Does globalization affect female labor force participation: Panel evidence

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Abstract. Various theoretical and empirical dimensions of the subject of globalization have been intensively examined in the literature of social science, particularly since 1990s. Besides those existing studies in the literature, we empirically investigate the effect of globalization on the woman's participation to labor force for four distinct globalization indicators (i.e., economic globalization, social globalization, politic globalization, and overall globalization index). An unbalanced data containing the years of 1990-2014 for 101 countries in the largest sense has been utilized in the analyses. Estimation results imply that there is a positive statistically significant relationship between economic globalization, social globalization, overall globalization and female labor force participation. On the other hand we found a negative statistically significant association between politic globalization and female labor force participation. Meantime it was seen that all of the covariates used in the analyses took the expected signs and were statistically significant in almost all models.
Keywords. Globalization, Female Labor Force Participation, Panel Data.
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1. Introduction

Globalization is a complex economic, political, cultural and geographic process in which the mobility of capital, organizations, ideas, discourses, and peoples has taken on an increasingly global or transnational form (Moghadam, 1999). Economic globalization, the growing role of international institutions, and the production and production by multinational corporations, is a deeper integration and interaction with the economy of trade. The globalization of the economy is due to market economy, supply and demand, and therefore production and consumption gain a cross border dimension. It is expected that the workforce will also interact due to the increasing economic globalization. As a result, female labor force participation (FLFP) is also affected. It is possible to see traces of political globalization in increasingly multinational politics, in key international structures such as the European Union, the United Nations, the International Labor Organization and the influence of civil society organizations on governments. It seems that the influence of international institutions is increasing in the decisions taken by States. Similar rapprochement and integration is seen in social and cultural globalization. Ray (2002) emphasizes socialization that emerges with globalization, adapting socialism to be viewed in more fluid and complex ways than in the past. At the same time, the articles draw attention to the fact that the concepts of 'social' may need to be reconsidered, with an understanding of the

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centrality, the encouragement of circulation and movement of commodities and cultural practices. Cultural globalization is triggering the convergence of different cultures with the formation of complex identities in international societies. Many understandings, including cultural and social globalization, as well as traditional gender understanding, revive themselves.

Consistent with the contradictory nature of globalization, the impact on women has been mixed. One feature of economic globalization has been the generation of jobs for women in export-processing, free trade zones, and world market factories. This has enabled women to grow and control their income and control their income in such a way as to hold patriarchal structures, including traditional households and familial relations. At the same time, however, much of the work available to women is badly paid, or demeaning, or insecure; moreover, women's unemployment rates are higher than men's almost everywhere. The feminization of poverty is another unwelcome feature of economic globalization. The impact of globalization has ensured that women's employment is guaranteed by law, which has a positive impact on women's employment. Concepts such as "discrimination in business life" (Foley *et al.,* 1999) and harassment (Bercovici, 2007) which have won literature despite this positive influence, are still in existence.

Women's labor force participation is influenced by a variety of economic, demographic, and cultural factors that have attracted the attention of both neoclassical and feminist economists. In addition to easily quantifiable influences such as wages, education, and the number and ages of children, gendered norms and expectations greatly influence women's labor force participation (Fazio *et al.,* 2007). Although there is not much paper to be done in this regard, the policies that determine the FLFP of globalization are a contrary trend, the globalization of the concepts of women's rights worldwide and the emergence of women's movements on a global scale are significant developments. On the other hand, the globalization of the concepts of human rights and gender equality and the activities carried out by international non-governmental organizations (NGOs) contribute to the development of female organizations. In addition, economic globalization has also triggered female participation in the workforce. According to this study, the main achievement of globalization is that women have a critical influence on FLFP.

The growth of women's employment has been a strong factor behind economic growth (Korotayev *et al.,* 2015). Globalization is also similarly affecting to FLFP. In this study we empirically analyze the association between globalization and female labor force participation by utilizing four different globalization indexes and an unbalanced data covering the period 1990-2014 and 101 countries. The findings show that a positive statistically significant relationship between economic globalization, social globalization, overall globalization and female labor force participation exist, whereas a negative statistically significant association is present between politic globalization and female labor force participation.

The second section provides a brief literature review; third part discusses and explains the data and methodology; section four reports and discusses the empirical results; and finally the last part concludes.

