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Women's Empowerment in Agriculture

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Abstract

The paper computes the current empowerment situation, the inclusion of women in decision making and gender equality within the household in the agriculture sector of Punjab, Pakistan. It follows an estimation approach that is based on a multidimensional poverty index methodology proposed by Alkire and Foster. Women's empowerment in agriculture index (WEA Index) methodology combines two corresponding sub-indices. The first index is five domains of empowerment (5DE Index) and the second is Gender equality index (GE Index). Five domains are Production, Resources, Income, Leadership, and Time. After analysis, the Overall WEA Index appraises that Leadership, Income and Resources domains respectively add the most share to the disempowerment of women. Men are not completely empowered in all the five domains but relatively they are in many advantages in many indicators than their partners. Overall in Punjab women are relatively more empowered in the time domain and production domain. The current situation of women's empowerment needs a further supportive policy or program implications in the area for better consequences in the future.

Keywords: Empowerment, Gender equality, 5DE Index, GE Index, WEA Index

Introduction

Change never occurs at once but requires endurance, stability, and an optimistic attitude. Change comes up within a person's individual mindfulness and afterward turns into the derivation for numerous actions and makes over into empowerment. Apparently, gender parity and women's empowerment are connected with each other. Due to inclusion in Millennium Development Goals (MDGs) and later on in Sustainable Development Goals (SDGs), empowerment of women and gender equality has become the center of attention for international development associations and debates.

Identification of women's empowerment is diverse theoretically and practically in debates. Conventionally, empowerment of women is estimated through alternative and indirect measures like education, work experience, number of children, or age at marriage, etc. It is also explored that Demographic and Health Surveys at country level compute empowerment in an insufficient way only at the household level with direct approach (Alkire, 2005; & Kishor & Subaiya, 2008). Indecisively, women's empowerment in the agriculture sector has been ignored by researchers. Measures used for assessment of progression in empowerment and gender have minimum coverage regarding women's position in agriculture. Recently, Alkire et al. (2013) projected an innovative vigorous and inclusive measure for tracking empowerment of women in agriculture. It is planned as an instrument to reflect the empowerment of women in the agriculture sector. It also assists to distinct the weaker areas of empowerment for further policy interventions.

The present paper selected the ever ignored sector for measuring women's empowerment in the agriculture sector of Sargodha District, Punjab. Sargodha District's total area is 5,864 km^2. The division is mainly agricultural and famous for citrus fruit, wheat, rice and sugarcane crops. District Sargodha has seven tehsils. The present paper measures empowerment on an individual level of both the genders within the household to fill the gap of robust and direct measures in the context of agriculture. The major purpose of the paper is to estimate female's empowerment at the individual point and gender equality at the household level. Moreover, it recognizes important areas which are essential for women to be supported to furnish further policy implications.

Review of Literature

Women's empowerment is a varied and complex concept in its characteristics. The first consistent idea with empowerment is found by Sen (1989) who described the term agency; a person with the competence to execute according to his or her personal will. Then it was defined in the context of different types of power phenomenon (Jejeebhoy, 1997; Sen, 1997; Mayoux, 1999). Kabeer (1999) changed the power viewpoint into three dimensions of behaviors of women for Bangladesh. Multiple factors, dimensions, variables, and indicators have been engaged for the purpose of presented literature with different contexts. In the financial background, Mehra et al. (2000) emphasized two main areas; to eradicate poverty and to enhance monetary projection

for women. The highest number of studies has calculated the empowerment of women with an exacting spotlight on funding (Hashemi & schular, 1994; Kabeer, 2005; Mayoux, 2006).

Status of women, autonomy, empowerment, and gender equality are associated with expressions. Pakistan is an agricultural country and women contribute as central backing to the rustic economy. Minimum studies in Pakistan are found on women's empowerment measurement with agriculture context. Pakistani society is considered conservative for women. Women are seen to be a symbol of more poor in country contour. They are treated unjustly and they are underprivileged, dependent. They are measured to be submissive than men (Khan & Maan, 2008). Generally, female folk are separated out from involvement in informal trade and industry labor and remain at home. But from dawn to dusk, they energetically take part in agricultural activities like production, raising livestock, supply food to men in fields but unfortunately they are less considered (Amin et al., 2009; Sadaf & Luqman, 2006). Farmers confront many difficulties and additional services overlook women farmers and promote merely men farmer. There prevails gender difference in agriculture facilitation (Akram, 2008). Iftikhar (2010) highlighted a wider gap between the two genders in the agriculture sector. The gender gap is present mostly in the availability and usage of innovative and prolific resources and training material. It is also anticipated that despite all these inequities and inequalities, women's contribution capitulates extra profit than men (Afzal et al., 2010). In Pakistan, small and micro enterprises sustain underprivileged females with fewer resources to earn a livelihood for them and family. In this way, these enterprises are playing an influential part in making women resourceful (Khan & Awan, 2011). Disempowerment includes other aspects such as less available opportunities, isolation of female from industrious labor. All these studies use indirect measures to measure empowerment in Pakistan.

