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Does Gender Tagging Public Works Increase Women's Participation? Experimental Evidence from Haiti, Kenya, and Rwanda[†]

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Women are one-third less likely to participate in the labor force as men (Jayachandran 2021). Public works programs provide jobs to almost 100 million individuals in over 50 countries (Subbarao et al. 2013; Muralidharan, Niehaus, and Sukhtankar 2023) and therefore hold the potential to contribute to closing gender gaps in labor force participation. Yet this potential is not fully realized, as less than 50 percent of participants are women in most programs (Subbarao et al. 2013).

In this paper, we ask whether and how gender tagging increases women's participation in "cash-for-work" (CFW) programs in Haiti, Kenya, and Rwanda that were implemented by the World Food Programme (WFP). We ask this question in the context of dual-headed households that can send either a man or a woman to work. This sample is particularly relevant for the study of women's labor force participation in lower-income countries, where over half of the gender gap emerges after marriage (Kleven, Landais, and Leite-Mariante 2024). We randomly assign villages to receive either the status quo CFW, under which households were informed that any adult household member could participate, or the CFW that features "gender tagging," under which households were informed that participants were intended to be women.[1] We survey women from dual-headed households on a range of outcomes, including their participation in CFW, while the work was ongoing.

Under the status quo CFW, dual-headed households typically send only men to do the work (46–68 percent). As men are, at baseline, disproportionately more likely to participate in paid work relative to the women in our sample, balanced participation in public works does not undo the substantial gender imbalance in labor force participation. Gender tagging meaningfully increases women's participation in public works across all three countries: Households are 11 to 27 percentage points (29–190 percent) more likely to send a female member under gender tagging. This is not attributable to a change in the fraction of households participating but rather households sending a woman that would have otherwise sent a man. For comparison, Field et al. (2021) find that directly depositing wages to an account held by women, and training them on its use, increased women's participation in public works by 9 percentage points (34 percent) in India.

Does gender tagging generate catch-up? We consider two possibilities for *which* women participate in response to gender tagging. On the one hand, the types of women who respond to gender

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[1] Additional villages were randomly assigned to a control group that did not receive CFW until after our endline survey.

tagging may be similar to those likely to work under the status quo. On the other hand, gender tagging may generate catch-up, drawing out the types of women who would not have worked under the status quo, perhaps by working "around social norms" (Jayachandran 2021). We present evidence from Rwanda consistent with the latter, applying recent econometric methods (Abadie, Chingos, and West 2018) to estimate the effects of gender tagging on the participation of women who appear least likely to participate under the status quo.

I. Research Design

WFP's CFW Program.—Between 2019 and 2024, we worked with the WFP to formally document and increase the impact of their CFW programs on women's participation and autonomy in Haiti, Kenya, and Rwanda.[2] The goal was to test a scalable implementation modality that would increase the empowerment value of CFW programs for women; such a modality should be independent of *household*-level eligibility, as across all countries, economically vulnerable households physically able to engage in work were targeted. Gender tagging was identified as a strong candidate, and all involved WFP country offices proceeded to implement a three-arm, village-level randomization, featuring a pure control, which we do not report on in this paper, and varying the implementation of CFW as follows.

The Status Quo CFW.—Households assigned to the status quo CFW could designate one adult member to take part in public works and receive a payment. In Haiti and Rwanda, work was done at sites that included multiple communities and involved watershed rehabilitation and terracing. In Kenya, work was done in communities and included trainings on cattle rearing and planting pasture grasses. Cash transfer sizes and frequencies varied across countries and were stated to be conditional on participating in the work.[3]

Gender Tagging.—Relative to the status quo CFW, gender tagging provided information to households that the work component was "designed" for women after registration. How this was implemented varied across contexts.[4]

II. The Men and Women in our Study

Sampling.—We study households with both women and men eligible to participate in CFW. In each country, the WFP listed households during a registration process conducted in eligible communities. In Haiti, Rwanda, and Kenya, we conducted surveys in 58, 52, and 50 CFW villages, respectively; half of these were randomly assigned to the status quo CFW and half to the gender-tagged CFW.

Data.—In this paper, we focus our analysis on two rounds of survey data on 2,605 households in our sample of CFW villages in Haiti, Kenya, and Rwanda. In each country, we collected a baseline household survey before implementation. We surveyed household members' participation while the work component of the CFW was ongoing.

