

Labour-intensive jobs for women and development: Intrahousehold welfare effects and its transmission channels*

Dr. Tigabu D. Getahun[♠] and Dr. Espen Villanger^{♠♦}

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Abstract

We examine the welfare impacts of poor women getting low-skilled jobs and find large positive income, consumption and poverty effects at household and individual levels. However, the women workers, their husbands and oldest daughters reduced their leisure, but the women to a much larger extent. Investigating the transmission mechanisms suggests that the impacts did not only go through income effects, but also through a bargaining effect. Getting the job improved the bargaining power of the wife through several mechanisms, which in turn added substantially to the positive impact on household consumption.

Keywords: salaried employment, wage labor, gender, bargaining, consumption, poverty, hunger

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[♠] Senior Researcher, University of Bonn, Center for Development Research, Department of Economics and Technological Change, 53113 Bonn, Germany. Email: tigyget@yahoo.com Phone: +49(0)228731799

[♠] Corresponding author.

[♦] Chr. Michelsen Institute (CMI), P.O.Box 6033 Bedriftssenteret, N-5892 Bergen, Norway. Email: espen.villanger@cmi.no. Phone: +4799799476.

1. Introduction

Growth in labour-intensive industries that employ the poor is believed to be major route out of poverty, particularly for Sub-Saharan Africa (Loayza and Raddatz, 2010; Rodrik, 2015). However, very little is known about the welfare impacts of such jobs at the micro level where the first-order effects of such transitions may be identified (Blattman and Dercon, 2015). Moreover, there is surprisingly little solid evidence about the transmission mechanisms through which the job may change the intrahousehold welfare allocations, including the links between female employment, bargaining power and individual outcomes. We study the impacts on intrahousehold welfare of women transitioning from traditional activities into formal salaried low-skilled employment and assess the income, substitution and bargaining effects.

A sector's poverty-reducing capacity may be related to the degree to which it employs low-skilled labour, since the poor can provide their labour as a production input (Loayza and Raddatz, 2010). Such employment links economic growth directly to poverty reduction and provides a rationale for attracting such investments through special economic zones, regulatory frameworks and direct subsidies (World Bank 2015). Moreover, the low-skilled industries employ mostly women, and increased earnings of mothers is believed to be important for their children's nutrition, health and education that in turn would enhance the long-run poverty reducing effects (Duflo, 2012). Jobs may also promote gender equality by improving the position of women and their bargaining power, which spurs additional interest from policymakers (Duflo, 2012).

In the theory of competitive labour markets, factor prices are equalized across sectors and the equilibrium wage is determined by the value of the marginal product of the worker. If the bargaining power of the employers is high, then the utility of the worker of getting the job would be similar to her outside option. Therefore, in low-skilled industries with abundance of labour and no minimum wages, labour unions or

substantial monitoring costs, one would predict that the income and welfare effects of the jobs would be small. This is indeed what Blattman and Dercon (2015) find in manufacturing industries.

However, higher wages and worker utility can be maintained in imperfect markets, but also between equilibria in structural transformations where manufacturing growth attracts labour from traditional rural agriculture by offering higher wages.¹ We find large positive household welfare effects from female jobs in the rose industry in rural Ethiopia along all indicators measured; consumption, income, poverty and a food security/hunger index.

We identify effects by comparing women who got a job in the cut flower industry with similar women who also applied for jobs, but for various reasons never started working. This likely minimizes self-selection into job search. Moreover, the hiring of workers was claimed to be random by all involved parties; farms arbitrarily recruited from the crowd showing up for work at the farm gate. Our qualitative inspection of the hiring process found that the management did not assess qualifications of the applicants other than visual screening, and no education or experience was required. Moreover, there were insignificant differences in most observables between hired and non-hired women at the time they applied.²

Our results differ from Blattman and Dercon (2015) likely due to varying outside options. In the poor rural areas we study, the alternatives to formal employment for women were typically involving unattractive low return activities like domestic work, subsistence agriculture or microbusiness. Having a rose farm job was highly appreciated and turnover rates were low. In the better functioning labour markets in urban and semi-urban areas, many workers' alternatives would be to get another formal/semi-formal job or to engage in businesses with higher returns. The outside options in the Blattman and Dercon sample seems to have been more attractive since many (77%) of the workers quit within a year.

Effects at the household or worker level may disguise important intrahousehold differences in welfare allocations, particularly in terms of work burden and leisure (Palmer-Jones and Jackson, 1997).³ We find large changes in leisure that is typically labelled as women “double” or “triple” working when doing most of the household work in addition to a full time job. Women who got the job reduced their leisure by more than two hours a day. Husbands and older daughters also reduced their leisure, but much less dramatically, while the sons’ leisure increased.

Intrahousehold bargaining may be crucial for understanding the welfare distributions within households (Ashraf, 2009). In collective household models, an improvement in women’s bargaining power may change the resource allocation in favour of the women’s priorities (Sen, 1990; Thomas, 1990, 1994; Hoddinott and Haddad 1995; Duflo, 2003). If women who get a job also improve their bargaining position, one may expect that the allocations of welfare within the household is skewed towards the women (Duflo, 2012). In our case, getting the job was a package containing many elements that could influence household decision making in different ways as compared to traditional employment. In addition to receiving higher wages, such factors could be unionization, having a tight working community with fellow woman workers and being away from home six days a week.⁴ We indeed find that bargaining power increased among the hired women, and that this changed the resource allocation in a way that caused an additional improvement in female welfare but also in total household consumption.

Our study relates to a small literature that identify and quantify causal effects of industrial employment on intrahousehold decisions. Jensen (2012) and Heath and Mobarak (2014) finds that improvements in labour market opportunities for women leads to reduced fertility, postponed marriage and that women take more education. Blattman and Dercon (2015), perhaps the study closest to ours, find that being offered a job in various industries in Ethiopia does not lead to any different impacts for the workers in terms of average hours worked, income, and wages as compared to a control group that was not offered a job.

Most empirical welfare analysis still focuses on total household impacts rather than intrahousehold distributional effects (Ashraf, 2009). Our work relates to the intrahousehold bargaining literature, which suggests that the allocations within the household is the most important determinant of aggregate inequality in poor countries (Dercon and Krishnan 2000). We show that failing to account for the intrahousehold allocations may lead to misleading conclusions about the impacts of employment, and to a lack of understanding the transmission mechanisms behind the outcomes. Husbands usually have more decision making power over the allocation of household goods and assets than the wife (Fafchamps and Quisumbing, 2002; Lim et al., 2007). Some even confiscate the wife's income to increase own consumption (Anderson and Baland 2002) or spend more on himself when that is not revealed to his spouse (Ashraf, 2009). Children may also be affected by the spouses' relative bargaining power. When the women gets a job, older children may take over care and household chores (World Bank, 2011). It may matter a lot whether gender inequalities are reinforced by pulling the oldest girl out of school for such purposes, or if the tasks are more equally distributed in the household.

2. Context

The flower industry in Ethiopia emerged in the late 1990s and by 2013 around 100 commercial farms had created around 85,000 low-skilled jobs. This generated additional indirect jobs in neighbouring communities, mostly for low-skilled women who were believed to lack income opportunities (EHPEA, 2013). Flower production is labour intensive with fierce international competition (Hortiwise, 2012) and the availability of cheap labour was important for the expansion. Widespread poverty and abundance of low-skilled labour ensured the availability of workers at internationally competitive wages. In rural Oromia, almost every third household was below the national poverty line (MoFED, 2012). The daily

wage for rose farm workers was less than one USD, comparable to the daily support from the national food security program to food insecure people.