2. Literature review

It is important to briefly remind readers what female really mean to participation in the labor force. We can define it as being engaged with the activities included in the system. It is therefore about participation measured by the National Accounts System by participating in the workforce of female. In sum, the theoretical literature, the structural change and the sectoral shifts in production and employment present significant important effects on the labor force participation dynamics of female. Nevertheless, the empirical literature to date does not address the link between globalization, sectoral growth and women's economic activities, and focuses on the two-way relationship between per capita GDP and women's participation in the workforce.

A significant number of studies that have examined the relationship between FLFP and economic development are included in the literature. It examines the effect of enlargement of gender inequality in certain areas. It is investigating the relationship between FLFP and economic growth. For example U hypothesis (Gaddis & Klassen, 2014) holds that it is a trade-off between growth and gender equality in employment for the poorest countries.

Table 1 below reports the literature summary.

Table 1. *Literature Summary*

Author(s)	Results
Kucera (2001)	The relationship between foreign trade and male and female employment that we can accept as a measure of globalization in the study is examined for Germany and Japan. Factor analysis was used. As a result; the increase in foreign trade has come to the conclusion that female employment affects negatively.
Koyuncu & Özen (2017a)	They investigate the role of poverty on female labor force participation. They found that there is a positive and statistically significant relationship between poverty and women's labor force participation.
Croda *et al.,* (2011)	This paper analyzes the intertemporal labor force participation of married women using an annual longitudinal sample from the German Socio-Economic Panel. Paper focuses on the 18 years covering the period 1990-2007 and obtains a sample of 451 women. Paper finds strong state dependence, and substantial effects for fertility variables. Transitory and permanent nonlabor income have in general small effects.
Siddiqui (2009)	In the study dealt with by Pakistan, the effects of commercial liberalization on male and female employment were examined. As a result, it has been found that commercial liberalization positively affects female employment in unqualified business groups.
H'madoun (2010)	This paper has conducted an empirical examination for 45 countries of the effect of religiosity on the workforce of women.
Bussmann (2009)	In the study of panel data method and generalized moment method for 134 countries, the effects of trade gap on female employment in 1970-2000 periods were examined. As a result; it has been found that the trade deficit positively affects female employment in developing countries and negatively affects OECD countries. It is also observed that the trade deficit positively affects female employment in the industrial sector in the developing countries and that in the developed countries the trade deficit positively affects female employment in the service sector.
Koyuncu & Özen (2017b)	In their study, they analyze the impact of institutional factors on women's labor force participation in a panel analysis framework. They got statistically significant results in parallel with their expectations and especially the finding of a significant negative association between corruption and female labor force participation is interesting.
Olmsted (2011)	In the study of Iran, Palestine and Iraq, the effect of globalization on women's employment was investigated. Globalization in Iraq positively influences women's employment in manufacturing industry; It has been found that globalization in Palestine negatively affects women's employment and globalization in Iran affects women's employment positively.
Cooray *et al.,* (2012)	Investigates the impact of foreign direct investment (FDI) and trade, as two measures of globalization, on female labor force participation in a sample of 80 developing countries over the last decades. Contrary to the mainstream view in the literature, which is mainly based on country-case studies or simple cross-country variation, finds that both, FDI and trade have a generally negative impact on female labor force participation. While the impact is of negligible economic size, it is stronger for younger cohorts, potentially reflecting a higher incentive to stay out of the labor force and invest in education in view of an increased skill premium due to globalization. Also finds that the direction of the effect depends on the industrial structure of the economy.
Koyuncu & Koyuncu (2016)	In this study they analyze the impact of globalization on corruption. The results imply that there is a statistically significant negative association between globalization and corruption level in a country.
Maqsood (2014)	The study examined the relationship between globalization and female employment in South Asian countries, 1990-2010. As a result; In the model where globalization is represented by foreign direct investment and urbanization, it is observed that globalization has boosted female employment. In addition, pharmaceutical, service and telecommunication sectors also positively affect female employment. In the model in which globalization is represented by the outward openness index, globalization has been found to reduce women's employment.

