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Examining the Relationship Between Female Employment Rate and Poverty in the Context of Three Fragile Countries: A Panel Data Analysis

Kadın İstihdam Oranı ile Yoksulluk İlişkisinin Üç Kırılgan Ülke Bağlamında İncelenmesi: Bir Panel Veri Analizi

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ABSTRACT

Poverty is a common difficulty in almost all countries in the world, and its fundamental cause is income inequality, which indicates that resources are unable to be distributed fairly among the population. Income inequality and poverty are two significant pieces of data that show how equitable distribution is in the public. Income inequality has been the phenomenon most affected by dominant patriarchal gender roles throughout history and has caused women to have low education levels and low employment participation. When evaluating the general status of women in terms of gender, women are seen to be a more vulnerable group in terms of income and socioeconomics. This research is based on a panel data analysis and interprets female employment and poverty using gross domestic product in the context of three fragile countries (i.e., Turkey, Brazil, and Indonesia) during the 2002-2018 period. This study performed its panel data analysis by utilizing random effects, and the results of the study have concluded increased female employment rates to reduce poverty. Increases in gross domestic product (GDP) and gross domestic product per capita (GDPpc) levels are also observed to have a poverty-reducing effect. In addition, education and working conditions need to be improved to increase female employment. The study suggests raising men's awareness changing the mentality toward women in the workplace in order to increase women's employment. Lastly, the study has concluded development policies should focus on increasing female employment in order to be able to reduce poverty levels.

Keywords: Poverty, determinants of poverty, female employment, panel data analysis, fragile countries
Jel Code: I30, J21, C33

ÖZ

Dünyadaki neredeyse bütün ülkelerin ortak problemi olan yoksulluğun temel nedeni, kaynakların halk arasında adaletli bir şekilde dağıtılamamasından oluşan gelir eşitsizliğinden kaynaklanır. Gelir eşitsizliği, baskın ataerkil toplumsal cinsiyet rollerinden en çok etkilenen, eğitim düzeyi ve istihdama katılımı düşük olan kadınlar üzerinde olumsuz bir etkiye sahiptir. Kadınların toplumsal cinsiyet açısından genel durumu değerlendirildiğinde, kadınların erkeklere göre daha az kazandığı, sosyal, ekonomik ve psikolojik gelir açısından daha kırılgan bir grup oluşturduğu görülmektedir. Panel veri analizine dayalı bu araştırmada 2002-2018 döneminde kadın istihdamı ve yoksulluk gayri safi yurtiçi hasıla ile, üç kırılgan ülke (Türkiye, Brezilya ve Endonezya) bağlamında incelenmiştir. Bu çalışmada rassal etkiler kullanılarak panel veri analizi yapılmıştır. Çalışma sonucunda kadın istihdam oranındaki artışın yoksulluğu azalttığı sonucuna ulaşılmıştır. Gayri Safi Yurtiçi Hasıla ve Kişi Başına Gayri Safi Yurtiçi Hasıla düzeylerindeki artışın da yoksulluğu azaltıcı etkisi olduğu gözlemlenmiştir. Ayrıca kadın istihdamının artırılması için eğitim ve çalışma koşullarının iyileştirilmesi gerektiği, kadın istihdamının artırılmasına yönelik bir öneri olarak erkeklerin bilinçlendirilmesi ve kadın çalışmasına yönelik zihniyetin değiştirilmesi gerektiği sonucuna varılmıştır. Sonuç olarak, kalkınma politikaları geliştirilirken kadın istihdamı artırılarak yoksulluk düzeyinin azaltılabileceği sonucuna ulaşılmıştır.

Anahtar Kelimeler: Yoksulluk, Yoksulluğun Belirleyicileri, Kadın İstihdamı, Panel Veri Analizi, Kırılgan Ülkeler

Jel Kodları: I30, J21, C33

1. Introduction

Poverty has a historical process as old as the history of humanity and has emerged as a concept whose importance has increased through globalization. Poverty and employment have become some of the most essential problems globally and have attracted the attention of societies all over. Although employment growth has been argued to be crucial for reducing poverty, the true impact of employment growth on poverty rates is still unclear. In other OECD countries such as the United States, the idea that job creation is key to poverty reduction is equally prevalent (Twinamatsiko et al., 2014). Still, various data sources have been used to conclusively determine that OECD countries have not made much progress in reducing poverty since the mid-1980s. Households have been observed to be less likely to be consistently poor when at least one household member is employed, and this risk of poverty is further reduced for dual-income households (Crettaz & Suter, 2013; Maldonado & Nieuwenhuis, 2015). Therefore, promoting employment may seem like a sensible policy strategy for reducing poverty rates. However, what is correct at the micro level may not be so at the macro level.

