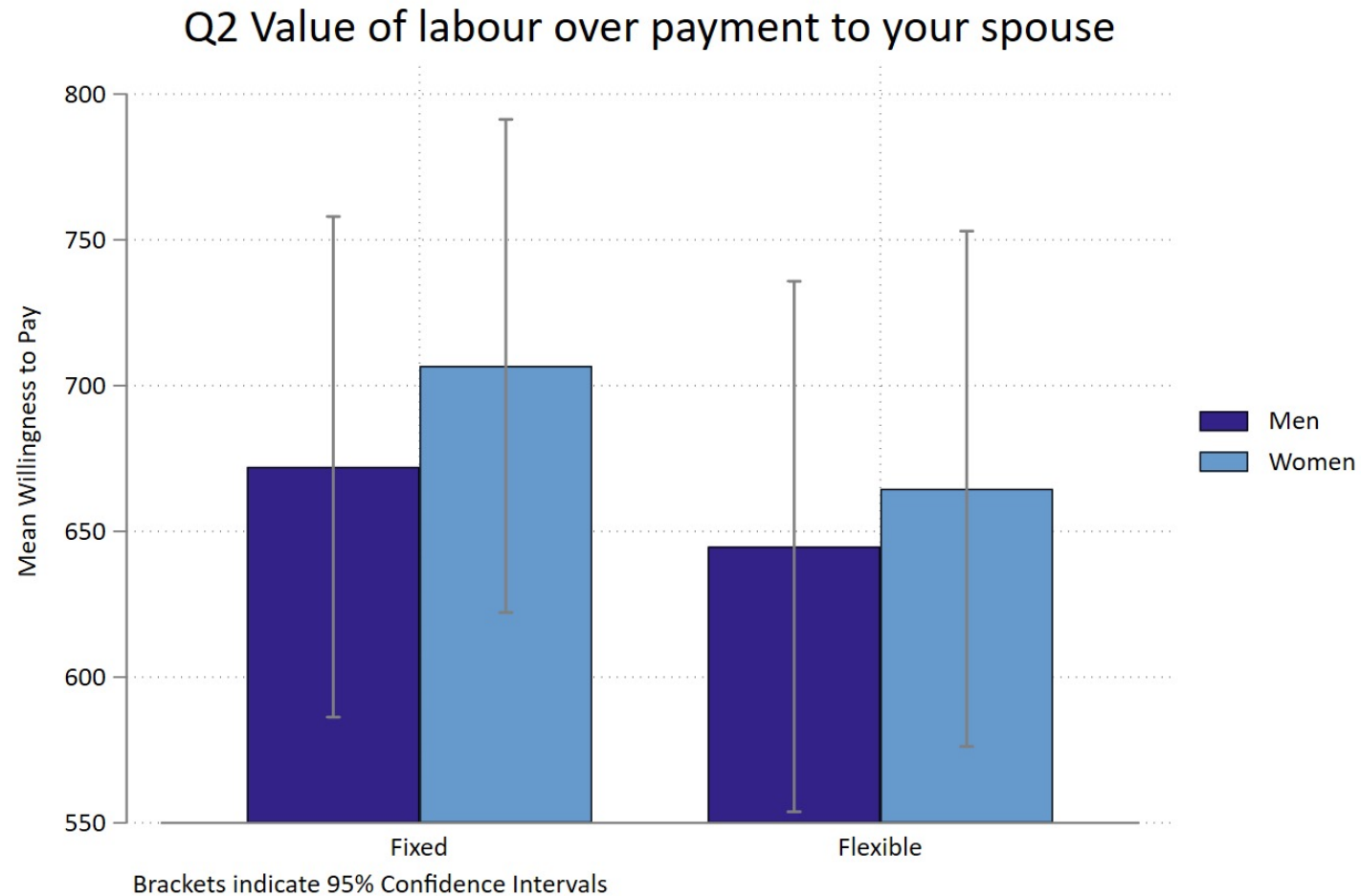
Women and Men have the Same Valuation of Changes in Workload, ctd