In Bangladesh, Kabeer (2012) finds that the enlargement of financial prospects for poor and disbursing extra concern to the expansion of programs can produce a friendly macroeconomic environment for female empowerment. Weiss (2012) evaluates that existing strategies need more improvements to enhance women's position especially for the common open-mindedness in Pakistan. Female empowerment at all levels signifies the country's overall growth. Khan (2013) investigates that globally women area sufferer by the violence from their counterparts at home. All these violence are in the form of physical, psychological or economically torture, or not allowing them to choose according to their taste. Alkire et al. (2013) investigate that another type of disempowerment of women is the excessive wastage of time in the informal sector or household chores and this waste of time suffers them and family in respect of care. Malapit et al. (2013) in Nepal also declares a positive impact of fruitful selection on the empowerment of mother and child in the context of nutrition status. Likewise Sraboni et al. (2014) review improvements in the empowerment of women in the perspective of nutrition and food safety in Bangladesh. Malapit et al (2015)measure women's empowerment in agriculture and production diversity with the help of household-level survey data. The study uses women's 5DE with ten indicators and gender parity index for Nepal. Membership of group, less workload, income control, and empowerment, on the whole, are positively linked with improved motherly diet. Empowerment of women lessens the depressing consequence of little production variety on child and maternal nutritional diversity. Cornwall (2016) elaborates preliminary feminist work from a multi-country research program on women's empowerment to find supportive pathways for these journeys. The presented literature review with respect to the empowerment of women is not covering agricultural perception. Alkire et al. (2013) twists the novel idea to researchers and proposed new domains to gauge the empowerment of women with an agricultural background. So, the existing literature, especially within Pakistan, lacks robust and direct domains of female empowerment in the context of agriculture. In this regard, the present paper chooses the methodology that not only covers agricultural context but investigates empowerment at the individual level and computes gender equality at household level simultaneously.

Research Objectives

The major purpose of the paper is to estimate empowerment, agency, and inclusion of women in the agricultural context. Collective objectives in this regard are:

1. To calculate five domains of empowerment of both the genders at the individual level.
2. To estimate gender parity within the household.
3. To identify areas in which empowerment needs to be supported for women to furnish some policy implications.

Data Source

The present paper employs survey data set collected with the help of individual-level survey questionnaire (used by Alkire et al., 2013). Data is collected from 12 rural union councils of District Sargodha and 175 households are selected through convenient sampling technique. Primary male and female are selected from each household. To collect data, the study sample includes only households engaged in agriculture directly or indirectly.

Explanation of Variables

The paper deals with five domains and further with sub-indicators to measure the aggregate index. The depiction of five domains is given below in details:

1. Production

The dimension gauge singular or shared choices about agricultural production. It includes two variables Productive Decision Input (PDI) and Relative Autonomy Indicator (RAI). The domain at one side captures responses of singular or shared choices regarding farming tasks and cattle rearing. At the other hand, it considers the degree of that response related to a variety of agricultural production activities and tasks such as what kind of crop should be cultivated? When and where to sell that crop? How much involvement in cattle rearing? For measuring or judging the autonomy variable, it follows the Self-Determination Theory. To create RAI, it covers three types of response regarding own capability to cope with a critical situation, facing social displeasure and acknowledgment of own personal choices (Alkire, 2007). The weight of this dimension is 0.20 out of 1 and weight splits evenly between the two indicators of this domain.