While evaluating poverty in terms of gender may not seem proper, poverty does in fact mainly affect women and children. Some studies conducted in developed countries in the 20th century have shown the vast majority of those who receive poverty assistance to be women. As poverty increases, women have been revealed to become poorer than men and to have a greater risk of impoverishment (Kardam & Yüksel, 2004, p. 45). Due to women's duties and responsibilities in business as well as in home life, the distribution of work and leisure time varies among women. Women's work hours increase due to decreases in family income levels and increases in the number of children. Working women who have more children than they can care for and women with lower education levels delegate childcare to their elder daughters (if they have any) and lead their daughters to push education into the background. The fact that women cannot receive adequate education causes poverty to increase and become a permanent problem (Güzel, 2011, p. 82).

In general, most studies have focused on overall employment. However, upon looking more closely at the present, the increase in employment being mainly caused by women has been mostly ignored. This study provides estimates of the impact of macro-level trends in the female labor force participation on poverty trends in Turkey, Brazil, and Indonesia between 2002-2018. Therefore, the paper will examine the extent to which a relationship exists between women's employment and poverty.

The study first draws the theoretical framework related to the subject, including a relevant literature review. Next, the study discusses the effect of the female employment rate

from the three fragile countries on the perceptions of poverty for the 2002-2018 period and conducts a panel data analysis.

2. Poverty

Poverty refers to situations in which one or more people have a lower economic level than a certain societal standard (Lipton & Ravallion, 1995, p. 2553) and when a person or community lacks the financial resources necessary for a minimum standard of living. In other words, poverty is the name given to situations where people's income levels are very low and are unable to even meet their basic needs as a low-income group (Topgül, 2013, p. 278). One of the most challenging problems researchers and policymakers generally face in the fields of social security and public policy is identifying those who are poor and measuring the extent of poverty (Callan & Nolan, 1991, p. 243). Several different approaches have been proposed and applied for measuring poverty in the literature, with various definitions having been made at the same time to explain poverty. These definitions for poverty can be gathered under three headings. According to the first of these, poverty is when an individual or community is below an objectively defined absolute minimum level. The second involves situations in which individuals have less than others in society. The third definition is when individuals or a community lack sufficient resources for survival (Hagenaars & Vos, 1988, p. 212). According to the first definition, poverty is absolute, according to the second definition, poverty is relative, and according to the third definition, poverty can be absolute or relative. These definitions accept different determinants of poverty and therefore result in different estimates of the extent of poverty. According to economists, only one definition of poverty is often used, and the others are ignored. That the population and the number of the poor vary according to each country is also a neglected reality. The concept of poverty has different conditions in each country. The primary purpose of many poverty studies is simply to estimate how many people in a given country are currently considered to be poor and to describe their characteristics (Callan & Nolan, 1991, p. 246).

The extent of poverty usually begins by assuming a particular poverty line in terms of income. According to Orshansky (1965), the poverty line is the minimum level that has been determined necessary for meeting basic needs such as food, clothing, and shelter. Sen (1979) stated that the costs of basic needs should be determined in a basket and defined the poverty line as the minimum level of expenditure required to meet these needs. This minimum level of spending does not allow spending on items involving wasteful or unproductive spending.

The concept of poverty and the first studies to prevent it were made in the 17th century. Under the leadership of John Locke, classical thinkers defended property rights while also arguing that the poor should not be excluded from social life (Kömürcü, 2014, p. 20).

Poverty and distribution debates increased gradually toward the end of the 19th century and studied in detail by many different countries under the leadership of England in the middle of the 19th century (Açıkgöz & Yusufoğlu, 2012, pp. 81–82).