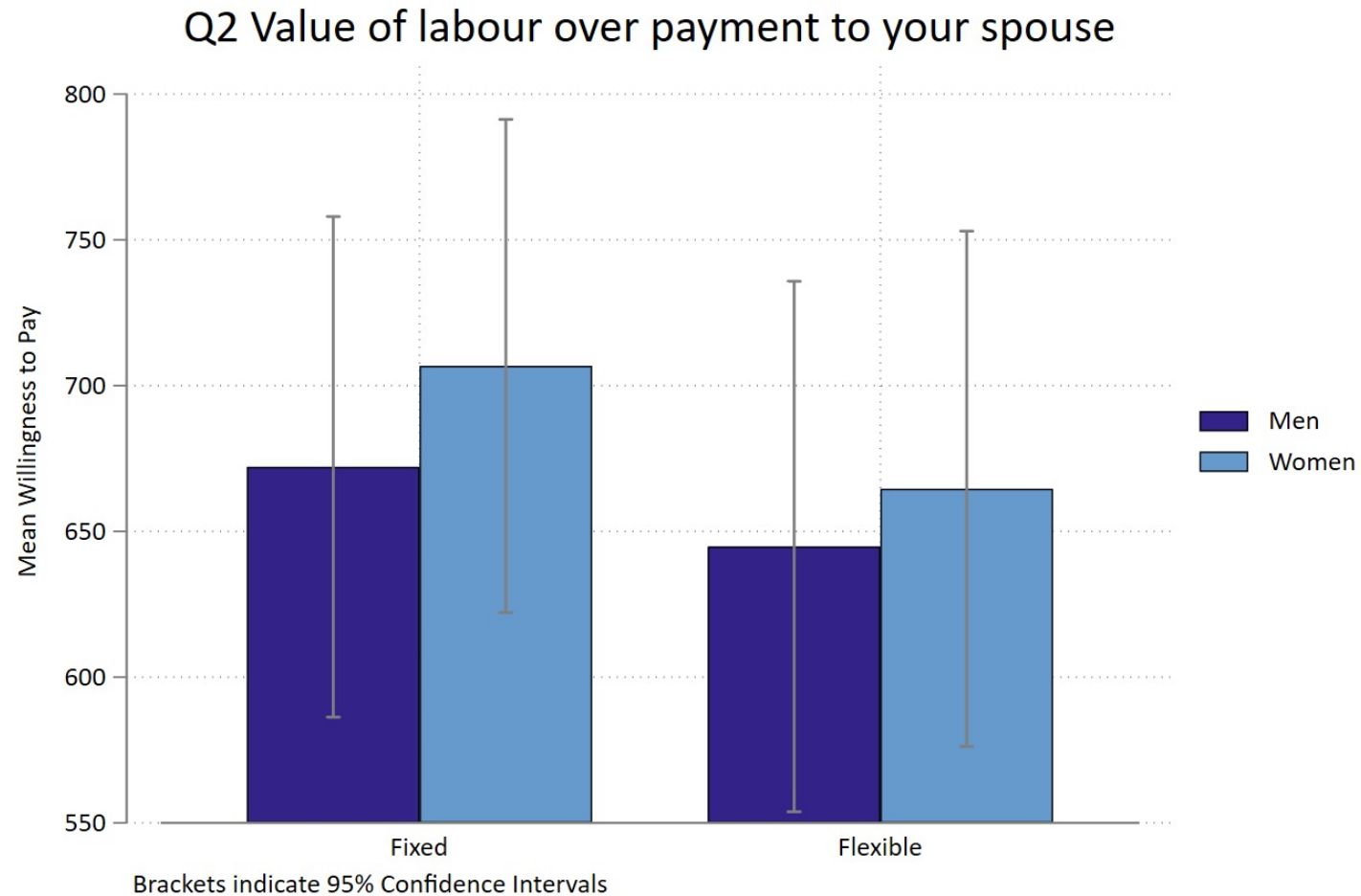
What Does This Mean?

- In impact evaluations and cost-benefit analyses of climate information services, we might observe changes in women's workload or control over income
- When workload increases, but income increases too, then is this a good thing?
- We see that an increase in control over income is more important for women than for men, but that a change in workload is valued equally for both genders