2. Resources

The domain combined three indicators such as Assets ownership (ASS), Decisions about transfer, sale, and purchase of Assets (TSP) and Credit Access and Decision Making (CADM). The first component ASS calculates own personal or shared possessions of various assets like residential house, farming property, mobile phone, small and large household things, cattle, poultry, marketable property, nonfarming or farming tools and transportation means. All these things are further categories into two groups: minor and major possessions. The second component indicator TSP deals with the gender gap in ownership rights. In almost all the patriarchal societies like ours, women do not possess personal ownership of property but merely can share her choices about the rental fee, mortgage, purchase and sale of belongings. Their share of decisions must not be limited to only minor possessions category. The third component CADM counts involvement and capability to decide about money borrowed from close friend, family member, or group base loan from any informal or formal source in the duration of the past year. In this way, the domain counts a person empowered on the basis of singular or shared ownership or decisions of a person about major possessions and exclude a person from empowerment vice versa. The weight of this dimension is 0.20 out of 1and divides into three identical parts (0.066) among three component indicators.

3. Income

The domain is famous and traditionally used as an indicator for computation of empowerment. This domain is comprised of a single indicator: control over income (COI). Two types of choices are considered for this indicator. Firstly, it calculates the contribution of an individual in specific activities and participation in choices about earnings from various sources such as cattle rearing or farming. Secondly, it considers the degree of responsiveness a person's decisions about waged earnings and household consumption activities. For empowerment consideration, the domain just counts decisions of a person about major consumption expenses choices because majors are good delegates of control of income while minors are not. The weight of this dimension and the single indicator COI is same 0.20 out of 1.

4. Leadership

The dimension scrutinizes individual's capability of leading a life characterized with leadership. For the judgment about this quality, the domain includes group membership (GM) and public speaking (PS). The first GM indicator observes the respondent's membership in a societal or communal group. The groups may be any of these; farmers trade or marketing group, water group, forest user group, local government, mutual cooperation group, microfinance group, charity trust, religious group or woman welfare groups. For true reflection, a member must be effective and efficient in the group. The second component indicator PS evaluates a person's public speaking. The indicator uses three motives for this purpose. Motive one covers speaking for assistance in building small wells or roads within the community. Motive two covers speaking ability for the sake of appropriate payment to labor in community works. Motive three includes speaking for the protest against the misbehavior of concerned authority or chosen officials. These motives demonstrate a person's valor and audacity to speak frankly in the belonging community. The weight of this dimension is 0.20 out of 1 and splits uniformly between components.

5. Time

The dimension counts two component indicators such as workload (WL) and leisure (LS). For the first indicator, WL individuals are asked to memorize past day's activities from the time 4 am to 3 am of the following day. The duration of time for all the notable activities is 24 hours total. The indicator WL copies Lesotho Time Budget Study (Lesotho, 2003) to note all the performed activities in time. Work activities which utilize a person's most time are considered primary. It includes cooking, personal occupation, shopping, waged earnings, manufacture, sewing, cattle rearing, family care, and travel. The second component indicator LS examines a person's satisfaction level with the time available for entertainment. The satisfaction level is calculated with a satisfaction scale ranging from zero to ten. Leisure includes doing exercise, watching TV, gathering with relatives or neighbors, visiting the cinema, playing sports, and enjoying music or listening to the radio. The weight of this dimension is 0.20 out of 1which is equally distributed between the two component indicators.

Methodology

The paper employs A-F Multidimensional Methodology by Alkire and Foster (2007, 2011). The WEA Index is comprised of two sub-indices; the 5DE Index and the GE Index.

On the contrarily, empowerment is calculated in the disempowerment style by using MPI methodology in M0 fashion. Empowerment index is created in the form of $1 - M0$. The data is supposed in the form of $(R \times I)$ with respondents and

indicators correspondingly as matrix J. The paper applies I indicators in place of N domains to deal within indicator inadequacy. While all $r = (1,2,3, \dots, R)$ and$i = (1,2,3, \dots, I)$. Cutoff for Inadequacy vector $y = (y1, \dots, yI)$is a step one for every indicator to be identified as disempowered. It consigns identical (0.20) weight to each dimension and all domains total sum is equal to 1. Value of a vector or weight is assigned as $w_i = (w1, \dots, wI)$with $\sum_{i=1}^{I} w_i = 1$. While s_r are aggregate weighted insufficiencies. $w1, \dots\dots, w10$ stands for relevant weight multiplied with matching indicators $I1, \dots\dots, I10$. Each respondent's inadequacies or insufficiencies score ranges from 0 to 1.

$$s_r = w1I1 + w2I2 + \dots\dots\dots\dots\dots\dots + w10I10 \quad (1)$$

A respondent is declared as empowered if his inadequacy score stands equal or under k and the insufficiency score of ethe mpowered respondent is converted into the value of 0. Adaptation of insufficiencies into 0 is called "Censoring of the score" (Alkire & Foster, 2011). $s_r \leq k$ is considered $s_r(k) = 0$ while $s_r > k$ is equal $s_r(k) = s_r$ and $s_r > k$ is mirrors a strict cutoff. The paper uses both the collective multidimensional approach of intersection and union with $k = (1,2 \dots, I)$.