With the Great Depression in the 1920s, interest in poverty increased in industrialized societies, and efforts to combat poverty were expanded alongside the mass unemployment that had occurred. The concept of poverty became a subject countries took into consideration together with the cultural, social, and economic changes after 1980, which is when the World Bank started publishing various studies on measuring poverty. According to the World Bank (2019), 2,500,000,000 people live below the poverty line of $2 per day.

Multiple factors cause poverty, and these factors can be listed as wars, natural disasters, economic crises, globalization, inability to access health and education opportunities, and lack of qualifications. Inequalities in income distribution and international capital movements are also seen among the causes of poverty (Sarısoy & Koç, 2010, pp. 330–331).

Poverty is directly related to growth and income distribution. Structural adjustment programs and growth policies implemented in underdeveloped and developing countries cause inequality in income distribution, and this provides a link between growth and poverty. Income distribution is expressed as the distribution of income earned in an economy over a certain period within society and is one of the factors of production. Income distribution involves a part of the population not having an equal share of the national income (Cerev & Yenihan, 2018, pp. 101–102). According to research, 75% of global inequalities are due to inequality between countries. As inequality in income distribution increases, so does poverty. Because inequality in income distribution is present in Türkiye, poverty and its economic consequences have serious significance. However, poverty also has social consequences in addition to its financial consequences. This situation causes an increase in the informal economy, an increase in alcohol and drug addiction, and an increase in crime rates (Güloğlu & Es, 2011, p. 4).

With the studies carried out in the United Kingdom in the early 1900s, a definition for living in poverty began to be made by measuring basic needs such as food and shelter (Greve, 2019, p. 24). Basic needs involve nutrition, clean drinking water, sanitation, health, shelter, education, and access to information and services. The minimum income level required to meet these basic needs is defined as the minimum income level. The concept of a basket of goods, which can be determined differently in each period, has been created in line with these needs, and the minimum income level has been updated each year according to this basket of goods. In 1990, the World Bank determined the minimum calorie level that an adult should consume to survive as 2400 calories per day and described individuals living

below this level as "absolutely poor" (Kayalıdere & Şahin, 2014, p. 67). However, in line with the fact that living costs and food availability vary from country to country, absolute poverty will also be defined differently from country to country (Flores & Ferreira, 2016, p. 24).

Relative poverty is a concept that is defined by comparing an individual or society with other societies and is therefore defined to cover people whose income level is below a certain income percentage (Topgül, 2013, p. 280). According to the definition of relative poverty, individuals in this group are able to meet their basic needs but remain below the welfare level of society and have inhibited social involvement in the community. In other words, relative poverty expresses an individual's status in society (Taş & Özcan, 2012, p. 424).

Rural and urban poverty have been evaluated in terms of meaning based on place of residence. Rural poverty is generally the type of poverty that occurs in the agriculture and livestock sector. In contrast, urban poverty is the type of poverty that occurs in the industry and service sectors. Rural poverty is a situation that has much more severe consequences than urban poverty (Özgüler, 2014, p. 181) because those living in rural areas are unable to benefit from public services or charitable institutions. Political instability and corruption, discrimination, irregular owner/tenant regulations, and outdated economic policies deepen poverty in rural areas (Topgül, 2013, p. 282). While the migration movements in Turkey in the 1950s triggered urbanization, they also caused the problems of poverty and unemployment in rural areas to come to the cities. The increased in these types of situations have also led to the rise of crime and violence, slums, and homelessness problems in cities (Özgüler, 2014, pp. 186–188).

Chronic poverty is a situation where one's poverty lasts for many years and where one unable to get out of their impoverished situation. Chronic poverty generally refers to situations in which poverty is persistent. Economic crises in a country, social exclusion, lack of qualifications, poor health conditions, globalization, and mismanagement are seen as causes of chronic poverty (Özgüler, 2014, pp. 141–142).

3. Women's Employment

Economic development is associated with the effective use of the factors of production. The most important factor among the factors of production is labor. The distribution of labor and the problem of gender inequality are two phenomena that affect each other in opposite directions. Although the percentage of women in the population has been high from past to present, female employment has lagged behind that of men. The increase in the female employment rate is one of the most critical factors affecting the development of countries, both economically and socially (Kasa & Alptekin, 2015, p. 4).