Our primary respondent in all surveys is a woman listed by the household as eligible to participate in CFW. We also ask selected questions to a man listed by the household as eligible to participate in

[2] El Salvador is also included in this effort but is not featured here, as an unconditional cash transfer to men was implemented instead of the status quo CFW arm.

[3] Intended transfers were as follows: US$400 over six months in Haiti, US$300 over six months in Kenya, and US$60–90 over two to three months in Rwanda.

[4] In Kenya, gender tagging involved replacing the training on cattle rearing and planting pasture grasses with training on poultry rearing, traditionally done by women in the region where the experiment took place. In both Haiti and Rwanda, work sites included communities assigned to the CFW both with and without gender tagging; as a result, gender tagging simply involved informing households that the CFW program was intended for women and that only women should participate whenever a woman in the household was able.

Table 1—Descriptive Statistics on Women and Men in Program-Eligible Dual-Headed Households

	Haiti		Kenya		Rwanda	
	Woman	Man	Woman	Man	Woman	Man
	(1)	(2)	(3)	(4)	(5)	(6)
Age	45.4	47.2	40.5	42.3	38.7	42.8
Any paid work	0.04	0.17	0.03	0.19	0.28	0.37
Is involved in decision-making over . . .						
woman's work	0.75	0.61	0.63	0.66	0.61	0.80
man's work	0.60	0.78	0.31	0.94	0.45	0.93
Observations	1,132	1,126	1,832	1,832	986	986

Notes: Sample averages of outcomes for households with both men and women eligible to participated in the CFW are presented in this table. Columns 1, 3, and 5 present averages for eligible women, while columns 2, 4, and 6 present averages for eligible men.

Table 2—Gender Tagging Increases Women's Participation in CFW

	Man or woman participated in CFW			Woman participated in CFW		
	Haiti	Kenya	Rwanda	Haiti	Kenya	Rwanda
	(1)	(2)	(3)	(4)	(5)	(6)
Gender tagging	−0.083	−0.022	−0.120	0.129	0.270	0.115
	(0.057)	(0.043)	(0.069)	(0.048)	(0.039)	(0.056)
	[0.153]	[0.612]	[0.093]	[0.011]	[0.000]	[0.050]
Status quo CFW mean	0.562	0.437	0.730	0.251	0.142	0.390
Observations	802	1,179	624	802	1,179	624
Number of clusters	58	50	52	58	50	52

Notes: This table presents regression estimates of β_c in $Y_{cvi} = \alpha_{c,s(v)} + \beta_c GenderTagging_v + \varepsilon_{cvi}$, where $c \in \{Haiti, Kenya, Rwanda\}$ indexes countries, v villages, and i households, and $s(v)$ denotes the randomization strata of village v. The sample is restricted to villages assigned to the CFW. Robust standard errors clustered at the village level are in parentheses, and p-values are in brackets.

CFW. In practice, these two individuals almost always corresponded to the female and male heads of household.

The Women and Men.—Data from our baseline time use module highlight important differences in labor market attachment across men and women (Table 1). While engagement in paid work outside the home over the previous two working days is rare among men in both Haiti and Kenya (17 percent and 19 percent, respectively), men are still 5–6 times more likely to report having worked, as only 3–4 percent of women report engaging in paid work. Even in Rwanda, where men and women are more likely to report paid work (37 percent and 28 percent, respectively), men are 32 percent more likely to have engaged in paid work.

These gender gaps in labor market participation are accompanied by gender gaps in agency over time use. While men and women both report some agency over the time they allocate to work (78–94 percent and 61–75 percent, respectively), men in Kenya and Rwanda are strikingly more involved in their spouses' decision to work than the women themselves.

III. Gender Tagging Increases Women's Participation

Table 2 presents OLS estimates of the impact of our random assignment to the gender-tagged CFW on household and women's participation. Household participation is high (44–73 percent), and

gender tagging does not significantly affect household participation in the program. Despite inviting men or women to engage in public works, the status quo CFW mainly fetches men workers as 46–68 percent of participating households do not send women.

Simply assigning households to the gender-tagged CFW dramatically increases women's participation (11–27 percentage points, or a 29–190 percent increase). Remarkably, these impacts are large even in contexts where women's participation is relatively high under the status quo CFW: In Rwanda, where women's participation reaches 39 percent under the status quo CFW, gender tagging increases women's participation by 11 percentage points, a 29 percent increase.

