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THE ABBREVIATED WOMEN'S EMPOWERMENT IN AGRICULTURE INDEX: AN APPLICATION IN THE REPUBLIC OF NORTH MACEDONIA

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ABSTRACT
Gender inequality has important implications for any society and is particularly important for developing economies because of their large reliance on the agricultural sector where it is especially pronounced. Women are often a crucial resource in agriculture and the rural economy but face constraints that reduce their productivity and hinder their competitiveness in the sector. In this study we measure the Abbreviated Women's Empowerment in Agriculture Index, as a standardized methodology that directly capture women's empowerment and inclusion of women in the agricultural sector, and quantify the level of women empowerment in the agricultural sector in the Republic of North Macedonia. Results show that women are disempowered in all domains in agriculture compared to men. More precisely, women are significantly disempowered in ownership of assets, input in decision making and control over use of income. Positive impact on the higher empowerment of the households and smaller gender parity gap is when women are responsible for farm accountancy within the agricultural household.

Key words: gender equality, agriculture, women's empowerment.

INTRODUCTION
Agriculture can be an important engine of growth and poverty reduction. It is perceived as a male-dominated sector but as an engine of growth and development, it should provide greater recognition of the importance of women (Alkire *et al.*, 2013). Women in agriculture lack empowerment and they are less productive because of the limited access to resources and opportunities (FAO, 2018).

The literature suggests four domains of empowerment: economic, social, political, and psychological (Fox & Romero, 2016) in which the approach for developing policy measures for women's empowerment should be strongly correlated with the interdependence of economic and social empowerment.

One of the most used measurement for women's empowerment in agriculture is Women's Empowerment in Agriculture Index (WEAI), introduced in 2012. The methodology was developed by United States Agency for International Development (USAID), the International Food Policy Research Institute (IFPRI), and the Oxford Poverty and Human Development Initiative (OPHI). WEAI was the first comprehensive and standardized measure to directly capture women's empowerment, agency, and inclusion of women in the agricultural sector (Alkire *et al.*, 2013; Malapit *et al.*, 2015). After introducing the WEAI in many non-European counties, few adaptations were done, and new version, the Abbreviated Women's Empowerment in Agriculture Index (A-WEAI) was introduced in 2015. A-WEIA measures empowerment in five domains: Production, Resources, Income, Leadership and Time allocation (Alkire *et al.*, 2013). The key advantage of the WEIA and A-WEAI over other

indexes is that it defines empowerment profiles for both women and men, measures intra-household inequality and reflects the inadequate agency at individual level. In addition, the results are useful for the agriculture and rural development policy since WEIA and A-WEAI provide multidimensional approach that is comparable over a time dimension and allows the monitoring of the impact of agricultural intervention on women's empowerment.

The national policy framework of the Republic of North Macedonia (RNM) continuously adjusts in line with the country's preparation for European Union (EU) integration. The importance of gender equality has been recognized by the national institutions and has become part of social and political priorities across different sectors. In addition, it is an issue addressed by current agricultural policy, but still, despite the presence of a legal framework, there is remarkable persistent inequity between men and women in rural societies (Hadzievski & Dzimrevska, 2017).

We focused on determination of the gender inequality in agriculture and level of women's empowerment. What was missing at the national level was applied empirical research in measuring the level of women's empowerment, to provide evidence-based results for the level of women empowerment in agriculture and the determinants of empowerment. The results can be further used to improve the gender responsiveness of the measures in different supportive programs for gender equality, including the national agricultural and rural development policy. The issue of women empowerment has been addressed in only a handful of studies in NRM given that most of the studies are not related to the agricultural sector. Jakimovski and Matilov (2002) stressed that insufficient education is the reason why women have limited opportunities in agricultural activities, and these activities normally emerge as a consequence of social and economic necessity, not from their own choice. A study of perspectives of women in rural areas (Risteska *et al.*, 2012) gave a baseline of the status of rural women in NRM and described possible measures that could lead to empowerment of women in rural areas. The study on Land and Gender (World Bank & FAO, 2014), pointed out that according to the national law, women and men have equal status in relation to property, but local customs, cultural norms, and traditions often prevail over laws and so women may lose their entitlements to male relatives. Almas *et al.* (2015) explored effects on women empowerment through gender specific money transfers from a national program that aimed to support women's bargaining position in the households in NRM. Petrovska Mitrevska & Tuna (2017) assessed the level of awareness of gender discrimination as relatively low in rural areas.