Mankind's beginning in history was based on matrilineal nobility. To meet the needs that emerged over time, male power was needed. As a result of this need, men have declared their dominance in many subjects alongside the effects of their physical power (Özkoçak & Tavuz, 2014, p. 187).

The changing understanding of production that occurred through the Industrial Revolution has led to machines gaining more importance. The existence of machines and adoption of the mass production approach has caused men's physical strength to lose its former significance. However, the human factor that provides this production has become more valuable, and this has eliminated the most significant disadvantage concerning female labor force participation (Küçükkalay, 1997, p. 62). With the Industrial Revolution and the understanding of capitalism, the division of labor became much more widespread, and the need to include women in the workforce became inevitable. Since then, women have finally been able to become wage workers (Afşar et al., 2015, pp. 67–68).

The male population has decrease as one of the consequences of World War II, and this has caused women to take a more specific place in employment. With the changing and developing new economic and social order, globalization has gained importance worldwide, and the tendency toward technology-intensive production has been present since globalization. This has created the need for a qualified workforce, and although female employment has increased, women are generally employed at lower wages than men (Dokuzcan et al., 2020, p. 122).

This situation has changed a bit in the 21st century. Developing technology and superior services sectors have started to provide women with greater employment opportunities. Through certain legal changes, agreements, and laws, women's place in business life has also begun to be protected, and women are enabled to take strong positions within companies (Yorgun, 2010, p. 169).

Developing socioeconomic and demographic factors have affected female labor force participation. Factors such as age, education, marital status, economic status, number of children, urbanization, changes in agricultural employment, and the number of people working per household are determinant with regard to female employment. When examining the studies on this subject, education level has been stated to increase the female labor force participation rate (Doğrul, 2008; Akın, 2016) and to be a factor that increases worker wages and changes the preferences of job seekers. For example, one study found women who'd completed primary education to be less likely to work a regular job (Cazes & Verick, 2013), and increasing women's education levels helps improve their labor force participation rate and employment in better paying jobs.

Another factor that determines female employment is marital status. Women who are married are less likely to be employed (Bun Song et al., 2008; Nazier & Ramadan, 2018; Xiao & Asadullah, 2020; Marcen & Morales, 2022), which is related both to the presence of household chores and childcare needs for mothers. Many working women experience a dilemma between their work and family lives. This causes women to experience an internal conflicts resulting in an attempt to balance work and family life (Yağcıoğlu, 2018, pp. 101–102).

4. Literature Review

The increased labor force needs accompanying the technological developments and globalization have necessitated women's inclusion in employment. This need has also been an important trigger in the struggle against poverty among women and children, being the most affected by it (Sharma, 2012; Faborode & Alao, 2016). In the short run, increased female employment can increase female productivity (Seymour et al., 2017; Diiro et al., 2018), and thus increased employment and national income level may be an important factor that reduces poverty (Khumalo & Freimund, 2014; Maligalig et al., 2019). In the long run, an improved sociocultural structure will ensure gender equality and prevent future generations from inheriting poverty (Morrison et al., 2007). However, most of the global policies have focused on the male factor in reducing poverty, and this increases gender inequality between men and women and differentiates their productivity (Forsyth et al., 2019). Meanwhile, traditional analyses on poverty reduction have not fully accounted for gender differences, and factors that will slow the engine of poverty need to be addressed in terms of gender differences. However, no consistent conclusions are found about the impact of microfinance on female empowerment (Van Rooyen et al., 2012; Hossain & Khan, 2016). While some researchers have emphasized that microcredit programs positively affect female empowerment (Lyngdoh & Pati, 2013; Raphael & Mrema, 2017), others have found these programs to have no adverse effects. Many studies have examined the potentially positive role that cooperatives aimed at solidarity and cooperation in economically and socially disadvantaged groups have in regard to female empowerment (Ferguson & Kepe, 2011; Ataei & Miandashti, 2012; Biru, 2014). Additionally, education can support female empowerment in terms of increasing their beliefs, perceptions, and household decision-making power (Huis et al., 2020). Access to resources such as credit, education, and involvement in social networks are other strategies that can support women's income generation and poverty reduction (Kabeer, 1999; Cornwall, 2016). The relationship between female economic participation and empowerment is complex, as increasing women's income does not consistently improve gender discrimination issues (Bailur & Masiero, 2017).