IV. Gender Tagging Generates Catch-Up

Predicting Women's Participation Under Status Quo CFW.—We start by testing whether household characteristics collected before the program meaningfully predict women's participation under the status quo CFW. In each country, we restrict our sample to households in communities assigned to the status quo CFW and estimate the model

$$\text{Woman participated in CFW}_{cvi} = \alpha_c + \mathbf{X}'_{cvi}\boldsymbol{\beta}_c + \varepsilon_{cvi}, \tag{1}$$

where c indexes countries, v indexes communities, and i indexes households. $\mathbf{X}_{cvi}$ is a vector of outcomes and characteristics reported at baseline for household i that we use to predict women's participation under the status quo CFW. [5] We estimate equation (1) using OLS and report the F-statistic for the joint test of $\boldsymbol{\beta}_c = \mathbf{0}$, the null hypothesis that baseline household outcomes and characteristics do not predict women's participation under the status quo CFW.

Testing for Catch-Up.—We next test for "catch-up," that is, whether the impact of gender tagging on women's participation is *larger* for households with *smaller* predicted women's participation under the status quo CFW. We cannot simply use predicted women's participation under the status quo CFW, $\mathbf{X}'_{cvi}\hat{\boldsymbol{\beta}}_c$ from the model above, for this test: Regressing women's participation on predicted women's participation can generate severe bias (Abadie, Chingos, and West 2018). Instead, we follow Abadie, Chingos, and West (2018) and use a repeated split sample approach to test for catch-up. Let $r \in \{1, \ldots, R\}$ index a randomized split of villages assigned to the status quo CFW, half into a training set $\mathcal{A}_r$ and half into an estimation set $\mathcal{M}_r$. We estimate equation (1) in the training set $\mathcal{A}_r$ and let $\hat{\boldsymbol{\beta}}_{cr}$ denote the estimated value of $\boldsymbol{\beta}_c$ in training set $\mathcal{A}_r$. We then estimate by OLS in the combination of the estimation set of the status quo CFW villages ($\mathcal{M}_r$) and the full set of gender-tagged CFW villages:

$$\begin{aligned}\text{Woman participated in CFW}_{cvi} = {} & \delta_{0cr} + \delta_{1cr}\left(\mathbf{X}'_{cvi}\hat{\boldsymbol{\beta}}_{cr}\right) + \delta_{2cr}\,\text{Gender Tagging}_v \\ & + \delta_{3cr}\left(\mathbf{X}'_{cvi}\hat{\boldsymbol{\beta}}_{cr}\right) \times \text{Gender Tagging}_v + \varepsilon_{cvir}.\end{aligned} \tag{2}$$

Our estimate of each coefficient is the average estimate across splits, $\hat{\delta}_{kc} = \frac{1}{R}\sum_{r=1}^{R}\hat{\delta}_{kcr}$, for $k \in \{0, 1, 2, 3\}$. Following Abadie, Chingos, and West (2018), we estimate standard errors by block bootstrap at the village level.

We consider three primary hypotheses related to catch-up: First, $\delta_{1c} = 0$ corresponds to the null that observable characteristics $\mathbf{X}_{cvi}$ do not predict women's participation under the status quo; in such a case, we are unable to test for catch-up. Second, $\delta_{3c} \geq 0$ corresponds to the null of no catch-up: Gender tagging does not differentially increase participation for women who appear less

[5] We use all 21 prespecified women-reported outcomes and three prespecified dimensions of heterogeneity from our preanalysis plan and other characteristics and baseline outcomes measured in all countries (woman's age, # of children, # of household members, and Food Consumption Score).

Table 3—Predictive Power of Observables for Status Quo CFW Women's Participation

	Woman participated in CFW		
	Haiti	Kenya	Rwanda
	(1)	(2)	(3)
F-statistic	$F_{20,335} = 1.661$ [0.038]	$F_{27,515} = 1.132$ [0.297]	$F_{28,245} = 3.098$ [0.000]
Number of covariates	20	27	28
Observations	356	543	274

Note: This table presents F-statistics for estimates of equation (1) with p-values in brackets.