By following Alkire and Foster (2011), it is supposed that $M_{r,I}$ show the set of complete $R \times I$ matrices and $J \in M_{r,I}$ symbolizes adequacies matrix of R respondents in I indicators. The entry J_{ri} of J is r respondent's adequacy in relevant indicator I, all $r = (1,2,3, \dots, R)$, all $i = (1,2,3, \dots, I)$. The row vector $J_r = (j_{r1}, j_{r2}, \dots, j_{rI})$ notify r respondent's adequacy among all i indicators where $J_i = (J_{1i}, j_{2i}, \dots, j_{Ri})$ allocates all respondent's sufficiency in indicator i. Row vector y exhibits an indicator's particular initial cutoff where $z_r > 0$ stands for the cutoff to consider a respondent as insufficient in an indicator i. The sufficiency matrix can be transformed into an insufficiency matrix z^0. After creating a column vector of insufficiency count, $z^0(k)$ is created with related k value as a matrix of censored insufficiencies. The percent of respondents with weighted insufficiencies above k level are measured as disempowered headcount from the whole population. It can be written as: $H^c = d/n$ .While $d = ((Jri < yi) = 1)$ or $\sum_{r=1}^{R} sr > k$ where d stands for total respondents recognized as disempowered and n stands for the total respondents used for calculation. For reflective calculations of disempowerment, width or intensity is used as a supplementary factor and can be written as $A^c = \frac{\sum_{r=1}^{R} sr(k)}{d}$. $sr(k)$ is denoted for total insufficiency count of recognized disempowered respondents from overall population and d identify total disempowered respondents as $\sum_{r=1}^{R} sr > k$. Finally, censored insufficiency matrix M0 is the average value assessment. The percent of disempowered respondents multiplied with average insufficiency score represent M0. $M0 = \mu(z^0(k))$ is known as adjusted headcount ratio or $M0 = H^c \times A^c$. 5DE computations can be done in M^0 fashion or in empowerment style as well.

$$5DE = 1 - M0 = 1 - H^c A^c \qquad or \qquad 5DE = Hm + Hc \times Am \quad (2)$$

Here the ratio of empowerment headcount is denoted by Hm, identical to $(1 - H^c)$ and Am is similar to $(1 - A^c)$ for average adequacy score of disempowered respondents. A respondent is disempowered who has inadequacy score 20 percent or above($sr(k) \geq 20percent$). On the contrary basis, empowered respondents have adequacies equal and above 80 percent($sr(k) \geq 80percent$).

It is also possible to further decompose disempowerment into subgroups, domains, and indicators. $M0(J; y) = \sum_{r=1}^{R} \mu(Z^0_{*i}(k))/N$ in domain situation if divided by I as a replacement for N then it stands for decomposition into indicator case. The paper calculates empowerment at district level so it can also be calculated as $M0\ region$.

$$M0\ region = w_1 Hc_1 + w_2 Hc_2 + \dots + w_{10} Hc_{10} \quad (3)$$

The paper employs ten indicators so weights w and censored headcount Hc of indicators vary from 1 to 10 where $\sum_{i=1}^{I} wi = 1$. Sum of the share of all ten indicators should be equivalent to 100 percent. In the similar style, country level empowerment can also be computed. For percent contribution of each indicator to the whole of M0 is computed as:

$$\text{Contribution of Indicator to total disempowerment (M0)} = \frac{\text{w}_\text{i}\text{Hc}_\text{i}}{\text{M0 region}} \times 100 \quad (4)$$

Another distinguishing feature of the method is the breakdown of entire information on the basis of position, regional, pectoral or religious subgroups. For instance a region P ($P = p1 + p2$) into specific subgroup $p1$ and $p2$ with their size $n(p1)$ and $n(p2)$ from the whole population correspondingly as ($n = n(p1) + n(p2)$). The aggregate weighted mean of two subgroup's disempowerment stays the same with overall disempowerment level.