The low levels of skills and education are reflected in the illiteracy rates in Oromia; 62 per cent for women and 32 per cent for men (CSA and ICF International, 2012). The gender disparities in education underline the disadvantaged situation for women. Almost half of the women were uneducated, compared to 26 per cent for men, and only 37 per cent of the women had some primary education compared to 50 per cent for men.

Despite recent positive policy reforms, gender inequalities remain severe (Mabsout and Staveren, 2010). Few Ethiopian women make household decisions by themselves. Only half of the women participate with their husbands in all of three decisions on her own health care, household purchases and her own visits to her family or relatives (CSA and ICF International, 2012). Even when the women do own or have rights to assets, these assets are usually controlled by men (Lim et al., 2007). Also suggestive of a weak bargaining position of the women, domestic violence is common and generally accepted (Garcia-Moreno et al., 2006).

3. Theoretical model

To motivate our empirical strategy, we model consumption and leisure demand based on the Browning and Chiappori (1988) collective household model. Household welfare is then represented by the weighted average of the spouses' individual utility functions, where the weight reflects their relative bargaining power. The decision choice problem of the Pareto efficient household can be represented by the following welfare maximization program (see also Browning et al., 2011):

$$\max_{Q, q^h, q^w, l^h, l^w} \{(1 - \mu)U^h(Q, q^h, q^w, l^h, l^w) + \mu U^w(Q, q^h, q^w, l^h, l^w)\} \quad (1a)$$

Subject to

$$P'Q + p'(q^h + q^w) \leq W^h L^h + W^w L^w + Y^{nl} \quad (1b)$$

$$l^h + L^h = 1 \quad , \quad l^w + L^w = 1 \quad (1c)$$

$$\mu = \mu(P, p, W^h, W^w, Y^{nl}, z) \quad (1d)$$

Equation (1a) presents the maximization of the household consumption welfare function where U^w and U^h represents the direct utility functions of the wife and their husband, respectively. q^h & q^w denote the consumption goods exclusively consumed by the husband and wife, respectively, and let l^h & l^w denote the leisure time of the spouses. This maximization problem is different from the standard (unitary household) maximization problem because the collective household utility varies with the relative bargaining power of the women, μ , which depends on prices, income and distributional factors (z).⁵ An increase in μ implies a change in intrahousehold consumption structure towards the consumption of goods preferred by the wife. We assume that spouses care not only for their own consumption and leisure demand, but also for their spouse's consumption and leisure. Furthermore, their utility is assumed to be a function of the private goods (q^h, q^w) an individual can exclusively consume and the public/household goods (Q) that can be jointly consumed by the spouses.

Equation (1b) represents the budget constraint of the household. P, p denotes the vector of prices of the purchased public and private goods, respectively, W^h, W^w denotes the husband's and wife's wage, L^h, L^w husband's and wife's outside working time, and Y^{nl} the aggregated non-labour household income.

Equation (1c) denotes the time constraint of the spouses, normalized to one.

The unique solution of the maximization (see Appendix A, all appendixes are available in Supplementary Materials), leads to the following structural consumption and leisure demand functions:

$$D_j = D(W^w, Y^{nw}, \mu(Y^{nl}, W^h, W^w, z)) \quad (2a)$$

$$L^w = L^w(W^w, Y^{nw}, \mu(Y^{nl}, W^h, W^w, z)) \quad (2b)$$

Where $L^w \in [0, 1]$ $Y^{nw} = Y^{nl} + W^h L^h$ and $D_j = (Q_j, q_j^h; q_j^w)$

Where $D_j = (Q_j, q_j^h; q_j^w)$ denotes the quantities public and private goods consumed by the household, subscript $j=1, 2, 3, \dots, n$ indicates the list of public and private consumption items. From the first order derivative of the consumption demand (equation 2a and equation 2b), we have:

$$\frac{dD_j}{dW^w} = \frac{\partial D}{\partial W^w} + \frac{\partial D_j}{\partial \mu} \frac{\partial \mu}{\partial W^w} \quad (2c)$$

$$\frac{dL^w}{dW^w} = \frac{\partial L^w}{\partial W^w} + \frac{\partial L^w}{\partial \mu} \frac{\partial \mu}{\partial W^w} \quad (2d)$$

Equation (2c) decomposes the wage effect on consumption goods into the standard income effect $\frac{\partial D}{\partial W^w} > 0$ and the distinguished bargaining effect, $\frac{\partial D_j}{\partial \mu} \frac{\partial \mu}{\partial W^w}$. Accordingly, an increase in the woman's earnings will influence consumption demand not only through the income effect but also through the bargaining effect. A higher bargaining power of the wife will skew consumption towards goods that she prefers more.

Equation (2d) decomposes the wage effect (the price of leisure) on leisure into the net Slutsky effect and the bargaining effect. In the standard model for poor households, the substitution effect is stronger than the income effect and hence $\frac{\partial L^w}{\partial W^w} < 0$. If the woman prefers more leisure, all else equal, then the bargaining effect, $\frac{\partial L^w}{\partial \mu} \frac{\partial \mu}{\partial W^w}$, will be positive and the net wage effect on leisure will depend on the relative strength of the two effects. If she does not prefer more leisure, the partial derivative $\frac{\partial L^w}{\partial \mu}$ is zero or negative and the net wage effect on leisure is negative.

4. Empirical strategy

Assuming a Cobb-Douglas type utility function, the log-linear transformation of the derived collective consumption and leisure demand functions (2a and 2b) yields:

$$\ln Dj = \beta_0 + \beta_1 \ln(W^w + W^H) + \beta_2 \ln Y^{nl} + \delta \ln \mu(Y^{nl}, W^h, W^w, z) \quad (3a)$$

$$1 - L_m = l_m = \rho_0 + \rho_1 \ln(W^w + W^H) + \rho_2 \ln Y^{nl} + \varphi \ln \mu(Y^{nl}, W^h, W^w, z) \quad (3b)$$

where δ and φ are vectors of parameters that captures the effect of the bargaining variables and the subscript m in the leisure demand equation denotes family member m , which includes wife, husband, daughter and son. A suitable functional form that simplifies the relationship between woman's bargaining power and the identity of the household income sources and other distributional factors are modelled following Fafchamps et al. (2009):

$$\mu(Y^{nl}, W^h, W^w, z) = 0.5 e^{(\theta(Z^w - Z^h) + \ln(W^w - W^h) + \ln(Y^{nlw} - Y^{nlh}))} \quad (4)^6$$

where $\theta = (\delta, \varphi)$ is a vector of parameters of the bargaining variables, $(W^w - W^h)$ is spouses earned income gap, $(Y^{nlw} - Y^{nlh})$ is the spouses unearned income gap and $(Z^w - Z^h)$ denotes other distributional factors such as women's attitude towards gender equitable norms, self-confidence, education and age differences between the husband and wife. We assume that the relative bargaining power of the woman positively depends on her income, education level and age, but negatively on her husband's income, education and age.