All the studies cited above do not quantify the level of empowerment nor do they link empowerment to a specific demographic profile of women. We used A-WEAI to elicit and econometrically estimate a measure of women empowerment, agency and inclusion of women in the agricultural sector. The approach identifies the key determinants of empowerment that could be selectively targeted in any enhancement support program for the advancement of the status of the women in agriculture (Alkire *et al.*, 2013). Results shown that women are significantly disempowered compared to men mostly in ownership of assets, input in decision making and control over use of income but positive impact on the higher empowerment of the households and smaller gender parity gap is when women are responsible for farm accountancy within the household. In addition, women are disempowered in 35.7% of the indicators while men are disempowered in 16.5% of the indicators. In general, 58 out of 100 women are disempowered, compared to 33 out of 100 men who are disempowered (66.6% of women do not achieve parity with their partner compared to 33% of men who do not achieve parity with their partner).

The paper is structured as follows. The second part presents the data used and method applied for measuring the A-WEAI. In the third part, the results are presented and discussed. Finally, by identifying the key domains that contribute to women's disempowerment, the main concussions are drawn.

MATERIALS AND METHOD

A-WEAI is used to elicit and econometrically estimate a measure of women empowerment, agency and inclusion of women in the agricultural sector to identify the key determinants of empowerment. A-WEAI represents an aggregate index, and is reported at the country and regional level. It provides gender disaggregated data for domain-specific measures of empowerment at the individual and household level, but also at the aggregate level, for the identification of the critical points where further efforts should be aimed at (Malapit *et al.*, 2015).

The abbreviated version of WEIA is consists of five domains in agriculture: 1. Production (Input in productive decisions), 2. Resources (Ownership of assets and access to and decisions on credit), 3. Income (Control over use of income), 4. Leadership (Group membership), 5. Time (Workload). A-WEAI is a weighted average of sub-index that measures the five domains of empowerment (5DE) and sub-index of gender parity (GPI). A comparison of the domains and indicators in the original WEAI and A-WEAI is presented in Table 1.

Table 1. Comparison of Original WEAI and A-WEAI

WEAI		A-WEAI		
Domains	Indicator	Domains	Indicators	Weight
Production	• Input in productive decisions • Autonomy in production	**Production**	Input in productive decisions	1/5
Resources	• Ownership of assets • Purchase, sale, or transfer of assets • Access to and decisions on credit	**Resources**	• Ownership of assets • Access to and decisions on credit	1/15 2/15
Income	Control over use of income	**Income**	Control over use of income	
Leadership	• Group membership • Speaking in public	**Leadership**	Group membership	1/5
Time	• Workload • Leisure	**Time**	Workload	1/5

Source: Malapit *et al.*, 2015; Yount *et al.*, 2016.

The methodology provides domain-specific measures of empowerment at the individual and household level and also at the region or country level that allow the identification of the critical points where further efforts for women empowerment are needed (Alkire *et al.*, 2013). Besides, the importance of the measurement of the A-WEIA can be stressed through its use as a diagnostic tool to signal key areas for interventions to increase women empowerment and gender parity in agricultural sector in NRM. By analyzing different domains, the crucial indicator/domain for particular development is identified that can be further better targeted by the national agriculture and rural development program and policy.