Although previous studies have examined various macroeconomic concepts to reduce

poverty, this study emphasizes the importance female employment has in reducing poverty in fragile countries with high foreign exchange dependency. The study highlights female employment as an important tool for reducing poverty and in this way aims to fill the gap in the literature.

5. Fragile Countries: Turkey, Brazil, Indonesia

Fragility can be defined in different groups according to the economic unit being examined, the researcher's opinions, or the risks. Most countries that are seen as fragile are those that are more affected than other countries by events that develop contrary to their will. One of the most important factors creating fragility is financial liberalization and the macroeconomic instability that is seen to accompany it. Fragility is the risk a country has of being negatively affected by external events. While no common view exists, indicators such as current account deficits as well as ratios such as current account deficit/GDP, international foreign exchange reserves/short-term external debts, and loan/deposits are used while determining economic fragility. These are examined under three groups: external fragility, fiscal fragility, and financial fragility.

After the 2008 global crisis, the Central Bank of America evaluated Turkey, Brazil, and Indonesia as fragile countries. The higher the fragility level in these countries, the more normal it is for a crisis to break out.

A current account deficit/GDP ratio greater than 4.5% is seen to signal a crisis. As this ratio increases, the need for capital will increase, which will then put pressure on exchange rates. Table 1 shows the current account deficit/GDP ratios of the three fragile countries selected in this study. Among these three countries, Turkey seems to be the most fragile country in terms of current account deficit/GDP.

Another indicator is the total foreign debt/GDP ratio. This ratio is used in risk and debt-burden analyses of an economy. According to the International Monetary Fund (IMF) and World Bank, a country whose ratio is between 30-50% is defined as a medium-indebted country, while a ratio greater than 50% indicates a heavily indebted country (Gumus, 2014). Table 2 provides the ratio of total external debt to GDP for the three countries, with Türkiye appearing to have the highest long-term total foreign debt/GDP ratio and Brazil to have the lowest total foreign debt/GDP ratio of the three fragile countries.

Table 1: Current Deficit/GDP (%), 2002-2018

Year	Brazil	Indonesia	Turkey
2002	-1.60	4.00	-0.26
2003	0.64	3.45	-2.40
2004	1.66	0.61	-3.47
2005	1.55	0.10	-4.14
2006	1.18	2.98	-5.59
2007	0.03	2.43	-5.42
2008	-1.82	0.02	-5.12
2009	-1.59	1.97	-1.75
2010	-3.59	0.68	-5.74
2011	-2.92	0.19	-8.87
2012	-3.42	-2.66	-5.45
2013	-3.23	-3.19	-5.83
2014	-4.14	-3.09	-4.14
2015	-3.04	-2.04	-3.16
2016	-1.36	-1.82	-3.11
2017	-1.07	-1.59	-4.76
2018	-2.68	-2.94	-2.79

Source: World Bank

Table 2: Total Foreign Debt/GDP (%), 2002-2018

Year	Brazil	Indonesia	Turkey
2002	47.08	67.67	54.94
2003	43.64	59.52	46.62
2004	33.98	56.33	39.58
2005	21.75	52.26	34.66
2006	17.99	38.96	38.30
2007	17.44	35.67	38.52
2008	15.90	32.09	38.09
2009	17.28	34.45	43.46
2010	16.46	26.98	39.05
2011	15.85	25.30	36.75
2012	18.33	28.32	38.77
2013	19.84	29.78	41.13
2014	23.11	33.98	43.63
2015	30.73	36.98	46.80
2016	30.91	35.36	47.58
2017	26.82	35.95	53.85
2018	29.93	37.54	58.18

Source: World Bank

Another fragility indicator is the exchange reserves to external debt ratio. Table 3 provides the ratios of the total reserves to external debts for Brazil, Turkey, and Indonesia between 2002-2018.