Substituting (4) into (3a) and (3b) and augmenting the two equation with the vector of sociodemographic variables and the disturbance term yields:

$$\begin{aligned} \ln Dj = & \beta_0 + \beta_1 \ln(W^w + W^H) + \beta_2 \ln Y^{nl} + \delta((Zh - Zw) + \ln(W^H - W^w) + \ln(Y^{nl} - Y^{nl})) \\ & + \Pi_k H_k + \varepsilon \end{aligned} \quad (5a)$$

$$\begin{aligned} \ln l_m = & \rho_0 + \rho_1 \ln(W^w + W^H) + \rho_2 \ln Y^{nl} + \varphi((Zh - Zw) + \ln(W^H - W^w) + \ln(Y^{nl} - Y^{nl})) + \\ & \Pi_k H_k + \varepsilon \end{aligned} \quad (5b)$$

where H_k denotes the vector of socio-cultural factors, demographics, household and individual specific characteristics, Π_k is the associated vector of parameters and subscript $k=1, 2, 3, \dots, n$ indicates the list of these variables. These equations are used to estimate the determinants of consumption and leisure demand (see table 10 and 11, below).

To estimate the job impact on consumption and leisure time, we introduce the group dummy G_i taking the value one if woman i got a job (i.e. treatment group) and zero otherwise (i.e. comparison group). We have panel data for consumption so we linearly add dummies for group, G_i , and time, T_t , in equation (5a) to control for pre-treatment characteristics and time trends. T_t equals one in the post-treatment period ($t=1$) and zero in the pre-treatment period ($t=0$). Then the standard difference in difference (DID) estimator of the impact is the least square estimate of δ , which is the coefficient of the interaction between time and group dummy, $G_i * T_t$ (Khandker et al., 2010):

$$\begin{aligned} \ln Dj_{it} = & \beta_0 + \gamma G_i + \lambda T_t + \delta(G_i * T_t) + \beta_1 \ln(W^{wt} + W^{Ht}) + \beta_2 \ln Y^{nlt} + \theta((Zht - Zwt) + \\ & \ln(W^{Hit} - W^{wit}) + \ln(Y^{nlit} - Y^{nlit})) + \Pi_k H_{ikt} + \varepsilon_{it} \end{aligned} \quad (6a)$$

We included retrospective questions for some recallable variables from the time when two groups were seeking a job, which was just before the workers were hired.⁷ The average time since this job-search was

4 years, with little deviation from the mean. We use the recall data from the job search phase of both groups to construct the panel for the DID estimation.

We do not have panel data for leisure, so the impact estimation is conducted on the cross section by including G_i in equation (5b).

$$\ln l_{mi} = \beta_0 + \gamma G_i + \beta_1 \ln(W^{wi} + W^{Hi}) + \beta_2 \ln Y^{nli} + \theta((Zhi - Zwi) + \ln(W^{Hi} - W^{wi}) + \ln(Y^{nli} - Y^{nli})) + \Pi_k H_{ki} + \varepsilon_i \quad (6b)$$

Since we use the DID estimator to estimate the job impact on consumption (equation 6a), it is important to assess possible selection bias. The DID may yield a biased and inconsistent estimate if there was self-selection into applying for a job or selection of workers at the hiring stage. The DID estimator requires that in absence of the treatment, the average outcomes for the two groups would have followed parallel paths over time. This assumption may not be realistic if the pre-treatment characteristics were different between the two groups since this may indicate that farm management selected workers based on observable and unobservable criteria. In that case, the DID estimation results should be interpreted as the combined effect of getting the job and time varying unobservable cofounders that influenced selection.⁸

In order to account for bias arising from self-selection into applying for a job, we constructed the comparison group only from the pool of women who had applied for a job at the same time as the treatment group, but who never started to work at the farm for various reasons (see details in the next section). Regarding selection at the hiring stage, the evidence suggested that selection for the jobs was random among job applicants, which would eliminate selection bias at this stage.⁹ Nevertheless, our sampling strategy also attempted to address selection at the hiring stage by constructing a comparison group as similar to the workers' group as possible to maximize the likelihood of parallel trends for the two groups.

To further account for possible selection and other endogeneity bias, we re-estimate the consumption impact by combining the DID with the three Stage Least Square (3SLS) estimator.¹⁰ The 3SLS estimator uses an instrument variable (IV) approach to produce consistent estimates and generalized least squares to account for the correlation structure in the disturbances across the equations (Greene, 2012). The 3SLS estimation can be thought of as producing estimates from a three-step process (Baltagi, 2002). In the first step the instruments are developed as predicted values resulting from a regression of each endogenous variable on all exogenous variables in the system. In the second step a consistent estimate for the covariance matrix of the equation disturbances will be obtained based on the residuals from a 2SLS estimation of the structural equation. In the third step, a GLS-type estimation using the covariance matrix estimated in the second step and with the instrumented values in place of the right-hand-side endogenous variables is performed (Zellner and Theil, 1962). The key challenge when using 3SLS is the same as with other IV techniques; to find good instruments that affects consumption only through its impact on the probability of getting a job. For the 3SLS, we estimate the following system of equations:

$$\Delta \ln Djit = \lambda_0 + \gamma G_i + \lambda_1 \Delta \ln(W^{wt} + W^{Ht}) + \lambda_2 \Delta \ln Y^{nlt} + \Omega \Delta (\ln(Zht - Zwt) + \ln \Delta(W^{Hit} - W^{wit}) + \ln \Delta(Y^{nlit} - Y^{nlit})) + \Pi_k \Delta H_{ikt} + \Delta \epsilon_{it} \quad (7a)$$

$$G_i = \psi X + \omega S + \nu \quad (7b)$$

$$W^i = \delta_0 + \delta_1 Educi + \delta_2 EXPi + \delta_3 EXPi^2 + \epsilon_i \quad (7c)$$

Equation (7a)¹¹ is the structural consumption demand equation where Δ denotes first difference of a time varying variable, G_i is a job/selection dummy indicating whether the farm manager selected worker i and λ_1 is the impact parameter. Equation (7b) is the selection equation, where S is the vector of exclusive

instruments that directly impact the worker's likelihood of being selected by the farm manager but do not directly impact consumption demand and X is the vector of explanatory variables included in (7a). Equation (7c) is the Mincerian earning function (Mincer, 1974), where W^i refers to the woman or their spouses earning, $Educ$ denotes years of schooling, $EXPi$ is age of the women or the spouse which is a proxy for labour market experience. The parameters δ_1 and δ_2 can be interpreted as the returns to schooling and experience, respectively. We also use an endogenous switching regression model to estimate the job impact using cross-sectional data and to assess the degree of recall bias (see Appendix B).