Table 4—Gender Tagging in Rwanda Generates Catch-Up

	Woman participated in CFW
	Rwanda
	(1)
δ_{1c}: predicted woman participated in status quo CFW	0.167
	(0.098)
	[0.089]
δ_{2c}: gender tagging	0.198
	(0.083)
	[0.017]
δ_{3c}: gender tagging × predicted woman participated in status quo CFW	−0.189
	(0.128)
	[0.141]
$\delta_{1c} + \delta_{3c}$	−0.022
	(0.110)
	[0.841]
Observations	562
Number of clusters	52

Notes: This table presents estimates of equation (2) averaged across 250 splits. Robust standard errors clustered at the village level estimated from 100 block bootstrap repetitions are in parentheses, and p-values are in brackets.

likely to participate under the status quo. Its associated alternative hypothesis $\delta_{3c} < 0$ corresponds to catch-up: Gender tagging has a larger impact on participation for women who appear less likely to participate under the status quo. And third, $\delta_{1c} + \delta_{3c} \leq 0$ corresponds to the null of full catch-up: If women who are more likely to participate under the status quo are no more likely to participate than other women under gender tagging, it must be that women who were less likely to participate "caught" up.

Observable Characteristics Predict Women's Participation under Status Quo CFW in Rwanda.—In Table 3, we present F-statistics for the test that observable characteristics predict women's participation under the status quo CFW in equation (1). We strongly reject this null only in Rwanda, with a weak rejection in Haiti. Consequently, we restrict to Rwanda when implementing our tests for catch-up.

Gender Tagging in Rwanda Generates Catch-Up.—In Table 4, we present estimates of equation (2) averaged across $R = 250$ splits. First, predicted women's participation under the status quo

CFW predicts women's participation in CFW using the estimator from Abadie, Chingos, and West (2018), consistent with the significant F-statistic for Rwanda in Table 3 ($p = 0.089$). Second, we find evidence consistent with catch-up—we are able to reject the one-sided null hypothesis of no catch-up ($\delta_{3c} \geq 0$) against the alternative hypothesis of catch-up ($p = 0.071$). Lastly, we fail to reject full catch-up ($\delta_{1c} + \delta_{3c} \leq 0; p = 0.580$).

V. Conclusion

We run experiments across three countries (Haiti, Kenya, and Rwanda) in which we survey dual-headed households invited to take part in public works programs implemented by the WFP. Inviting either a man or a woman from each household to do the work mainly induces men to perform the work, despite men enjoying higher rates of labor market attachment at baseline. Simply informing households that the work is intended for women induces stark increases in women's participation. Our results indicate that setting general participation quotas in public works programs may fall short of delivering work opportunities to women with low labor market attachment in dual-headed households. Instead, gender tagging offers a scalable alternative for increasing women's participation.

In ongoing work, we document important downstream impacts of gender tagging on women's autonomy across contexts. We track these men and women both over the course of the program and after the program ended. We find that men's control over household resources *increases* under the status quo CFW. Gender tagging fully offsets this negative impact on women's autonomy. These impacts persist beyond program implementation, highlighting the potential longer-term impacts of a one-off job offer on women's bargaining position within the household.

REFERENCES

Abadie, Alberto, Matthew M. Chingos, and Martin R. West. 2018. "Endogenous Stratification in Randomized Experiments." *Review of Economics and Statistics* 100 (4): 567–80.

Christian, Paul, Lelys Dinarte-Diaz, Felipe Dunsch, Dahyeon Jeong, Jonas Heirman, Erin Kelley, Florence Kondylis, Gregory Lane, and John Loeser. 2024. "*Gender Gaps in Earnings and Economic Empowerment: Experimental Evidence from 4 Countries.*" AEA RCT Registry. https://doi.org/10.1257/rct.5933-3.0.

Field, Erica, Rohini Pande, Natalia Rigol, Simone Schaner, and Charity Troyer Moore. 2021. "On Her Own Account: How Strengthening Women's Financial Control Impacts Labor Supply and Gender Norms." *American Economic Review* 111 (7): 2342–75.

Jayachandran, Seema. 2021. "Social Norms as a Barrier to Women's Employment in Developing Countries." *IMF Economic Review* 69 (3): 576–95.

Kleven, Henrik, Camille Landais, and Gabriel Leite-Mariante. 2024. "The Child Penalty Atlas." *Review of Economic Studies*. https://doi.org/10.1093/restud/rdae104.

Muralidharan, Karthik, Paul Niehaus, and Sandip Sukhtankar. 2023. "General Equilibrium Effects of (Improving) Public Employment Programs: Experimental Evidence from India." *Econometrica* 91 (4): 1261–95.

Subbarao, Kalanidhi, Carlo del Ninno, Colin Andrews, and Claudia Rodríguez-Alas. 2013. *Public Works as a Safety Net: Design, Evidence, and Implementation*. World Bank.