Table 3. Exchange Reserves/External Debt (%), 2002-2018

Year	Brazil	Indonesia	Turkey
2002	16.31	24.94	21.89
2003	20.90	26.98	24.67
2004	23.99	26.30	23.37
2005	28.56	24.44	30.24
2006	44.18	31.33	29.98
2007	75.63	38.52	29.42
2008	73.69	32.70	25.36
2009	84.69	36.85	26.87
2010	81.90	48.52	28.57
2011	87.12	50.15	28.78
2012	84.71	44.65	35.18
2013	74.17	37.70	33.57
2014	65.28	38.24	31.38
2015	65.60	34.42	27.63
2016	67.18	36.49	25.60
2017	68.87	36.83	23.58
2018	67.18	31.79	20.85

Source: World Bank

While exchange reserves reduce the vulnerability of a country's economy to financial shocks, external debts increase this vulnerability. Therefore, the ratio of exchange reserves to external debt stocks is an indicator of fragility. When examining Table 3, the rates in Turkey and Indonesia are seen to be lower than in Brazil, with Turkey being the most fragile country during the examined period.

6. Methodology

6.1. Hypotheses

The study's aim is to examine the extent to which the female employment rate affects poverty. However, to explain the change in the dependent variable, the countries' gross domestic product values and per capita GDP values have been added to the model as macro variables. When examining the studies on poverty and economic growth in the economics literature, economic growth is seen to be a necessary but insufficient factor in reducing poverty (Erkal et al., 2015, p. 2). Many studies have revealed a sustainable increase in the productive capacity of economic growth to be able to create new employment opportunities and increase productivity; therefore, having the unemployed participate in economic activity will increase their incomes. In addition, increasing the income of the poor will result in increased education, health, and personal development expenditures, thus resulting in increased production capacity and ultimately in economic growth (Barro, 2000; Ravallion, 2001; Norton, 2002; Dollar & Kraay, 2002; Islam, 2004; Zaman et al., 2011; Ncube et al., 2013). In light of these findings, the study's hypotheses are as follow:

H_1: An increase in the female employment rate in the selected countries has a poverty-reducing effect.

H_2: An increase in GDP in the selected countries has a poverty-reducing effect.

H_3: An increase in the GDP per capita in the selected countries has a poverty-reducing effect.

6.2. Sample and Data Set

The study initially looked at five fragile countries, but two countries (i.e., India and South Africa) were excluded from the analysis and the model due to a lack of data. The reason why no more countries were included is because the study desires to work with a homogeneous group. Therefore, the study selected three countries with high foreign exchange dependency, high current account deficit, and high foreign dependency. These are Brazil, Turkey, and Indonesia. The study uses data on the growth, poverty, and female employment rates between 2002-2018 for the selected countries. The dependent variable in the study's model is the poverty rate, and the independent variables are the female employment rate and GDP. Data on these three countries' GDP, GDP per capita, poverty, and female employment rates were obtained from the World Bank (WDI). The poverty rates used in the study for the country i during year t is \$5.50 per day. This study has deemed using USD appropriate for standardizing the data from the three different currencies and has preferred to use a panel regression analysis. The poverty rate is calculated as the percentage of the population of people with an income of less than \$5.50 a day. The female employment rate is obtained by taking the ratio of female employment to total employment. First, the logarithm of the variables was addressed due to the high scale differences among the variables. The study's model was established using Equation 1 as follows:

$$Poverty_{it} = \alpha + FemaleEmployement_{it} + GDP_{it} + GDPpc_{it} + u_{it} \qquad (1)$$

where $Poverty_{it}$ is the logarithm of the poverty rate for country i (unit) during year t (time), $FemaleEmployment_{it}$ is the logarithm of the female employment to total employment ratio for country i during year t, GDP_{it} is the logarithm for gross domestic property of country i during year t, and $GDPpc_{it}$ is the logarithm of gross domestic product per capita for country i during year t. No need exists for the stationarity test in panel data analysis in analyses covering less than 30 years (Levin & Lin, 1993; Park, 1990; Johansen, 1991). Since $t = 17$, the period is considered to be short term, and direct panel data analysis can be applied without conducting the stationarity test (Barbieri, 2009; Arouri, & Rault, 2014). Practically no general test exists for panels of fairly short time series, and even when some applications are shown, the stationarity test is assumed to be applicable for periods of at least $t = 25$ and usually for $t \geqq 30$ (Baltagi, 2005).

