A Non-Parametric Approach to the Women Employment Through Microcredit Financing

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Abstract

The empowerment of women as a priority of economic development is a crucial issue for all economies, particularly for developing ones. Supporting employment is an inevitable aspect of women empowerment which enhances the socioeconomic conditions, nominately for the ones being a member of low-income households. As a developing country Turkey also tackles with the trouble of low labor force participation rate of women. More clearly, in 2018, the regarding rate was % 34 which is far more behind the developed economies. Furthermore, the rate of women entrepreneurship is low as well, that corresponds to around % 1.5 of employed women. Therefore, within the scope of gender equality, measures supporting the employment and entrepreneurship of women become the focus of economy and social policies. Regardingly, microcredit financing emerges as a policy solution for employment and other socio-economic struggle areas of women. In this context, this study aims to analyze the efficiency of microcredit schemes provided via Turkish Grameen Microfinance Program by employing a non-parametric approach, that is data envelopment analysis. The methodology enables to provide an efficiency ranking on the basis of input and output variables among the selected provinces of Turkey. The findings indicate that the microcredit programs in the East region of Turkey are implemented so as to ensure higher efficiency scores compared with others.

Jel Codes: J16, J21, C67

Keywords: women employment, microcredit financing, data envelopment analysis

1.INTRODUCTION

In the last decade, we have witnessed a wide literature on the female employment. One stream of the regarding literature, particularly in developing countries has focused on the bottlenecks of female employment to enter the labor markets which is mostly about the education, settlement conditions, marital status, income, gender perception and roles etc. (Kasnakoğlu and Dayıoğlu, 1997; Dayıoğlu, 2000; Dayıoğlu and Kırdar, 2010; Buğra ve Yakut Çakar 2010; Kızılgöl 2012; Kılıç and Selcen, 2014). As a peculiarity of a developing economy, Turkey has also faced with the issue of low female employment and labor force participation rates with regard to those factors. Furthermore, the entrepreneurship capacity of women is rather unsatisfied which was around %1.5 of female workers in 2018. As a recipe for the regarding problem, government implements a number of social care and assisstance programs. Beside the government policies; microcredit programs are also utilized, particularly to support the women entrepreneurship.

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In this context, the basic concern of this study is to measure the technical efficiency of microcredit programs in 17 provinces of Turkey in 2018 by employing a non-parametric approach, namely data envelopment analysis. The study contributes to the existing limited literature (Altunöz 2018; Tömen 2015; Yaprak and Helvacıoğlu 2014; Şengür ve Taban 2012; Ece and Ergeneli 2019) concerning microcredit programs by utilizing a comparative regional perspective which addresses the efficiency issue.

The paper is organized as follows. The second part mentions the pattern of female employment in Turkish labor markets. Third part of the study presents data, the analytical framework of methodology and findings. The final part concludes.

2. A BRIEF EVALUATION ON WOMEN EMPLOYMENT AND MICROCREDIT FINANCING IN TURKEY

According to the demographical structure of Turkish labor market, although the women constitute the half of the population, the labor force participation and employment rates are far below compared to males'. Moreover, those rates for female labor force do not show progress in time. More clearly, female labor force participation and employment rates increase solely about % 9 and % 5, respectively within the period 2015-2019. The ratios merely reach to %34.4 and %28.8 in 2019 which are less than half of the regarding rates of men.

Table 1. Labor Force Statistics (2015-2019)

	Labor force participation rate			**Employment rate**		
	Total	Female	Male	Total	Female	Male
2015	51,3	31,5	71,6	45	27,5	65
2016	52	32,5	72	46,3	28	65,1
2017	52,8	33,6	72,5	47,1	28,9	65,6
2018	53,2	34,2	72,7	47,4	29,4	65,7
2019	52,9	34,4	71,7	45,4	28,8	62,4

Source: The table is generated by utilizing labor force statistics of Turkish Statistical Institute .

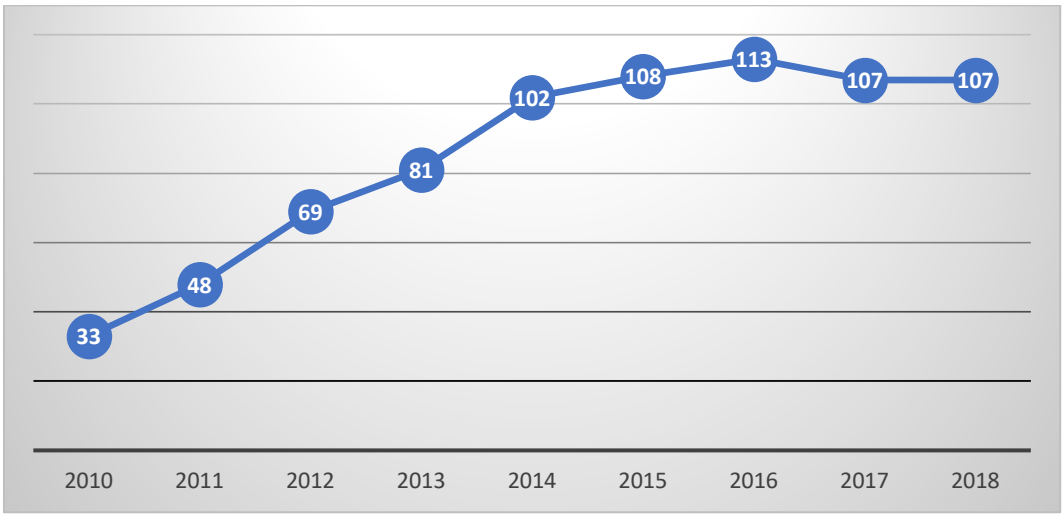
In addition, the distribution of female workers with regard to sector and occupation is very unbalanced and unequal compared to men. Female workers are usually employed in sectors of agriculture and services which provide relatively low wages. On the other hand; the share of female entrepreneurs is very low, which is around % 1.5 of female workers.