To control for possible selection bias, we apply the 3SLS where we use an information source dummy¹² regarding job opportunities at the farm, and distance from the applicant's home to the farm, as instrument variables to create an exogenous link between getting the job and consumption. We believe the first instrument is valid since being connected to someone working in a farm seems only to affect consumption demand through its impact on the likelihood of being selected for the job, and not through any other channel that is not controlled for. We also believe that the second instrument, distance from home to the farm is valid: Women who resided closer to the farm probably had a better chance of knowing the flower farm managers, or checking for vacancies more frequently, and hence could have had a better chance of being selected for the job. Those residing closer could also have had a higher chance of getting a job since the transport cost was covered by the farm; it would be in the farms' interest to hire those close to the farm to reduce travel costs. As long as transport costs accrued to the farm and not to the worker, travel costs were not affecting the women's or households' consumption.¹³ The data also indicates a significant difference between the flower worker and the comparison group in terms of distance to the farm (Table 1, next section). Moreover, the characteristics of the women were not significantly different in terms of distance from their home to the nearest commercial farm. As shown in Appendix C, the vector of the additional exclusion restriction variables in the selection equation had a significant relationship with the probability of getting a job. The estimation result from the selection equation suggests that applicants who got information about

job opportunities from someone inside the farm and women who resided closer to the farm had a better chance of being selected for the job.

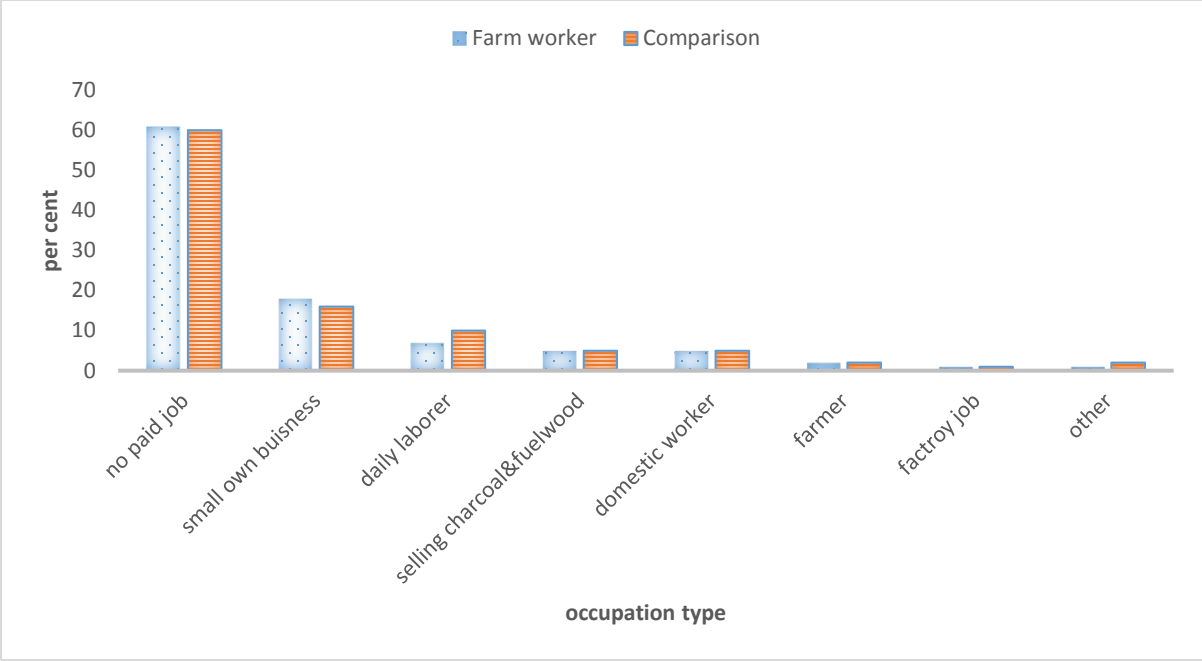
The test of overidentifying restrictions (Sargan $\chi^2(7) = 14.86$, and Basmann $\chi^2(7) = 14.41$) indicates that the excluded instruments are valid instruments. The test of weak instrument yields a large F-value ($F(8,483) = 26.23$) rejecting the null of weak instrument. The minimum Eigen value test confirms the same (see Appendix D).

5. Data

In 2013, we randomly selected 664 women from a list of married workers in 25 commercial farms. In order to minimize selection bias from making the decision of searching for a job or not (see Basu, 2006), we asked these women to name two of their friends who were seeking a commercial farm job together with them at that time, but for whatever reason did not end up with such a job.¹⁴ This resulted in 455 nominated friends where 182 were randomly selected as the comparison group. This sample selection generated two groups that were similar in terms of their initial observable characteristics, which increased the probability that they would also be similar in terms of their unobservable initial characteristics (Wooldridge, 2009). The 846 women were interviewed using a structured survey instrument comprising household demographics, expenditure, income, assets, social participation, attitudes, decision-making, domestic responsibilities, time use and food insecurity and hunger perception modules.

The previous occupation pattern of the two groups was almost identical (Figure 1). Most were unemployed or in precarious employment at the time they searched for a job, and few had ever had a formal job before (8%). More than three fifths had never participated in any income generating activities while a fifth had been engaged in informal microbusiness.

Figure 1. Previous occupation



The two groups were also similar along most of the measured characteristics (Table 1). However, they were significantly different in terms of their connection to workers at the commercial farm. Almost three fourths of the farm workers, but less than one fifth of the comparison women, had heard about the vacancies from someone working inside the farm. Moreover, the comparison women resided significantly farther from the farm and lived in slightly larger households.

Table 1. Sample characteristics

	Comparison mean	Farm workers mean	Difference
Can read and write (%)	53.30	50.30	-3.0
Years of schooling completed	3.15	3.48	0.32
Completed 3rd grade (%)	45.05	48.49	3.44
Completed 6 th grade (%)	29.12	31.78	2.66
Age	27.83	26.25	-1.58
Husband can read and write (%)	65.56	74.58	9.02*
Husbands' age	34.94	33.12	-1.82
Lives in an extended family	13.19	13.25	0.06

Orthodox Christian (%)	81.32	84.64	3.32
Years of living in current place	16.16	15.91	-0.24
Born in Oromia (%)	86.81	82.98	-3.83
Born in Amhara (%)	9.14	8.13	-1.02
Born in an urban area (%)	30.22	28.96	-1.26
Adult equivalent household size	2.11	1.91	-0.21*
Has children (%)	73.62	76.34	2.72
Number of children below 5 years	0.63	0.54	-0.08
Had inside information about farm job (%)	16.67	72.96	56.29***
Travel time by foot from home to farm (minutes)	97.8	77.34	-20.46***
Parents own agricultural land (%)	76.1	84.63	8.53***
Parents own cattle (%)	4.35	4.67	0.32
Average earned income of the women (ETB)	121	115	-6
Average per adult equivalent income (ETB)	432	458	26
Average per adult equivalent food consumption (ETB)	318	303	-15
Average per adult equivalent consumption (ETB)	445	433	-12
Poverty rate, consumption-based (%)	36.3	35.9	0.4
Household food insecurity/hunger scale	4.48	4.33	-0.15
Number of times adults eat per day	2.57	2.62	0.05
Number of times children eat per day	2.81	2.93	0.12
Days per year the household face food deficit	24	22	2
Average women's share of household income (%)	13.2	15.8	2.6
The average share of food expenditure (%)	66.6	65.2	-1.4

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, where 1 USD = 11.8 Ethiopian Birr (ETB).

The food insecurity/hunger scale is an index based on the number of increasingly severe experiences of food insecurity captured by survey questions (Bickel et al., 2000). Higher number indicates more severe food insecurity.