Akbulut (2011)	Investigates the growth of the service sector as an explanation for the increase in women's employment. This model demonstrates that a higher rate of productivity growth in market services compared to home services can account for a large fraction of the observed increase in women's labor supply from 1950 to 2005.
Koyuncu & Özen (2017c)	They examine the impact of religion, ethnic, linguistic, and cultural diversity on women's labor force participation. They found that diversification in religion, ethnicity, and language in a country significantly and positively affect the women's labor force participation.
Abdulloev, Gang, & Yun (2014)	Highlights the effects of two factors – international migration and education – on the labor force participation decision and its gender gap. Using probit and decomposition analysis, investigation shows that education and migration have a significant association with the gender gap in labor force participation in Tajikistan.
Koyuncu & Sarıtaş (2017)	Short and long term association between globalization and economic growth in Turkey were examined in an ARDL framework. They identified just a long term significant positive relationship between globalization and economic growth.

In the future sections of the study, the data and methodology part will be explained first and the results will be reported afterwards.

Then the result section will be given.

3. Data and methodology

In addition to various studies investigating different aspects of female labor force participation in the literature, in this study we empirically analyze the role of globalization in female labor force participation by using four globalization series, namely economic globalization, social globalization, politic globalization, and overall globalization index. In other words, this study tries to reveal if there exists a statistically significant association between globalization and female labor force participation in a country and if it is so then the direction of that association. We used an unbalanced data covering the period of 1990-2014 and 101 countries in the largest sense.

In order to conduct our empirical analyses, in parallel to the framework of Koyuncu & Özen (2017c), we estimated the following multivariate fixed time effect models:

$$FLFP_{it} = (\beta_1 + \tau_t) + \beta_2 GLOBAL_{it} + \beta_3 AGRIEMP_{it} + \beta_4 INDUSTEMP_{it} + \beta_5 URBAN_{it} + \beta_6 INFLATION_{it}$$
$$+ \beta_7 FERTILITY_{it} + \beta_8 PRIMARY_{it} + \beta_9 SECONDARY_{it} + \beta_{10} TERTIARY_{it} + \beta_{11} CONSUMPTION_{it} + u_{it}$$

where it subscript stands for the i-th country's observation value at time t for the particular variable. β_1 is the intercept term and τ_t represents time-specific effects which affect all countries in the same way (i.e., τ_t is variant across time but not across countries). u_{it} is idiosyncratic error term of the regression model.

We reported the list of dependent and independent variables, their definitions, and the data sources in Table 2 below.

Table 2. *List of Dependent and Independent Variables*

Variables	Definition	Source
FLFP	Labor force participation rate, female (% of female population ages 15+)	WDI
GLOBAL	Various globalization indexes from KOF Index	Zurich Tec. Institute
AGRIEMP	Employment in agriculture (% of total employment)	WDI
INDUSTEMP	Employment in industry (% of total employment)	WDI
URBAN	Urban population growth (annual %)	WDI
INFLATION	Inflation, GDP deflator (annual %)	WDI
FERTILITY	Logarithmic value of fertility rate, total (births per woman)	WDI
PRIMARY	School enrollment, primary, female (% gross)	WDI
SECONDARY	School enrollment, secondary, female (% gross)	WDI
TERTIARY	School enrollment, tertiary, female (% gross)	WDI
CONSUMPTION	Logarithmic value of household final consumption expenditure per capita (constant 2010 US$)	WDI

In our model we used the same covariates as in Koyuncu & Özen (2017c) with the same reasoning.

As a result of the interruptions in their life such as giving birth, child caring and raising, daily house duty etc., it is expected that women are more likely to chose the jobs offering flexible working hours, like part time or seasonal works instead of full-time or long-lasting ones. Therefore we expected to have women to prefer jobs in agricultural sector rather than industrial sector since the jobs in agricultural sector are usually seasonal with flexible working hours relative to industrial sector. Because of that, we anticipate to have a positive sign for the coefficient of AGRIEMP and a negative sign for the coefficient of INDUSTEMP.

Urbanization may force women to join working force due to the fact that living-cost is higher in urban area than rural area. As urbanization rate rises it is expected to have women to be more prone to join working force. Thus a positive sign for the coefficient of URBAN is anticipated.

Inflation level in an economy reflects the cost of living. Since higher the inflation means higher the cost of living, a positive impact of inflation on female labor force participation rate is expected.

One of the largest and long-lasting interruptions in a woman's life is giving a birth. As number of births increases, women are less inclined to join labor force. Therefore we anticipate that FERTILITY affects female labor force participation negatively.

Women in a society with higher education level are more prone to join working force. Hence a positive sign is anticipated for the coefficients of PRIMARY, SECONDARY, and TERTIARY variables.