One stream of the policies aiming at a rise in both women employment rate and a progress in female entrepreneurship capacity extends over microcredit financing programs. As Al-Shami et al. (2017) emphasize, those programs empower women in a number of aspects by achieving women involvement in household decisions-making and resource controlling, supporting women to acquire new skills that improve their business development, strengthening women in their community through social capital networks and enabling women to contribute to their household welfare. Thus, those programs significantly contribute to the compensation of the strategic and practical gender needs which are underlined by the studies of Molyneux (1985) and Sumbas (2013).

The origin of the regarding schemes relies on the study of Muhammed Yunus in 1976 suggesting banking services via a particular financial intermediary namely Grameen Bank which centers on the rural area of Bangladesh to break out of poverty. One of the main

objectives of Grameen Bank is to reach disadvantaged groups, particularly women whose majority are from the households in poverty and dependant to a male (Kabeer, 2012). The bank also began to faciliate in 2003 in Diyarbakır, Turkey to provide financial services to low-income women. The bank which is active in 64 provinces and 97 branches, funded through three financial sources: i) municipialities, governerships and foundations, ii) private donations and iii) bank lending. Some detailed statistical data on the bank is presented by Figure 1 and 2.

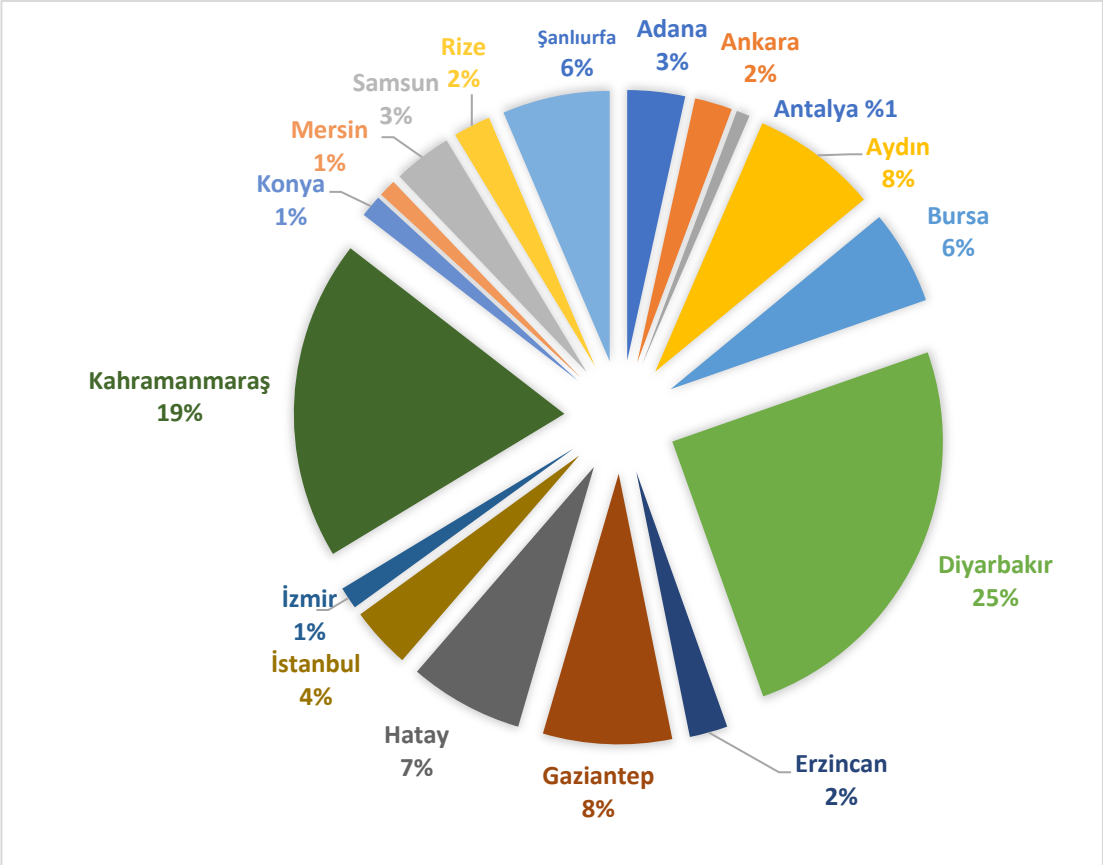
Figure 1. Total Microcredit Disbursement (2010-2019)



Source: The graph is generated by using the data form TGMP (2018).