A-WEAI comprises of two sub-indexes. The first sub-index assesses the degree to which women are empowered in the five domains of empowerment (5DE) in agriculture. This sub-index provides a multidimensional empowerment profile for each man and woman. It weighs 90% of the total A-WEAI. The second sub-index is Gender Parity Index (GPI) and measures gender parity within the households. GPI is a relative inequality measure that reflects the inequality in 5DE profiles between the primary adult male and women in each household. GPI measures the intra-household inequality and facilitates the analysis of households that lack gender parity. It weighs 10% of the total A-WEAI. For those households that have not achieved gender parity, GPI shows the empowerment gap that needs to be closed for women to reach

the same level of empowerment as men. The total A-WEAI score is the weighted sum of the country level 5DE and GPI.

$$AWEAI = 90\% \times 5DE + 10\% \times GPI \qquad (1)$$

The method for developing the A-WEAI relies on using the individual responses to the survey questions where each of the six indicators are assigned a value of 1 if the individual's achievement is adequate, i.e., it exceeds the defined inadequacy cut-off for the specific indicator, and value of 0 otherwise (Alkire *et al.*, 2013). At the beginning, an individual empowerment score for each woman (adequate achievement) was calculated. The individual empowerment score represents the weighted average of each of these six indicators using the weights defined in the methodology. So, woman/man who has achieved "adequacy" in 80% or more of the weighed indicators is considered "empowered". On the contrary, the person is disempowered is if the inadequacy score is greater than 20% (Alkire *et al.*, 2013).[1]

Data collection

The data for A-WEAI were collected at the household and individual level by interviewing men and women within the same households. A field survey on 464 agricultural households was carried out in eight statistical regions of the country, in accordance to NUTS 3 classification. The main criterion for selecting the regions and municipalities for the survey was the national NUTS nomenclature that provides a single and uniform breakdown of territorial units at the regional and local level. This nomenclature is the basis for collecting, processing and publishing regional statistics used for planning and running the regional policy in the RNM (State Statistical Office of RNM, 2018). The Nomenclature of Territorial Units for Statistics – NUTS consists of 5 levels: NUTS level 1 and NUTS level 2 represent the whole territory of the RNM as an administrative unit, NUTS level 3 consists of 8 non-administrative units – statistical regions that are formed by grouping the municipalities as administrative units of lower level.

The survey was conducted in the period 20 June - 31 July 2018. Twenty experienced advisors for the National Extension Agency (NEA), who have had permanent cooperation with the agricultural producers, were selected to perform the household interviews. Before the final questionnaires were developed and adopted, a group of nine rural women were interviewed to pre-test the adequacy of the questionnaires. The interview was organized in cooperation with the National Farmers' Federation.

The selection of the agricultural households in the survey was based on a sample defined in a FADN system[2] selection plan for each region and the country. A unique feature of the FADN system is the collection of (sensitive) accounting data for the agricultural household. In order to ensure that the FADN sample adequately reflects the diversity of the field of observation, the design of the sample was stratified by three stratification variables: region, economic size and type of agricultural holding, as defined by the regulations for a network of accounting data from agricultural holdings. Beside the FADN agricultural households, a representative number of non-FADN agricultural households were selected to obtain additional diversity in the sample.

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[1] Detailed instructions for the methodology applied for calculation of A-WEAI is available at http://weai.ifpri.info/versions/a-weai/.
[2] The Farm Accountancy Data Network (FADN) is a survey conducted in the member states of the European Union (EU). Every year, accounting data from over 100,000 agricultural holdings in the 27 EU Member States are collected. FADN is based on the application of the same accounting principles for the recording of data from economies in all EU Member States. However, the network does not cover all agricultural holdings in the Union, but only those whose size allows them to be defined as commercial holdings. The economies involved in FADN are underlined randomly selected at the level of each region in the EU.

RESULTS AND DISCUSSION

A-WEAI is composed of two sub-indexes: the five domains index (5DE) for women with the disempowerment index (1-5DE), and Gender Parity Index (GPI). GPI measures gender parity in empowerment within the household, with the empowerment gap (1-GPI) defined as the percentage difference in empowerment scores between women and men. The weights of the 5DE and GPI sub-indexes are 90% and 10%, respectively. The total AWEAI score is the weighted sum of the country or regional level 5DE and GPI. Improvements in either 5DE or GPI will increase A-WEAI (Alkire *et al.*, 2013).