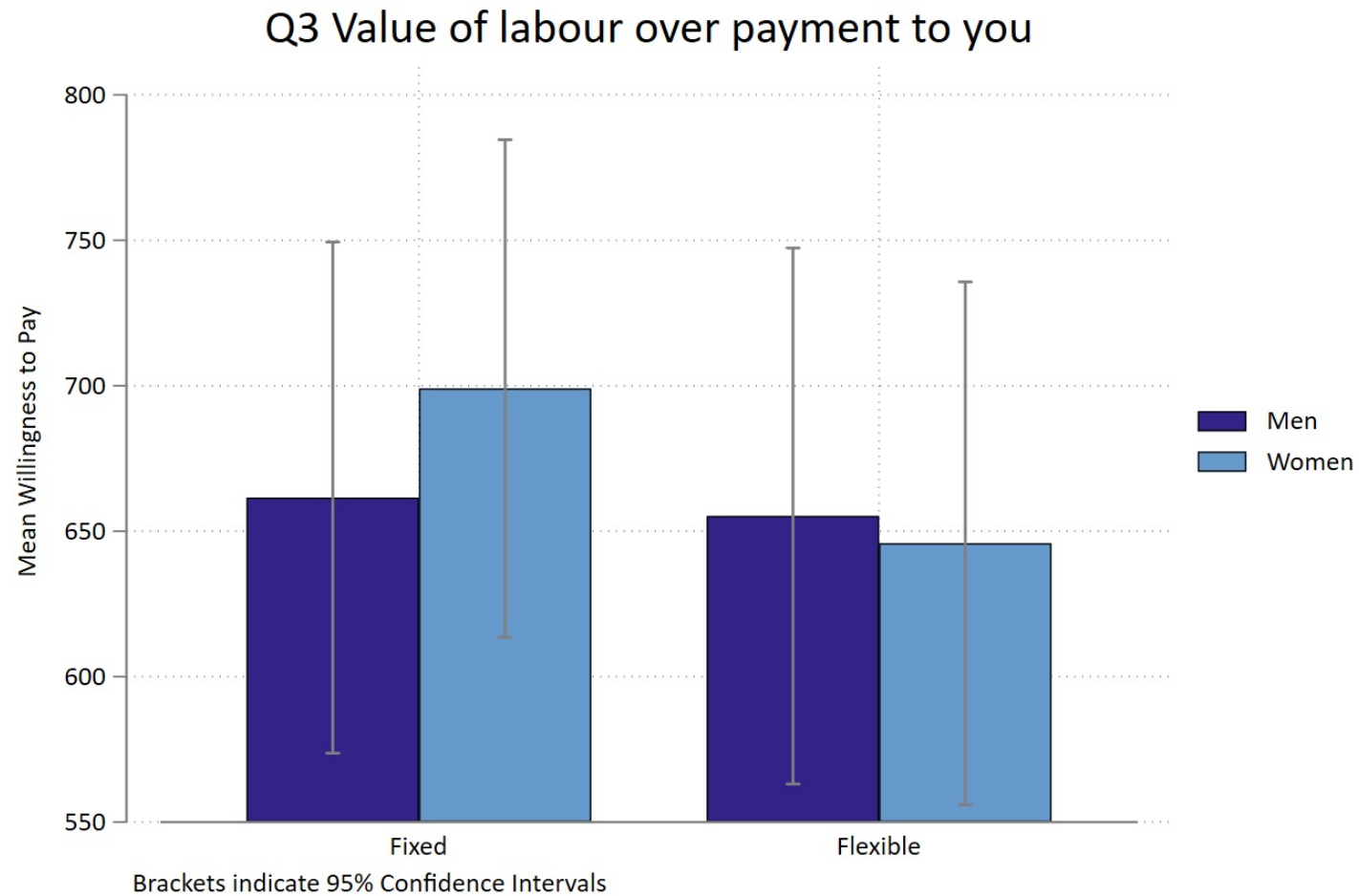
Flexibility Seems to Not be Valued



Flexibility Seems to Not be Valued, ctd



Flexibility Seems to Not be Valued, ctd



Why is Flexibility Not Valuable?

- Flexibility generally assumed to be valuable
 - And found to be valuable – especially by women
- Why is that not the case here?
 - Is it just not valued?
 - Or is there a countervailing commitment effect that is (at least strong) strong?



Next steps: Qualitative research and adapting climate information services

Tatiana Gumucio, Ph.D., Clark University

Validation through qualitative research

- Rich, nuanced data → unpack complex concepts
 - Domains of women's empowerment
 - Reasoning behind tradeoffs
- Assess how social differences influence tradeoffs
- “Ground truth data”



Validation through qualitative research



- Semi-structured interviews with women and men
- Qualitative data analysis → quantify results
- Benchmark – assess validity of experimental methods

Adapting climate information services

- Apply understanding of social differences and their influence on tradeoffs
- Target findings for different types of women and men
- Provide focused recommendations





Thank You!

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