The simple income comparison shows that the farm workers increased their wage income by more than 266 per cent (322 ETB) on average from before they started in the job, compared with the change for the comparison women (Table 2). The remittances went in the opposite direction; the farm worker group experienced a decrease in received remittances by 214 per cent (ETB 45) compared with the comparison household. Similarly, income from the sale of agricultural produce decreased by 76 per cent (ETB 108) for farm workers' compared to the other group. We also see that net total household income declined. The difference in changes in real household incomes suggests that farm workers' households experienced a much lower real income drop (16%) than the comparison group (37%). The difference in the change over time for the two groups preview our main results.

Table 2. Income changes, by source (ETB)

Monthly income	Before		After		Diff-in-diff
	Comparison	Farm worker	Comparison	Farm worker	
Women's earnings	121	115	296	612	322**
Remittances	21	28	51	13	-45***
Agriculture	142	152	192	94	-108***
Non-farm own business	159	134	156	70	-61*
Commercial farm job	15	69	52	699	593***
Other hired work	579	409	781	583	28
Real household income	479	430	304	363	108***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Similarly, the changes in per adult equivalent household consumption reveals a difference of 31 per cent (138 ETB) in favour of farm workers. Moreover, the average annual expenditure on children's, men's and women's clothing and shoes, which are the most exclusively assignable and recordable expenditure in Ethiopia, were significantly higher for households where the women got the job (Table 3). The average expenditure on women's clothing and shoes after getting the job was 120 per cent higher for the farm workers relative to comparison women, while the difference between their husbands' and comparison husbands' expenditures was only 80 per cent.

Table 3. Expenditure on clothes and shoes (ETB), 2013.

Expenditure on	Comparison	Farm worker	Mean difference
- wife's clothes and shoes	168 (38%)	372 (2%)	204***
- husband's clothes and shoes	323 (32%)	582 (3%)	259***
- children's clothes and shoes	332 (19%)	472 (3%)	140***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ Share of zero expenditures in parenthesis. If they did not have children, we do not count it as zero.

We use spouses' earnings difference and qualitative indicators such as women's gender equitable attitude and social network as proxies for bargaining power. There is a large reduction in the earnings gap for farm worker households while there is almost no change for the comparisons (Table 4). The women's share of household earnings increased for both groups over time, but much more for farm worker households.

Table 4. Intrahousehold earnings differences

Indicator	Before		After		Diff-in-diff
	Comparison	Farm worker	Comparison	Farm worker	
Spouses' earnings difference (ETB)	624	480	620	253	-223**
Women's share of household earnings	0.13	0.16	0.24	0.45	0.18**

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

To investigate whether the job influenced the gender attitudes, the women were asked if they agree or disagree with five gendered statements. The farm workers' scores are significantly more gender equitable than the comparisons' (Table 5).

Table 5. Gender attitudes, 2013 (share disagreeing with the statement)

	Comparison	Farm worker	Diff.
Women should subject to traditional law/ should not treat like a men	74	98	24***
A husband has the right to beat his wife if she misbehave	57	92	35***
The important decisions of the family should be made by the men of the family only	66	91	25***
A wife should tolerate being beaten by her husband to keep the family together	57	75	18**
It is better to send a son to school than it is to send a daughter	61	96	35***
Average gender equitable score	3.1	4.5	1.4***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Moreover, the average social network score of farm workers is significantly higher than the comparisons (Table 6).

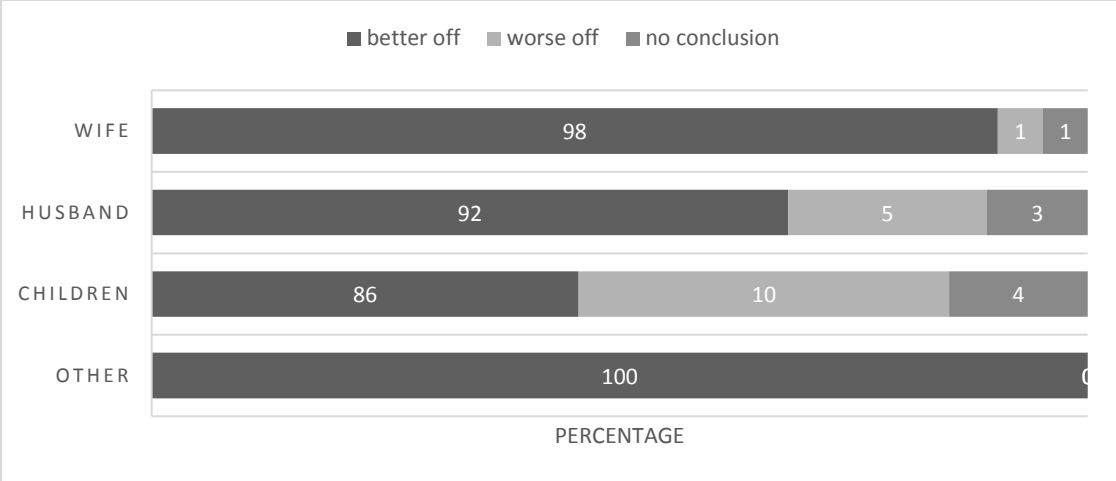
Table 6. Network memberships, 2013.

	Women's Prayer group (%)	Idir (%)	Equib (%)	Workers' union (%)	Average membership score
Farm worker	18	61	53	23	1.55
Comparison	36	71	19	4	1.31
Mean difference	-18***	-10**	34***	19***	0.24***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Idir are savings groups for funeral expenses. Equib is a rotating credit and saving scheme.

We also conducted focus group discussions with half of the farm workers, and their spouses, to get their own views of job impacts (Figure 2). They indicated that the job had improved the material wellbeing of all household members. The women described improvements in their own wellbeing as affording to buy enough food, buying clothes for themselves, being able to save money and covering personal expenses from their own earning. Moreover, they felt economic independent with an ability to decide over own income, and more self-confident with higher self-worth. Most husbands were also pleased about their wives' job, mostly because this had helped them to meet their household's consumption demand. Most spouses also stated that their children's wellbeing was improved.

Figure 2. Focus groups concluding on job impacts on individual welfare.



Concerns raised included hard physical work, direct exposure to dangerous chemicals, risk of incurring costly health services and the pressure and time-constraints to cope with domestic responsibilities.

6. Impact estimation

Table 7 reports the DID estimation of the augmented Mincerian earning function (see equation 7c) for the job impacts on woman’s earning, using heteroscedasticity-robust estimator of the VCE of the least square estimator. The coefficient of the impact variable (1.86) is highly significant and positive suggesting that getting the job increased the average real wage of the women by 186 per cent. The coefficient of the dummy for being in the farm worker group (job treatment dummy) is insignificant indicating that the earnings for the two groups were similar before applying for the job.

Table 7. Job impacts on women’s earnings

Variable	DID
Time dummy	1.13*** (0.24)
Job treatment dummy	-0.06 (0.20)

Impact (Job*Time)	1.86 ^{***} (0.25)
Years since getting the job	0.03 (0.02)
Woman age	0.12 ^{***} (0.03)
The square of woman age	-0.00 ^{***} (0.00)
Woman years of schooling	-0.05 (0.04)
Women complete 3 rd grade	0.15 (0.21)
Women complete 6 th grade	0.13 (0.22)
Women read and write	0.01 (0.16)

<i>N</i>	1688
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Note: Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Job treatment dummy is 1 for farm workers and 0 for comparisons.