In RNM, the average value of the 5DE index is 0.643 for women which means that women are on average empowered in 64.3% of the indicators while men are empowered in 83.5% of the indicators. On the up-side, the disempowerment score can be interpreted as the opposite of the 5DE index; i.e., women are disempowered in 35.7% of the indicators. Given these scores of empowerment/disempowerment, the percent of disempowered individuals amounts to 57.7% for women and 33.3% for men. One can also calculate the disempowerment score for the sub-sample of those that do not achieve empowerment. Among the disempowered women, the disempowerment score is 61.9% while it is 49.7% for men. The average GPI score is 0.754 which means that women exhibit empowerment scores that are 75.4% of those of men. The GPI score is even lower (62.7%) if we restrict the sample to those that do not achieve parity with their men partner. This difference with men is reflected in the average empowerment gap which amounts to 24.6% (=1-GPI). Overall, 66% of women do not achieve parity with their men counterparts and exhibit a small or large difference in empowerment scores which is reflected to the GPI. Finally, the AWEAI is a weighted average between 5DE and GP. The AWEAI amounts to an overall value of 0.654 and exhibits significant potential for improvement either through improving 5DE or by reducing the empowerment gap between women/men (Annex I).

Table 2. A-WEAI results (five domains of empowerment index, the disempowerment index, the Gender Parity Index, the empowerment gap)

Indexes	Women	Men
5DE index	Empowered in 64.3% of the indicators	Empowered in 83.5% of the indicators
Disempowerment index (1-5DE)	Disempowered in 35.7% of the indicators	Disempowered in 16.5% of the indicators
Share of disempowered individuals	58 out of 100 women are disempowered	33 out of 100 men are disempowered
Average Gender Parity Index (GPI)	Women exhibit empowerment scores that are 75.4% of those of men	
Empowerment gap (1-GPI)	The percentage difference in empowerment scores between women and men is 24.6%	
Share of individuals not achieving parity	66.6% of women do not achieve parity with their partner	33% of men do not achieve parity with their partner
Gender Parity Index of sub-sample disempowered individuals	Women exhibit empowerment scores that are 62.7% of those of man	
Empowerment gap (among those without parity)	The percentage difference in empowerment scores between women and men is 37.3%	
Abbreviated Women's Empowerment Index in Agriculture (A-WEAI)	The overall A-WEAI (0.654) exhibits significant potential for improvement either through improving 5DE or by reducing the empowerment gap between women and men	

In addition, the level of disempowerment index (1-5DE) was measured at the regional level (Figure 1). The regions are arranged in the figure by how large the gap is between women and men. Vardar, Southeast and Polog regions exhibit the largest gap between genders. Their level of disempowerment is also above the national average for women but is below the national average for men.
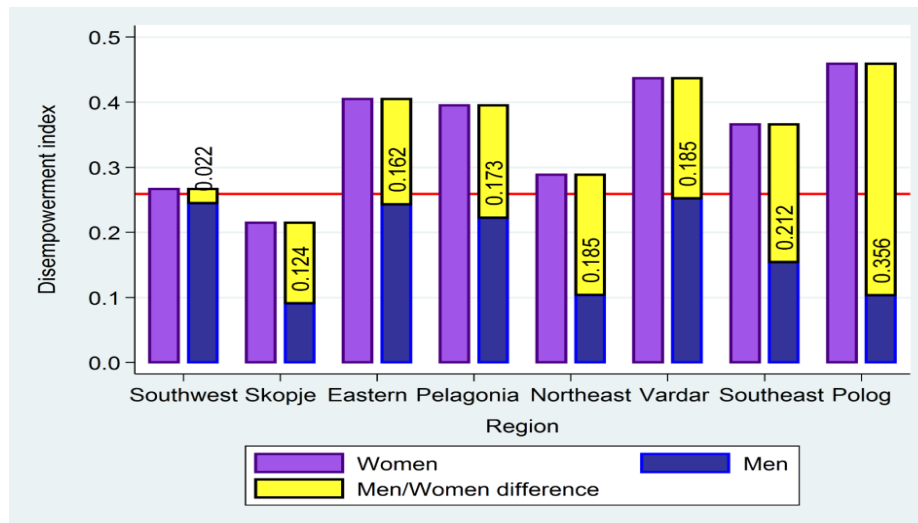