$$M0\ region = \frac{n(p1)}{n} M0p1 + \frac{n(p2)}{n} M0p2 \quad (5)$$

Same as calculations of indicator's contribution, the contribution of subgroup into the whole disempowerment can be attained independently such as for subgroup $p1$:

$$Contribution\ of\ p1\ to\ regin\ M0p = \frac{\frac{n(p1)}{n} M0p1}{M0\ region\ P} \quad (6)$$

The second index of gender equality (GE Index) detains equality between the two primary genders within the family. This index is a proportional inequality measure that reflects the gender inequality within 5 domains. $J \in M_{R,I}$ symbolizes an sufficiency matrix of R respondents in I indicators. $(J_{ri}; y_i)$ sufficiency matrix is additionally created in $Z^0(k)$ insufficiency matrix and it indicates respondents less or equal insufficiency score than k=0.20. While $s'r > k$ is $s'r(k) = s'r$ but $s'r(k) \leq k$ is $s'r(k) = k$. When a disempowered women's insufficiencies are more $(s'_r(k)female > s'_r(k)male)$ than primary male in that

household, it is measured with notation E^0. The GE Index is a combination of two aspects; $H^E$and I^E. The H^E is $H^E = \frac{h_e}{t}$ indicates comparative explanation of household that has gender inequality.

The other aspect is the average gap score I^E in the empowerment of both the primary genders. The notation is used for $I^E = \frac{1}{h_e}\sum_{i=1}^{h_e} \times \frac{s'_i(k)female - s'_i(k)male}{1 - s'_i(k)male}$. I^E computes strength (breath) of gender inequality. In conclusion, the GE Index is computed as:

$$GE\ Index = H^G + H^E \times I^G \quad (7)$$

While $H^G(H^G = 1 - H^E)$is percentage representation of female possessing gender parity, H^E stands percentage of female possessing gender inequality and I^G ($I^G = 1 - I^E$) stands for the women's comparative parity value to the primary men. The drop in the percent of gender unequal households (H^E), by growing the number of households with equality (H^G) or by declining the insufficiency value of female than male (I^E), GE Index score can be enhanced.

The final aggregate index is a combined score of two representative indices. The obtained outcomes from relative two indices vary from 0 to 1. Better level of empowerment is reflected from getting more nearer to one and its notation is:

$$WEA\ Index = 0.9(5DE) + 0.1(GE\ Index) \quad (8)$$

The expanded form of formula is as:

$$WEA\ Index = 0.9(Hm + Hc \times Am\ ) + 0.1(H^G + H^E \times I^G) \quad (9)$$

The aggregate index gives ninety percent weight to 5DE Index and demonstrates the extra significance of empowerment above gender parity with ten percent weight.

Empirical Analysis and Discussions

The paper tracks empowerment of both the genders at the individual level and parity between the two at the household level. Table 01 represents 5DE Index and GE Index with score value 0.749 and 0.828 respectively at cutoff K=0.20. In District Sargodha, 68.0 percent of women having disempowerment status and average inadequacy score is 36.97 percent of domains. So, women's disempowerment Index score is mined from H^C and I^C in a way as 68.0 percent × 36.97 percent = 0.251. In this way 5DE Index score is 1- 0.251 = 0.749 for women in the area. Headcount of men with disempowerment is 59.42 percent which is less than women indicating better empowerment level of men in the area. Average disempowerment intensity for men is 37.12 percent of domains. M0 value for men is 59.42 percent × 37.12 percent = 0.221. Empowerment score in five domains for men is 1-0.221 = 0.779.

In the second index, 44.0 percent of households are exhibiting gender inequality while 56.0 percent of women have parity of empowerment with their male counterparts. Average breath of this gender gap is 39.21 percent that is quite vided. Overall gender equality index value is (1 – [44.0 percent × 39.21 percent]) or 0.828.

Table 1: ***Women's empowerment score in agriculture (WEA Index)***

Indexes score		
Percent of data usage	100%	
Number of observations	350	
i-5DE Index		
	Women	**Men**
Disempowerment headcount (H^C)	68.00%	59.42%
Average Intensity score (I^C)	36.97%	37.12%
Index of Disempowerment (M0)	0.251	0.221
5DE Index (1-M0)	0.749	0.779
ii-GE Index		
Percent of women having gender disparity (H^E)	44.0%	
The average gender gap in empowerment (I^E)	39.21%	

Gender Equality Index (GE Index)	0.828
iii- Overall WEA Index	
WEA Index score	0.757

Author's own computations

The WEA Index score in District Sargodha is 0.757 which is a weighted average of two sub-indexes. The overall index value shows that almost 26 percent of women in the area are disempowered and almost 76 percent of the women are having empowerment in agriculture.