Women in households with higher consumption spending may be more prone to work in order to make contribution to their family budgets. Thus we expect to have a positive impact of CONSUMPTION on the participation of women to working force.

4. Estimation results

The estimation results are given in Table 3 below. Each one of the estimated four models is checked for the existence of heteroscedasticity problem by utilizing Modified Wald test and autocorrelation problem by using Wooldridge test. The test results indicate that there is both heteroscedasticity problem and autocorrelation problem in each model. Therefore the reported estimation results in Table 3 are heteroscedasticity and autocorrelation corrected estimation results. In other words reported coefficients are robust coefficients.

Table 3. *Estimation Results*

Globalization =>	Economic		Social		Politic		Overall	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
AGRIEMP	0,0857	0,0000	0,1184	0,0000	0,0925	0,0000	0,1082	0,0000
INDUSTEMP	-0,1325	0,0000	-0,1164	0,0000	-0,1674	0,0000	-0,1413	0,0000
URBAN	0,0512	0,4100	0,1732	0,0030	0,2089	0,0000	0,2029	0,0010
INFLATION	0,0028	0,0000	0,0035	0,0000	0,0036	0,0000	0,0029	0,0010
FERTILITY	-1,3160	0,0090	-4,7137	0,0000	-5,6097	0,0000	-6,2519	0,0000
PRIMARY	0,0247	0,0100	0,0430	0,0000	0,0469	0,0000	0,0537	0,0000
SECONDARY	0,0150	0,0110	0,0265	0,0000	0,0273	0,0000	0,0307	0,0000
TERTIARY	0,0468	0,0000	0,0363	0,0000	0,0423	0,0000	0,0380	0,0000
CONSUMPTION	0,6922	0,0000	0,5310	0,0240	0,7816	0,0000	0,5047	0,0280
GLOBAL	0,0259	0,0060	0,0258	0,0230	-0,0095	0,0470	0,0249	0,0570
Num. of Observation	1.253		1.298		1.298		1.298	
Num. of Countries	97		101		101		101	
Modified-Wald Test	3,00E+05	0,0000	3,1000E+05	0,0000	5,1000E+05	0,0000	90551,7300	0,0000
Wooldridge Test	186,5730	0,0000	199,6420	0,0000	193,4250	0,0000	195,4970	0,0000

As can be seen from the table, a statistically significant positive association is identified between female labor force participation and globalization indexes of economic, social and overall. On the other hand, we found a statistically significant

negative relationship between politic globalization and female labor force participation.

A statistically significant positive coefficient is found for AGRIEMP variable in all four models, in parallel to our expectation. This finding implies that women are more inclined to prefer flexible jobs, like ones in agriculture sector.

In parallel to prior expectation, a statistically significant negative association is found between INDUSTEMP and FLFP variables in all four models,. This finding shows that women are less prone to work full-time or long-lasting jobs, like ones in industrial sector.

The coefficient of URBAN variable is statistically significant in three out of four models and takes the anticipated sign. Hence the result hints that as urbanization rate rises woman's participation to work force increases as well.

INFLATION variable reflecting cost of living in the model is statistically significant and receives the expected sign in all four models. In economies with higher inflation and thus higher cost of living, women are more inclined to work.

The coefficient of FERTILITY variable is statistically significant and takes the anticipated sign in all models. Therefore women are less willingly to work in an economy with high fertility rate.

Coefficients of the proxies of education level (i.e., PRIMARY, SECONDARY, and TERTIARY variables) are statistically significant and get the anticipated positive sign in all models. This finding reveals that societies with higher education level experience higher female participation rate to work force.

CONSUMPTION variable is statistically significant and receives the expected positive sign in all four models. In economies with higher household expenditure level, women are more prone to join work force.

5. Conclusion

The topic of globalization has been intensively analyzed in the literature in various aspects in both theoretical and empirical sense. In addition to them, this study empirically investigates relationship between globalization and female labor force participation. In order to conduct our empirical analysis we used an unbalanced data covering the period of 1990-2014 and 101 countries in the largest sense. Four indicators of globalization are used and they are economic globalization index, social globalization index, politic globalization index, and overall globalization index. According to the estimation results, we found a positive statistically significant relationship between economic globalization, social globalization, overall globalization and female labor force participation. On the other hand a negative statistically significant association was identified between politic globalization and female labor force participation. Also all of the covariates take the expected signs and are mostly statistically significant in all models.

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