The DID estimation of equation (6a) shows that the job impact on household consumption was also large; increasing the real per adult equivalent consumption by 29 per cent relative to the comparison group (Table 8). In the estimation, we dropped “bad controls” that are directly impacted by the treatment (i.e. job dummy), including women’s attitude, network and earning. Dropping these controls might however cause omitted variable bias, which we attempt to handle through the IV estimation.

Results of the 3SLS estimation of equations (7a-c) are presented in Table 8 below and in Appendix C and shows that getting a job increased the real per adult equivalent consumption of the average household by 34 per cent compared to the comparison group. This is similar to the DID estimation results, and suggests that our findings are robust to potential selection bias at the hiring stage.

Table 8: Impact on household consumption

	DID	3SLS
Variables	Log of real per adult equivalent consumption	Growth in real per adult equivalent consumption

Time	-0.14*	
	(-2.53)	
Job treatment dummy	0.01	0.34***
	(0.25)	(4.46)
Job*Time	0.29***	
	(4.48)	
Duration of the intervention	0.06***	-0.15***
	(8.03)	(-16.49)
Log of real husband earning	0.22***	
	(10.25)	
Log of real non-labour income	0.08***	
	(10.34)	
Adult equivalent household size	-0.25***	-0.09*
	(-6.99)	(-2.17)
Age of the Woman	-0.02	0.00
	(-1.31)	(0.08)
The square of woman age	0.00	-0.00
	(0.72)	(-0.08)
Woman age*Literacy	-0.00	0.01*
	(-0.47)	(2.27)
Woman age* 6 th grade completed	0.01**	0.00
	(3.25)	(0.80)
Spouses education gap	-0.11	0.12
	(-1.70)	(1.56)
Dummy for married woman	0.02	0.48*
	(0.14)	(2.06)
Born in urban area	-0.09*	-0.03
	(-2.35)	(-0.72)
Dummy for Orthodox Christian	0.02	0.00
	(0.45)	(0.08)
Dummy for ethnic group	-0.02	-0.04
	(-0.71)	(-0.89)
Dummy for parental land holding	-0.01	-0.01
	(-0.33)	(-0.22)
Log of initial woman's earning		0.00
		(0.03)
Growth in husband's earning		0.15*
		(1.99)
Growth in non-labour income		0.03***
		(3.50)
Constant	4.37***	-0.40
	(19.07)	(-1.00)
Number of observations	1249	513

Note: Standard errors in parentheses, * p < 0.05, ** p < 0.01, *** p < 0.001 . We control for husband's age, initial spouses' age and income gap. For farm women, initial year refers the year they started to work at commercial farm and growth in consumption/income refers the log difference of values between the survey year and the year they got the job. The number of observations differ because DID uses levels while 3SLS uses first differences.

To further check the robustness of the DID estimation results to recall bias, we also estimated the job impacts using the cross sectional data without recall data. We continue to address selection bias in the sensitivity analysis and hence take account of the joint determination of household consumption and getting a job. This implies that we need to use the endogenous switching regression model, which comprises the selection function and the consumption function of those women who got a job and the comparison women (see Appendix B), which is estimated by a Full Information Maximum Likelihood (FIML) estimator developed by Lokshin and Sajaya (2004). The FIML estimation results suggest that getting the job increased the real per adult equivalent consumption of the working women's household by 25 per cent (ETB 172) which is slightly less than the DID estimates (Appendix E). This suggests that our impact estimates are robust not only to selection bias but also to recall bias.

We also find large impacts on other indicators of household welfare such as consumption poverty, food insecurity and hunger (see Appendix F). Food poverty was reduced by 81 per cent, the overall poverty incidence declined by 61 per cent and hunger was substantially reduced.

We also estimated the job impacts on intrahousehold leisure.¹⁵ Since leisure time is less recallable, we used the FIML estimator on the cross sectional data (Appendix G). The estimated parameters of the respective leisure demand functions shows significant leisure reductions for the women, their oldest daughter and the husband (Table 9).¹⁶ The negative impact on the women's leisure was much larger than for the other household members, and the impact was larger for the oldest daughter than the husband. On the contrary the oldest sons' leisure increased. This is likely because in rural Ethiopia daughters, and to some extent husbands, are expected to fill in for the mother's domestic work while there are no such expectations for the sons.

Table 9. Intrahousehold leisure impacts, hours monthly, 2013

	Wives		Husbands		Oldest daughter		Oldest son	
	Mean	Se	Mean	se	Mean	Se	Mean	Se
E(Y _{1i} /X _i , F=1)	38	(0.50)	78	(0.75)	118	(1.86)	126	(1.57)
E(Y _{0i} /x _i , F=1)	91	(1.06)	82	(1.06)	125	(1.37)	117	(2.32)
ATET	-53	(1.12)	-4	(1.14)	-7	(2.29)	9	(2.46)
N	524		524		524		524	

Note: FIML estimates of the leisure demand functions.

7. Transmission mechanisms

The estimation results suggest that the woman's higher earnings from the job increased household consumption not only through higher household income, but also by reducing the earnings difference between the spouses. The latter likely improved the intrahousehold bargaining power of the women. The estimated elasticity of household consumption with respect to women's wage income, as shown in Table 10, indicate that doubling the women's salary would increase household consumption by 14 per cent through its Slutsky effect (sum of couples' real earnings) and by 4 per cent through its bargaining effect (spouses' earnings difference). This finding is consistent with the prediction of our theoretical model (equation 2c) and several other studies (Thomas, 1990, 1994; Carrasco and Zamora, 2010).

Getting the job likely increased the women's networks, and improved their self-confidence and gender attitudes (Tables 5 and 6). The improvements in such factors increased household consumption by influencing the intrahousehold bargaining process, but without directly influencing the individual preference of the couples or their joint budget set (Table 10). The coefficient of the woman's average gender equitable attitude score (row 4)¹⁷ is statistically significant and positive in the two consumption functions and negative in the food insecurity/hunger function reflecting the additional channel through which the job increased household consumption.