I. Decomposition into disempowerment

Fig 1: Contribution by Domain into Disempowerment of Women

Figure 1 and 2 for a brief description of domains vise disempowerment of women and men respectively. Women are much better against their male counterparts in the leadership domain because women of the area have greater skills of public speaking while men are behind their women in this area. The second domain in which women are in more empowerment than their men is time. Men are spending more hours on work-related activities or income generating activities while women are mostly housewives and stay at home. Some women are sharing cattle rearing workload with their men along with their household chores. In the matter of time satisfaction, women are more content than their men. Within the resource domain, men are more disempowered than women in credit access and decision making indicator because women are generally considered comfortable in loan taking from friends and relatives than men. All the rest of the domains with sub-indicators show greater empowerment of men over women or women are more deprived in income, resources and production domains than men.

Fig 2: Contribution by Domain into Disempowerment of Men

Table 02 shows a detailed description of decomposition into disempowerment of women and men. The indicators group membership and public speaking (49.10 percent and 32.0 percent respectively) contribute most to the disempowerment of women belonging to Sargodha region under the leadership domain. Third major contributor into disempowerment is very less control of income with 30.30 percent. 29.10 percent of women of the area have little decision-making powers regarding transfer,

sale, and purchase of various goods. Twenty-three percent of women have very little access to credit and decisions regarding its use.

Table 02 also demonstrates decomposition into disempowerment of men in District Sargodha. Most men are not a member of different groups and they are not good at public speaking (42.30 percent and 34.80 percent respectively). Almost twenty-five percent of men have less access to credit and twenty-three percent of men are not good at decision making regarding transfer, sale, and purchase of assets. Control over income and workload contribute equally to disempowerment that is 22.20 percent. Although both men and women are quite disempowered generally overall comparison situation of empowerment of men as compared to their women is quite better in the area.

Table 2: ***5DE decomposition by indicators at k=0.2***

Domains	Indicators	Women's Statistics			Men's Statistics		
		Censored Headcount	% Contribution	Contribution	Censored Headcount	% Contribution	Contribution
Production	Productive Decision Input (PDI)	0.223	8.9%	0.022	0.171	7.7%	0.017
	Relative Autonomy Indicator (RAI)	0.183	7.3%	0.018	0.097	4.5%	0.010
Resources	Assets Ownership (ASS)	0.131	3.7%	0.009	0.080	2.7%	0.006
	Decisions about Transfer, Sale and Purchase of Assets (TSP)	0.291	8.1%	0.020	0.228	7.2%	0.016
	Credit Access and Decision Making (CADM)	0.234	6.5%	0.016	0.246	7.7%	0.017
Income	Control over Income (COI)	0.303	24.1%	0.061	0.222	20.4%	0.045
Leadership	Group Membership (GM)	0.491	19.6%	0.049	0.423	19.0%	0.042
	Public Speaking (PS)	0.320	12.8%	0.032	0.348	15.8%	0.035
Time	Workload (WL)	0.189	7.5%	0.019	0.222	10.0%	0.022
	Leisure (LS)	0.149	5.9%	0.015	0.165	7.7%	0.017

Author's own computations

II. Reflective Insights of the empowerment of women

The particulars of insights from group discussions and weaknesses of women's empowerment within indicator's response items are discussed here (see appendix 01). The first production domain's first sub-indicator (productive decision input) the results show that in section 2 of the questionnaire 152 women are inadequate in decision making of cash crop farming. Only 23 women have sole or joint adequacy in this response item. While in section 5, from four related items almost 92 percent of women are inadequate in the extent of personal decision regarding agricultural production and buying inputs for agricultural use. The situation reveals that in patriarchal societies like Pakistan mostly women are not considered in decision making of outside home decisions like agricultural production. RAI also shows a weaker own personal choice making of women than their men regarding three capability responses. One old lady said in focus group discussions that women should respect their counterparts as a religious obligation. Within resources domain, there are three sub-indicators. In the first indicator assets, ownership (ASS)