Figure 1. Regional representation of the disempowerment index (red line - the national average of the disempowerment index)

The red line in the graph is the national average of the disempowerment index (DAI). The regions are arranged in the figure by how large the gap is between men and women. For example, one can observe that regions like Vardar, the Southeast and Polog exhibit the largest gap between genders. Their level of disempowerment is also above the national average for women but is below the national average for men. One of the regions that seems to be in relatively good position among others, is Skopje not only because it exhibits one of the lowest gaps between men and women in terms of disempowerment but also because both men and women disempowerment scores are lower than the national average.

Domain specific/related results
Women are disempowered in almost all domains, yet ownership of assets, input in decision making, and control over use of income contribute most to women's disempowerment. These three indicators make around 34.5% of the value of the disempowerment index in agriculture for women but only 10.1% of the value of the disempowerment index in agriculture for men.
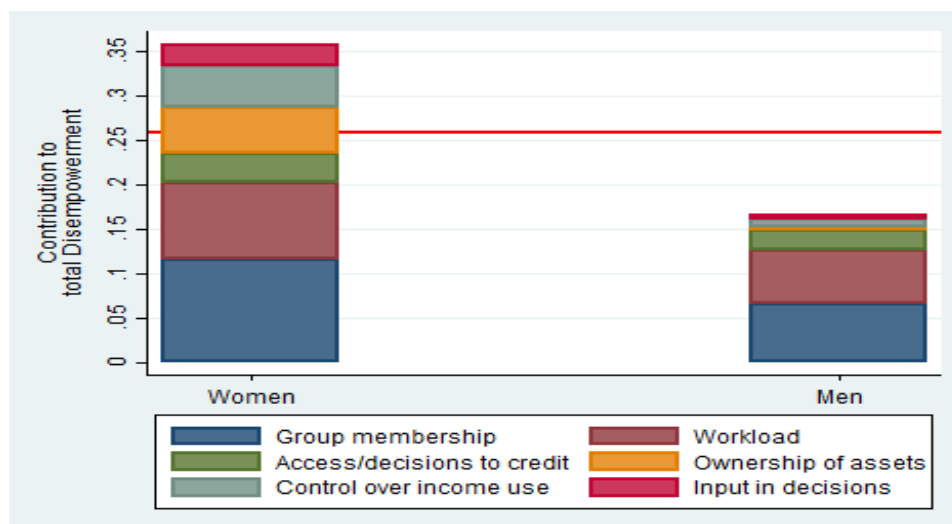
Figure 2. Contribution of the domains/indicators to the women' disempowerment
(red line - the national average of the disempowerment index)

CONCLUSIONS

We use A-WEAI to measure the level of women's empowerment in agriculture in Republic of North Macedonia. Our findings indicate that women are disempowered in all domains (Production - input in productive decisions; Resources -ownership of assets and access to and decisions on credit; Income - control over use of income; Leadership - group membership; Time -workload) but domains that contribute most to the women's disempowerment are: ownership of assets, input in decision making, and control over use of income. On the other hand, a positive impact on the higher empowerment of the households and smaller gender parity gap is when women are responsible for farm accountancy within the household. Based on that, more empowerment will be given to the women if further policy interventions consider the importance of the women in agriculture being responsible for farm accountancy/control over income use, increased ownership of assets and increased input in decision making. The overall A-WEAI is 0.654 and exhibits significant potential for improvement either through improving the empowerment in the five-domains or by reducing the empowerment gap between women and men.