7. Empirical Findings

Table 4 presents the descriptive statistics of the variables such as the means, standard errors, and minimum and maximum values. Due to some data missing from the data sample, a loss of observation occurred for two variables. After searching the literature, the interpolation method was used as a method for filling in the incomplete observations.

Table 4: Descriptive Statistics, 2002-2018

Variable	Observation	Mean	Std. Error	Min.	Max.
$Povert_{yi}t$	51	3.44	0.740	2.140	4.484
$FemaleEmployment_{it}$	51	3.58	0.163	3.259	3.774
GDP_{it}	51	27.71	0.515	26.919	28.516
$GDPpc_{it}$	51	8.88	0.623	7.722	9.628
$poverty_{it}$	51	39.86	27.095	8.50	88.60
$femaleemployment_{it}$	51	36.44	5.639	26.046	43.5782
gdp_{it}	51	1.24e+12	6.52e+11	4.91e+11	2.42e+12
$gdppc_{it}$	51	8464.20	4054.69	2259.308	15190.1

Note: Variables in italics in Table 4 represent their values before taking their logarithms.

Table 5 shows the Pearson's correlation coefficients. As can be seen from Table 5, a country's GDP negatively correlates to its poverty rate, which is expected. A 38% negative relationship exists between GDP and poverty. However, a very high and negative correlation of approximately 92% exists between GDP and poverty, as well as a strikingly negative 69% relationship between poverty and female employment rate.

Table 5: Correlation Coefficients

	$Poverty_{it}$	$FemaleEmployment_{it}$	GDP_{it}	$GDPpc_{it}$
$Poverty_{it}$	1.000*			
$FemaleEmployment_{it}$	-0.692*	1.000*		
GDP_{it}	-0.385*	0.181*	1.000*	
$GDPpc_{it}$	-0.928*	-0.666*	0.579*	1.000*

*: Pearson's correlation coefficients are statistically significant at 1% significance level.

When analyzing the model, the mean for the variance inflation factor (VIF) was found to be 1.88, which indicates no multicollinearity problems to be present; this is one of the model's assumptions. As can be seen from the results in Equation 2, the error terms are normally distributed at a 10% significance level. The null hypothesis accepts the assumption that the error terms are normally distributed. As seen in Equation 2, the null hypothesis cannot be rejected at the 10% significance level, and therefore no deviation is found based on the assumption of the error terms being normally distributed. According to the results from the Breusch-Pagan Lagrange test shown in Equation 3, no heteroskedasticity exists in the model at

a 1% significance level.[1] According to the Hausman test results as shown in Equation 4, effective and consistent estimators will be obtained by estimating the model with random effects at a 5% significance level. As seen in Equation 5, the cross-sectional dependence (CD) was tested using the Pesaran CD test, and no cross-sectional dependence was determined to be present in the model at the 5% significance level.

$$Joint\ test\ for\ Normality\ on\ e\colon\ chi2(2) = 4.75\ \ Prob > chi2 = 0.0928 \qquad (2)$$

$$chi2(1) = 4.10\ Prob > chi2 = 0.0428 \qquad (3)$$

$$chi2(3) = (b - B)'[(V_b - V_B)^{-1}](b - B) = 36.28,\ \ Prob > chi2 = 0.95623 \qquad (4)$$

where b is ?is consistent under H0 and H1, obtained from xtreg, , B is is inconsistent under H1, efficient under H0, obtained from xtreg., and V is H0: difference in coefficients not systematic..

$$Pesaran's\ test\ of\ cross\ sectional\ independence = -1.363,\ Pr = 0.1729 \qquad (5)$$

Table 6 gives the generalized least squares (GLS) regression results. The coefficient of determination (R^2) of the model shows the level to which variability in the independent variables explains the change in the dependent variable.