women are mostly inadequate in ownership of means of transports (98.90 percent), agricultural land (98.30 percent), business equipment (98.30 percent), commercial or residential land (96.60 percent), and mechanized farm equipment (95.40 percent) respectively. In ownership, indicator women are generally found adequate in small consumer durables (90.30 percent), large consumer durable (76 percent) and small livestock (45.70 percent) respectively. This shows a very weak ownership status of women. A woman in focus group gathering states that she owns large consumer commodities as her dowry items like Refrigerator, Tv, Sofa, etc. and also one buffalo but her ownership status is just apparent. Deere and Leon (2001) also concluded that women confront disadvantages in ownership of assets. The second sub-indicator decisions about transfer, sale, and purchase of assets include decisions regarding who will sell, give away and mortgage the assets? Women are inadequate in transferring (give away, rent and new purchase) agricultural land, mechanized and nonmechanized agricultural equipment respectively. In borrowing and usage of credit from five different sources, women are only adequate in borrowing and use of that credit from friends or relatives. All the rest of the sources show women's almost complete inadequacy. So resources domain plays a major role in women's disempowerment than their men.

Income domain consists of only one indicator with eight response options from two sections (2&5) of the questionnaire. Women are mostly weak in the use of income generated from nonfarm economic activities (93.70 percent), salary or wage income (93.10 percent), cash crop farming (91.40 percent) respectively from section two. Same is the case with options to what extent women can make their own personal decision regarding three aspects of household life: livestock raising, nonfarm business activity, and personal salary or wage income. Women show weaker adequacy than their men in all the three aspects of household life. Income domain is the second major contributor towards women's disempowerment. Most of the women admit the fact that they use the money for different purposes with their husband's consent and are not fully authorized or allowed to use it personally.

Next is the leadership domain with two sub-indicators; public speaking and group membership. Rural women are normally good at speaking to help build infrastructure in their communities and 60.60 percent are empowered while 39.40 percent is inadequate in this ability. Second ability regarding speaking to ensure payment is a little weaker among women because 47.40 percent of women are inadequate. Regarding speaking to protest against the misbehavior of authorities is the weakest area with 56.00 percent inadequacy. In group membership out of A-J options of groups according to the questionnaire; only thirty women are a member of religious groups and twenty-seven women are a member of some mutual help group. Women are not at all member of all the remaining eight groups. Therefore, the leadership domain contributes most of the share in women's inadequacies.

Finally, Time domain consists of two sub-indicators; in workload indicator 137 women (78.30 percent) are overburdened means inadequate at k=0.20 while in leisure satisfaction indicator 84.60 percent of women are dissatisfied. The Time domain overall goes in favor of women than their men because women are mainly housewives and are responsible partly in livestock rearing along with household chores. while men are engaged fully in all kind of farm management activities, buying, selling of crops and livestock rearing activities.

III. Disempowerment Index at all k levels

The paper basically uses cutoff k=0.20 for computation of disempowerment index. Alkire et al. (2013), Malapit et al. (2013) and CARE (2013) also employ the cutoff (k=0.20) to compute disempowerment of the individual. For more policy configuration of disempowerment, levels of k from 0.1 to 0.4 are analyzed for finding result variations.

Table 3: ***Women's 5DE at different k levels***

Levels of K	Women's Statistics				Men's Statistics			
	H	A	M0	5DE=1-M0	H	A	M0	5DE=1-M0
K=0.1	0.9371	0.3049	0.2857	0.7143	0.8857	0.2871	0.2543	0.7457
K=0.2	0.6800	0.3697	0.2514	0.7486	0.5942	0.3712	0.2206	0.7794
K=0.3	0.5371	0.4043	0.2171	0.7829	0.3714	0.4600	0.1709	0.8292
K=0.4	0.2971	0.4885	0.1451	0.8549	0.2514	0.5273	0.1326	0.8674

Author's own computations

It is viable that selected cutoff level should be suitable with the area or community perspective because moving towards upper levels of k decreases the number of disempowered persons. On the other hand, the representation of disempowered individuals

is higher with lower levels of k. This is quite evident from the calculations of different k levels in table 04. The paper follows an appropriate k=0.20 level as the cutoff for data analysis so that normal depiction of results can emerge.