ACKNOWLEDGEMENTS

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ANNEX I

Table 3. A-WEAI calculation at national and regional level

		All regions		Eastern		Northeast		Pelagonia		Polog		Skopje		Southeast		Southwest		Vardar	
Female	5DE	0.643	[0.533]	0.785	[1.000]	0.605	[0.533]	0.712	[1.000]	0.541	[0.500]	0.595	[0.533]	0.634	[0.533]	0.733	[0.767]	0.563	[0.400]
	Dismpowerment score (1-5DE)	0.357	[0.467]	0.215	[0.000]	0.395	[0.467]	0.288	[0.000]	0.459	[0.500]	0.405	[0.467]	0.366	[0.467]	0.267	[0.233]	0.437	[0.600]
	1-5DE (among the disempowered)	0.619	[0.600]	0.595	[0.533]	0.615	[0.600]	0.630	[0.600]	0.622	[0.600]	0.621	[0.600]	0.616	[0.600]	0.533	[0.533]	0.647	[0.600]
	% not achieving empowerment	57.7%		36.1%		64.3%		45.8%		73.8%		65.2%		59.4%		50.0%		67.5%	
	GPI score	0.754	[0.798]	0.832	[0.917]	0.730	[0.784]	0.762	[0.818]	0.678	[0.727]	0.767	[0.818]	0.728	[0.778]	0.875	[1.000]	0.758	[0.818]
	% not achieving parity	66.0%		50.0%		66.7%		68.9%		69.0%		59.7%		75.6%		44.4%		60.8%	
	Empowerment gap	0.246	[0.202]	0.168	[0.083]	0.270	[0.216]	0.238	[0.182]	0.322	[0.273]	0.233	[0.182]	0.272	[0.222]	0.125	[0.000]	0.242	[0.182]
	GPI score (among those without parity)	0.627	[0.727]	0.665	[0.750]	0.596	[0.563]	0.655	[0.750]	0.533	[0.545]	0.610	[0.667]	0.640	[0.739]	0.720	[0.764]	0.602	[0.625]
	Empowerment gap (among those without parity)	0.373	[0.273]	0.335	[0.250]	0.404	[0.438]	0.345	[0.250]	0.467	[0.455]	0.390	[0.333]	0.360	[0.261]	0.280	[0.236]	0.398	[0.375]
	A-WEAI score	0.654	[0.553]	0.790	[0.982]	0.616	[0.566]	0.717	[0.982]	0.555	[0.533]	0.613	[0.553]	0.644	[0.553]	0.748	[0.778]	0.580	[0.460]
Male	5DE	0.835	[1.000]	0.909	[1.000]	0.778	[1.000]	0.896	[1.000]	0.897	[1.000]	0.757	[1.000]	0.846	[1.000]	0.756	[0.767]	0.748	[0.767]
	Dismpowerment score (1-5DE)	0.165	[0.000]	0.091	[0.000]	0.222	[0.000]	0.104	[0.000]	0.103	[0.000]	0.243	[0.000]	0.154	[0.000]	0.244	[0.233]	0.252	[0.233]
	1-5DE (among the disempowered)	0.497	[0.467]	0.467	[0.467]	0.500	[0.467]	0.507	[0.467]	0.481	[0.467]	0.500	[0.467]	0.495	[0.467]	0.489	[0.467]	0.504	[0.467]
	% not achieving empowerment	33.3%		19.4%		44.4%		20.5%		21.4%		48.6%		31.1%		50.0%		50.0%	

Notes: 5DE is the five domains of empowerment score (0=completely empowered; 1=completely disempowered). A-WEAI is the Women's Empowerment in Agriculture Index. GPI is the Gender Parity index score (0=complete disparity; 1=complete parity). Mean values and percentages are reported; median values are in brackets.