Table 6. The Estimation Results of Random Effects-GLS Regression

Poverty$_{it}$	Coef.	Std. Err.	z	P>|z|
FemaleEmployment$_{it}$	-3.619	.530	-6.82	0.000
GDP$_{it}$	1.295	.103	-12.53	0.000
GDPpc$_{it}$	-2.345	.127	-18.38	0.000
_cons	1.166	1.679	0.69	0.491
R^2 =0.94	Wald chi2	=871.29*	*: p<0.01	

In light of the findings, the independent variables together can be said to explain 94% of the variance in the dependent variable. According to the Wald test result, the model is generally significant. When examining the *z*-test statistics of the coefficients, the coefficients are seen to be statistically significant. According to the obtained data obtained, a 1% increase in the female employment rate will reduce the poverty rate by 3.61%. A 1% increase in GDP will increase poverty by 1.29%. Also, when GDP per capita increases by 1%, the poverty rate will decrease by 2.34%. These results support all three hypotheses (i.e., H_1, H_2, and H_3), and thus they cannot be rejected. In other words, while the female employment rate, and GDP per capita has a reducing effect on the poverty rate, GDP has an increasing poverty effect.

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[1] The null hypothesis of no heteroscedasticity has been tested, and the null hypothesis was rejected at the 1% significance level. Therefore, the study accepts that no heteroscedasticity is present at the 1% significance level.

8. Discussion and Conclusion

Addressing poverty is a top priority on the agenda for international development, and governments worldwide have attached great importance to poverty-reducing measures. However, poverty reduction policies have primarily focused on men, and this has widened the productivity and income gap between men and women and increased gender inequality. An essential finding of this study involves the role that involving women in employment has in reducing poverty.

According to the empirical findings, poverty will decrease by approximately 3.62% when female employment is increased by 1% in Turkey, Brazil, and Indonesia. This result is significant because women and children are the most affected poverty groups. When a relationship is established between poverty and certain demographic factors such as income distribution structure, regional income differences, labor force, gender, education, or poor group, one can say that women will constitute a significant part in this. In terms of gender, having women be removed from social life and in the background (especially regarding education and work life) makes them the poorest group in terms of income distribution (Dansuk, 2008). In most countries, studies have observed that those who are unable to participate sufficiently in work life are mostly women. For this reason, studies on women are even more critical these days, especially when seeing that they are often exposed to various discriminations. One of the most important efforts of both national and international organizations is that they produce policies for preventing and reducing poverty. If these objectives cannot be achieved, the effects of poverty should at least be minimized as much as possible. Implementing policies for women as the ones most affected by poverty has become more critical and vital in this context.

In Latin America, Mediterranean, and Islamic countries where the differences in male-female employment participation rates are partially high, female employment in the labor market is not widely approved due to religious and cultural reasons (Ozer & Bicerli, 2004). Therefore, increasing the female labor force participation in fragile countries such as Turkey, Indonesia, and Brazil is expected to reduce poverty.

Although female employment levels in the USA are high, both the wage gap between women and men and poverty among women and children are higher compared to European countries. The decline in population growth also poses a more significant threat than in Europe. In the Nordic countries of Europe, female employment and women's wages have been increased mainly through employment in the public sector (e.g., health, education, and social services). These countries have implemented a gender policy model based on both spouses being employed that involves high female employment, reduced wage inequality,

and many public services and benefits including parental leave (Erdut, 2005). Increasing the education levels of the female population is also expected to bring about positive changes regarding demographic factors.

Education on an individual basis is an income-increasing factor. According to Dansuk (2008), raising the education level of the poor is only possible by developing production structures. As a result of the analysis, a per-capita-income increase of 1% in the three fragile countries was shown to decrease poverty by 2.35%. So, reducing or eliminating the deficiencies and problems in education and employment will allow the knowledge economy, also called the new economy, and new technologies to be used as a tool to reduce female poverty. The widespread use of work-from-home practices that have developed with new technologies can be used as an effective policy tool for the female workforce who wants to prevent the risk of poverty while still maintaining their traditional responsibilities and work life. Education, micro-finance, and associations are common tools and strategies for helping women overcome poverty and being engaged in employment. The most prominent determinants of poverty are seen to be GDP and GDP per capita, and this study has focused on female employment. One limit of the article is that it only addressed the determinants of poverty with these variables. Future studies could eliminate and improve upon these shortcomings.

Female employment further improves the livelihoods of poor households and helps lift them out of poverty. The results from this study suggest that researchers and policymakers should pay more attention to gender poverty issues.

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