Table 10. Consumption determinants

	Growth in per adult equivalent consumption		Growth in per adult equivalent food consumption		Change in food insecurity/hunger scale	
	(I)		(II)		(III)	
	Coef.	Se	Coef.	Se	Coef.	Se
Slutsky effect						
DLn(real non-labour income)	0.029***	(0.008)	0.024**	(0.009)	-0.083*	(0.046)
DLn(Sum of couples real earning)	0.140***	(0.035)	0.122***	(0.035)	-0.358**	(0.124)
Bargaining effect/distributional factors						
DLn(spouses earning difference)	-0.036*	(0.015)	-0.037*	(0.015)	0.327***	(0.073)
Average Gender Equitable Score	0.037*	(0.017)	0.049*	(0.019)	-0.308***	(0.090)
Dummy woman's self-confidence	0.004	(0.043)	0.043	(0.048)	0.189	(0.227)
Spouse age difference	0.019*	(0.008)	0.011	(0.009)	0.035	(0.045)
Square of spouse age difference	-0.000	(0.000)	0.000	(0.000)	-0.002	(0.002)
Spouse education difference	0.057	(0.098)	0.019	(0.103)	-0.886	(0.467)
Organizational membership score	0.001	(0.029)	0.002	(0.033)	-0.073	(0.119)
Socio-demographic effects						
Duration of the intervention	-0.152***	(0.012)	0.026	(0.013)	-0.002	(0.055)
Adult equivalent HH size	-0.096*	(0.043)	-0.092	(0.049)	-0.137	(0.221)
Dummy for television ownership	0.119*	(0.051)	0.041	(0.053)	0.110	(0.237)
Dummy for literate husband	0.154	(0.176)	-0.080	(0.186)	-0.252	(1.056)
Lag of women literate dummy	-0.442*	(0.224)	-0.214	(0.219)	-1.004	(1.023)
Woman age # Literate	0.015*	(0.007)	0.008	(0.007)	0.053	(0.032)
women completed 3 rd grade	-0.055	(0.226)	-0.158	(0.215)	1.894	(1.037)
Woman age # 3 rd grade complete	-0.000	(0.007)	0.002	(0.007)	-0.060	(0.032)
Husband age # Literate	-0.003	(0.004)	0.004	(0.005)	-0.002	(0.024)
Age of household head	0.009	(0.017)	0.016	(0.020)	-0.022	(0.078)
Square the head age	-0.000	(0.000)	-0.000	(0.000)	0.000	(0.001)
Dummy for marital status	-0.164**	(0.052)	-0.181**	(0.057)	0.389	(0.329)
Dummy for Orthodox Christian	0.007	(0.053)	0.039	(0.055)	0.122	(0.285)
Dummy for urban born women	-0.020	(0.048)	0.029	(0.057)	-0.000	(0.237)
Dummy for Oromo ethnic	-0.096	(0.055)	-0.077	(0.066)	-0.025	(0.240)
Dummy for livestock ownership	0.045	(0.058)	0.118	(0.074)	0.331	(0.264)
Intergenerational Effect						
Dummy for parental land holding	0.055	(0.054)	0.034	(0.055)	-0.208	(0.265)
family highest years of schooling	0.008	(0.006)	0.009	(0.006)	-0.043	(0.028)
Dummy for parents owning cattle	0.005	(0.007)	0.010	(0.007)	-0.038	(0.031)
Parents owns pack animal	0.006	(0.017)	-0.002	(0.018)	-0.026	(0.073)
Constant	0.348	(0.325)	-0.066	(0.364)	1.927	(1.838)
<i>N</i>	409		409		421	
F(29 ,379)\$, (Prob > F)	21.7 (0.000)		4.2 (0.000)		3.9 (0.000)	
R-squared	0.5375					

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. A heteroscedasticity-robust estimator of the VCE of the ordinary least square estimator is used. The self-confidence dummy indicates whether the women can help her family without help from her husband. The food insecurity/hunger scale is an index based on the number of increasingly severe experiences of food insecurity captured by survey questions (Bickel et al., 2000). Higher number indicates more severe food insecurity.

To study the mechanisms through which the job impacted intrahousehold leisure allocation, a leisure demand function was estimated for each household member.¹⁸ The estimated marginal effects and the VCE robust standard errors are reported in Table 11.

Table 11. Leisure determinants (hours per month)

	Wife		Husband		Oldest daughter		Oldest son	
	MEs	se	MEs	Se	MEs	se	MEs	se
Slutsky Effect								
Log of real non-labour income	-0.004	(0.01)	-0.011	(0.02)	0.043*	(0.02)	-0.011	(0.02)
Log of real woman's earning	-0.032**	(0.01)	0.002	(0.02)	-0.114**	(0.03)	-0.043	(0.03)
Log of real husbands income	-0.083	(0.07)	-0.294**	(0.11)	-0.112	(0.16)	0.114	(0.15)
Bargaining effect								
Log of real spouses income gap	0.055*	(0.03)	0.065*	(0.03)	0.024	(0.06)	-0.030	(0.06)
Average gender equitable score	-0.088***	(0.02)	-0.021	(0.03)	0.058*	(0.04)	-0.046	(0.04)
Dummy woman's self-confidence	0.064	(0.04)	0.118*	(0.06)	0.280**	(0.08)	0.055	(0.09)
Membership/network score	-0.038	(0.02)	-0.073*	(0.03)	-0.011	(0.05)	0.004	(0.02)
Spouses age gap	0.014	(0.01)	0.004	(0.01)	0.022	(0.02)	-0.000	(0.00)
The square of age gap	-0.000	(0.00)	-0.001	(0.00)	0.001	(0.00)	0.029	(0.19)
Spouses education gap	0.060	(0.09)	0.155	(0.12)	0.065	(0.18)	0.046*	(0.02)
Socio demographic effect								
Duration of the intervention	0.008	(0.01)	0.027	(0.01)	0.036*	(0.02)	-0.008	(0.07)
Adult equivalent household size	-0.018	(0.04)	0.061	(0.07)	-0.105	(0.11)	0.159	(0.11)
Dummy for Literate husband	0.571**	(0.21)	0.183	(0.27)	0.855*	(0.35)	-0.047	(0.05)
Dummy for Literate Woman	0.346	(0.20)	0.396	(0.31)	-0.024	(0.45)	-0.283	(0.33)
Woman age # Literate	-0.011	(0.01)	-0.015	(0.01)	-0.003	(0.01)	0.104	(0.42)
Women Completed 3 rd Grade	-0.187	(0.22)	0.096	(0.33)	-0.132	(0.51)	-0.001	(0.01)
Woman age# 3 rd Grade completed	0.009	(0.01)	-0.001	(0.01)	0.009	(0.02)	0.146	(0.44)
Husband age # Literate	-0.016**	(0.01)	-0.006	(0.01)	-0.022*	(0.01)	-0.006	(0.01)
Husband age	-0.000	(0.02)	-0.037	(0.02)	0.011	(0.03)	0.004	(0.01)
The square of husband age	0.000	(0.00)	0.001*	(0.00)	-0.000	(0.00)	-0.062	(0.03)
Dummy for married women	-0.022	(0.05)	-0.011	(0.07)	-0.145	(0.21)	0.000	(0.00)
Dummy for Orthodox Christian	0.006	(0.04)	0.035	(0.08)	-0.203	(0.14)	0.042	(0.19)
Dummy for urban born woman	-0.009	(0.04)	0.083	(0.06)	0.129	(0.11)	0.162	(0.12)
Dummy for Oromo ethnicity	0.034	(0.04)	0.096	(0.07)	0.067	(0.12)	0.082	(0.10)
Dummy for television ownership	0.059	(0.04)	0.074	(0.07)	-0.060	(0.11)	-0.088	(0.12)
Livestock	-0.020	(0.04)	-0.131*	(0.06)	-0.185	(0.10)	0.046	(0.12)
Intergenerational Effect								
Dummy for parental land holding	-0.086*	(0.04)	0.014	(0.07)	-0.071	(0.10)	0.017	(0.01)
family highest years of schooling	0.007	(0.01)	0.005	(0.01)	0.011	(0.01)	-0.002	(0.01)
Parents own cattle	0.001	(0.00)	0.006	(0.01)	-0.010	(0.01)	0.013	(0.02)
Parents own pack animals	-0.008	(0.01)	-0.002	(0.02)	0.051	(0.03)	-0.059	(0.08)
Constant	1.766***	(0.45)	5.991***	(0.64)	5.586***	(0.98)	5.816***	(0.85)
<i>N</i>	499		492		216		225	
Chi2(20)	222		74		133		100	
Prob>Chi2	0.000		0.000		0.000		0.00	

Notes: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors in parentheses. The dependent variable is the number of leisure hours consumed by the respective household member per month.