According to Figure 1, the amount of microcredit disbursement has increased over the period 2000-2018 and reached almost 810 million TL by 2018, cumulatively. On the other hand, Figure 2 presents the distribution of microcredits through the provinces. The share of East region of Turkey which origins the program with regard to high women poverty and unemployment rates, is relatively apparent comparing to other provinces.

Figure 2. The Distribution of Microcredit Disbursement in Province Level (2019)



Source: The graph is generated by using the data form TGMP (2018).

3. DATA, METHODOLOGY AND FINDINGS

This study aims to examine the relative efficiency, that is defined as the maximum output produced by a given amount of input or minimum input to produce a given level of output, of several decision making units (DMUs), here are the provinces. Within the scope of study, data envelopment analysis (DEA) which is suggested by Charnes et al. (1978) as a tool of linear programming is performed. The model is based on the assumption of constant returns to scale to analyse the relative efficiency of provinces in the framework of an input-oriented approach aiming to produce a given amount of output with minimum inputs. The model is based on the maximization of efficiency for the ith DMU, ε_i, as below:

$$\max.\ \varepsilon_i = \frac{v_1 y_1 + v_2 y_2 + \cdots + v_n y_n}{w_1 x_1 + w_2 x_2 + \cdots + w_m x_m} \qquad (1)$$

with subject to the restrictions, that are i) the weights, v and w, are equal to or greater than zero and ii) the ratio of weighted outputs (y) to inputs (x) in equation (1) is equal to or smaller than one.

The regarding inputs and outputs[2] to evaluate the efficiency of microcredit programs in the provinces of Turkey are presented in Table 1. The output variable is determined as the rate of

[2]The number of DMUs should be more than the (number of inputs *number of outputs), 2 (number of inputs + number of outputs), 3 (number of inputs + number of outputs). Our choice regarding the number of DMUs is consistent with those criteria.

registered women labor force while the inputs are the amount of microcredit disbursement together with the number of women who obtained microcredit regarding their entrepreneurship plans. In the sample selection, the study considers 17 provinces which obtained the highest share of microcredit disbursement in 2018.

Table 1. The Specification of Input and Output Variables

Variable	Definition	Data Source
Output Variable		
The rate of registered women labor force	The number of registered woman employees/The number of total woman employees	Turkish Employment Agency Annual Labor Force Statistics 2017
Input Variables		
The amount of microcredit disbursement	The total amount of microcredit distributed to women in the province level	Turkey Grameen Microfinance Program (TGMP) Annual Report (2018)
The number of microcredit beneficiaries	The number of women entrepreneurs getting microcredit in province level	TGMP (2018)

Source: The table is composed by the author.

The methodology enables to derive an efficiency score and ranking for each DMU as follows in Table 2.

Table 2. Microcredit Policy Efficiency

Province	Efficiency Ranking	Efficiency Score
Adana	9	0.1315
Ankara	13	0.0774
Antalya	17	0.0379
Aydın	5	0.2429
Bursa	7	0.1656
Diyarbakır	1	1
Erzincan	12	0.0828
Gaziantep	3	0.4156
Hatay	6	0.2263
İstanbul	8	0.1478
İzmir	15	0.0457
Kahramanmaraş	1	1
Konya	14	0.0561
Mersin	16	0.0372
Rize	11	0.1021

Samsun	10	0.1111
Şanlıurfa	4	0.3459

Source: The table is composed with regard to the findings of analysis.

The findings of the analysis assert that the origin provinces of microcredit programs, namely Diyarbakır, Kahramanmaraş, Gaziantep and Şanlıurfa possess the leading efficiency score and ranking which is as expected. Likewise, a major part of the microcredit plans is canalized to those regions as presented in Figure 2. On the other hand; metropols such as Ankara, İzmir and İstanbul fall even behind in the efficiency ranking.

4. CONCLUSION

This study aims to measure the efficiency of microcredit program as a social assistance program which targets specifically to increase the employment rate and entrepreneurship capacity of women. To do that, a non-parametric approach, that is data envelopment anlysis is employed. The findings show that microcredit scheme is implemented relatively efficient in the East region of Turkey. On the other hand; the provinces with higher population and income level such as Ankara, İstanbul, İzmir have a lower efficiency score and ranking in comparison to others. As social and economy policy reflections of those findings, it could be asserted that the regarding plans are required to be developed so as to be more efficient and effective. Thus, the programs ought to be designed to provide outcomes supporting the empowerment of women which enables them to get out of poverty trap. Thus, the microcredits should be canalized to the regions, sectors etc. that ensure a rise in women labor force participation for the jobs with regular employment.

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