Conclusion

Women and men are most disempowered in the leadership domain but men are more disempowered than women. Income domain is the second most disempowerment of women and men but women are more deprived in this domain. Resources domain is at third in the sequence of disempowerment of women whereas for men time domain also contributes equally with resource domain in men's disempowerment. Production domain contributes at forth for women's disempowerment while for men it is the least deprived area. The time domain is the least contributor in women's deprivations. Gender disparity is also quite significant in households. Overall, the WEA Index score demonstrates that women are disempowered in almost all the dimensions but group membership, public speaking, assets ownership and control over income indicators contribute mostly to women's deprivations. All the results show men's are mostly in advantage than women in agriculture.

Recommendations

The results indicate that program or policy implications are inevitable for getting a better level of empowerment at the individual or domestic level in agricultural settings. For research purpose, the present paper suggests measuring WEA Index at country level, across districts and within District Sargodha across its Tehsils. Keeping in contextual view, true and effective actions are needed along with extensive community mobilization arrangements to influence norms regarding women's rights. The agriculture sector is basically a conservative part of the economy. So, there is a dire need for further improvement in the empowerment of women belonging to agriculture.

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Appendix

Table 3: Women's inadequacy deep insights of all sub-indicators

Domains	Indicator	Response options	Number of inadequate women	Disempowerment in %age
PRODUCTION	Productive Decision Input (PDI)	Section2: input into the production of food crop farming	116	66.30
		Cash crop farming	152	86.90
		Livestock raising	63	36.00
		Section 5 input into agriculture	162	92.60
		Input into buying	161	92.00
		Input into crop type	137	78.30
		Crop marketing	75	42.90
RESOURCES	Assets Ownership (ASS)	Owner of agricultural land	172	98.30
		Large livestock	119	68.00
		Small livestock	95	54.30
		chickens	115	65.70
		Nonmechanized equipment	161	92.00
		Mechanized equipment	167	95.40
		Owner of business equipment	172	98.30
		Owner of house	157	89.70
		Owner of large consumer durables	42	24.00
		Owner of small consumer durables	17	9.70
		Ownership of cell phone	77	44.00
		Owner of another land	169	96.60
		Owner of transport means	173	98.9

	Decisions about Transfer, Sale, and Purchase of Assets (TSP)	Agricultural land	139	79.40
		Large livestock transaction	103	58.90
		Small livestock transaction	86	49.10
		Chicken transactions	111	63.40
		Non-mechanized farm equipment	137	78.30
		Mechanized farm equipment	148	84.60
		Give away agri equipment	138	78.90
		Give away large livestock	103	58.90
		Give away small livestock	85	48.60
		Give away chicken	112	64.0
		Give awaynonmechanized equipment	138	78.90
		Give away mechanized equipment	149	85.10
		Rent agri land	139	79.40
		Rent large livestock	105	60.00
		Rent small livestock	88	50.30
		Rent chicks	112	64.00
		Rent nonmechanized farm equipment	140	80.00
		Rent mechanized farm equipment	151	86.30
		New purchase agri land	158	90.30
		New purchase of large livestock	128	73.10
		New purchase of small livestock	100	57.10
		New purchase of chickens	110	62.90
		New purchase of nonmechanized equipment	146	83.40
		New purchase of mechanized equipment	150	85.70
	Credit Access and Decision Making (CADM)	The decision to borrow from govt.	171	97.70
		Informal borrowing adequacy	175	100
		Formal source borrowing	175	100
		Friends or relative borrowing	42	24.00
		Group-based borrowing	163	93.10
		Borrowed from friends etc	55	31.40
INCOME		Use of income about food crop	153	87.40
		Use of income about cash crop	160	91.40
		Use of income about livestock	94	53.70
		Use of income about nonfarm economic activities	164	93.70

	Control over Income (COI)	Use of income from wage employment etc.	163	93.10
		The decision about income use from livestock	125	71.40
		The decision of income use from nonfarm activity	119	68.00
		The decision of income use from own salary	107	61.10
LEADERSHIP	Public Speaking (PS)	Speak to help built infrastructure	69	39.40
		Speak to ensure payment	83	47.40
		Speak to protest against misbehavior	98	56.00
	Group Membership (GM)	Agriculture group	175	100
		Water user group	175	100
		Forest user group	175	100
		Credit/microfinance group	174	99.40
		Mutual help or insurance group	148	84.60
		Trade and business group	174	99.40
		Civic group or charitable group	164	93.70
		Local government	175	100
		Religious group	145	82.90
		Local community jirga	172	98.30
TIME	Workload (WL)	Workload	137	78.30
	Leisure (LS).	Leisure satisfaction	148	84.60

Author's own computations