Table 11 shows that the estimated effect of the income and bargaining variables on leisure mirrors the consumption demand estimations. Recall the large increase in the wives' earnings arising from getting the job (Table 7). This raised the women's opportunity cost of leisure substantially, and the job had a large negative impact on her leisure (Table 9). Table 11, row 2, confirms that the wife's real earning is statistically significant, large and negative in the wife's leisure demand estimation. In addition, the job decreased the spouses' income gap (Table 4), and likely improved the woman's bargaining power. The leisure demand estimation for the wife indicates that narrowing the spouses' income gap decreased the wife's leisure time (Table 11, row 4). From equation (2d), we can infer that this result is consistent with the woman's higher bargaining power increasing her labour supply outside of the home. Hence, her increased bargaining power lets her maintain a job outside of the home, which comes at the expense of reduced leisure. Moreover, as indicated by the negative and significant coefficient of the average gender equitable score (row 5), more gender equitable attitudes is negatively related to the woman's leisure. Since the job improved these attitudes (see Table 5), this partial correlation again suggests that the effect of the job worked through strengthening the women's bargaining position, again in favour of work at the expense of her leisure.

Recall that the husband reduced his leisure when his wife got the job, although to a much lesser extent than the wife (Table 9). Our qualitative work suggested that husbands stepped in for the wife on some domestic chores when she got the job. This is consistent with the husband's leisure estimation where the coefficient of the spouses' income gap is significant and positive (Table 11, row 4). Hence, when the woman got the job, the spouses' income gap was reduced, the bargaining power of the wife increased, and this induced the husband to reduce his leisure (when controlling for other effects including the household budget). The job impacted the leisure time of the husband primarily through this bargaining power of the women: In the husbands' leisure function, the coefficient of wives' wages is insignificant (row 2). The husbands' leisure time was also negatively associated with their wives social network (Table 11, row 7). Again, the job expanded the network of the women, including unionization (Table 6), which likely

increased their bargaining power that in turn was used to induce the husband to contribute more to household chores. As expected, the leisure demand estimation for the husband in Table 11 yields a similar and negative relationship as for the wife between own wage and leisure (row 3).

The job also reduced the oldest daughters' leisure (Table 9), and our qualitative work suggested that they had to step in for their mothers in several domestic chores. The leisure estimation for the oldest daughters' support this since the women's wage is significant and negatively associated with the oldest daughters' leisure time (Table 11, row 2). Moreover, Table 11 also shows that the mother's gender equitable attitude and self-confidence is significant in the daughters' leisure estimation (row 5 and 6). This indicates that mothers with strong self-confidence and positive gender attitudes protected their daughters' leisure time. However, even if the job improved the women's confidence and gender attitudes, which reduced the negative effect on the daughters' leisure, the net effect of the job was still negative for the daughters' leisure.

The oldest son was shielded from the negative impact of the job on leisure as experienced by the other household members, and in fact experienced an increase in leisure (Table 9). Our qualitative work suggested that the sons were not to step in for mothers in household chores, so the substitution effect would not impact sons. Then there would only be an income effect on son's leisure, which is positive (see equation 2d), and hence consistent with positive impact estimate. Table 11 shows that none of the changes occurring when the woman got the job appear significant in the oldest son's leisure equation (column 4). The only significant determinant of the sons' leisure demand is the education gap of the spouses, which is positive suggesting that sons have more leisure when fathers have more education relative to their wives.

8. Conclusion

The jobs had large positive impacts on the material wellbeing of the working women and their individual household members through increased household consumption, reduced poverty and improved food security. However, the job reduced the women's time for leisure substantially, which created an additional burden for them.

The job also improved the working women's intrahousehold bargaining power. This increased their household consumption substantially, likely through distributional factors such as decreased spouses earning gap and through her improved outside options, self-confidence, gender equitable attitudes and social network. We find that doubling the woman's salary would increase household consumption by 18 per cent, where the woman's increased bargaining power accounts for almost a quarter of this increase (22 per cent).

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¹ See Lewis (1954). Higher wages can also be maintained when there is union bargaining (Card 1996), labor poaching or efficiency wages (Shapiro and Stiglitz, 1984; Katz et al., 1989) and in labor markets where learning is important (Papageorgiou, 2014).

² In the epidemiology literature, conducting case-control studies is common when it is not possible or ethically to randomize the intervention (see Anglemyer et al., 2014, for a systematic review of comparisons between RCTs and case-controls and other observational methodologies).

³ The degree to which the job or the total working time causes fatigue (work intensity) can have major implications for wellbeing and gender division of labor (Jackson and Palmer-Jones, 1999).

⁴ Anderson and Eswaran (2009) finds that it is employment outside the husband's farm that increases the women's empowerment.

⁵ Bourguignon et al. (1994) defined the distributional factors as a set of variables that impacts decisions, but affects neither preferences nor budget constraints.

⁶ Intuitively, $\mu=0.5$ for equal bargaining power.

⁷ Respondent recall can be accurate when there are important memory "markers" (Ravallion, 2008). We used 'seeking the farm job' as memory marker since this was their first formal job search ever. With short recall period, recall bias is likely minimal and anyway expected to be similar for farm workers and comparisons.

⁸ The DID estimation with covariates will account for selection based on observables but not for selection based on unobservable time varying factors.

⁹ All farm managers, 93% of our respondents and our qualitative work indicated stated hiring was random among jobseekers, apart from visual inspection of candidates.

¹⁰ The estimates are likely more efficient than the 2SLS (Appendix D) since they were not significantly different from each other (see Baltagi, 2012).

¹¹ DID can be represented in levels (equation 6a) or first difference (equation 7a).

¹² Whether the women got information about vacancies from someone working in the farm.

¹³ Travel costs are often used as instruments for participation in training programs to estimate program impacts on earnings. Then it is essential that these costs accrue to the worker, since they influence the likelihood of participating in the program, but not affecting earnings (Imbens, 2014).

¹⁴ This was more cost effective than surveying to find those who had applied for a job at the same time as the treatment group. If friends are more similar along observables and unobservable than a random sample, then this approach also helps addressing selection bias.

¹⁵ Leisure is the most exclusively assignable resource for the poor (Chiappori, 1988; Bourguignon and Chiappori, 1994; and Fafchamps et al., 2009).

¹⁶ Similar to Ilahi (1999) and Doss (2011).

¹⁷ The average gender equitable score variable is a 1 to 5 score reflecting the woman's attitude towards gender equitable norms. To this end, the sample women were read a series of five statements related to gender and asked if they agree or disagree with these. The list of the five statements are reported in Table 5. A larger score denotes a more gender equitable norm.

¹⁸ We use poisson regression instead of linear regression since the latter may not provide the best fit over the values of the leisure demand determinants since leisure is a count variable (Wooldridge, 2009). However, since the poisson regression model is intrinsically heteroskedastic, a robust estimate of VCE for poisson MLE is used to retain the consistency of the parametric estimates.