Religious, Ethnic, Linguistic and Cultural Diversity and Female Labor Force Participation[*]

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Abstract. There are numerous macro and micro level determinants of female labor force participation (FLFP) counted in the literature. Besides the other explanatory factors of FLFP, diversification in religion, ethnicity, language and culture in a society may also play an important role in the explanation of FLFP. Therefore this study empirically examines the impact of religion, ethnic, linguistic, and cultural diversity on FLFP by using a cross-section data of 109 countries. We hypothesize that societies with higher level of religion, ethnic, linguistic, and cultural diversity experience higher level of FLFP via interaction across distinct religions, ethnicities, languages, and cultures. Our empirical results endorse our hypothesis for religion, ethnicity, and language except culture. This finding reveals that diversification in religion, ethnicity, and language in a country significantly and positively affects the FLFP level in that country.

Keywords. Religion, Ethnicity, Language, Culture, Female labor force participation, Multivariate analysis.

JEL. C13, C21, J21, Z1, Z12, Z13.

1. Introduction

Production factors are at a high level of productivity is one of the factors that positively impact economic development. In this context, it is also important to increase the productivity of the workforce which is one of the production factors. However, when the structure of the labor force is examined in terms of gender, it appears that the majority of males (Özer & Biçerli, 2004).

Participation of women in working life extends to the Industrial Revolution, but it has gained weight in the last century. Developments such as the spread of human rights, globalization, democracy, emergence of international institutions and organizations have positively influenced women's position in business life. In addition, the decline in male labor force as a result of the first and second world wars also increased the need for labor and brought about the first increases in female employment.

It is theoretically accepted that the participation of women in the workforce will increase the productivity of the workforce from the factors of production (Evans & Kelley, 2008). Particularly in developed countries, the high participation of women in the labor force is seen as a sign of a positive impact on labor productivity. For

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example, this rate is averagely 66.1% in 27 EU countries and averagely 60.8% in OECD countries (Karabıyık, 2010).

In addition to vast literature on the determinants of female labor force participation (FLFP), another interesting area worth to be queried is the relationship between diversification in religion, ethnicity, language, culture and FLFP. In other words, besides the other existing determinants of FLFP, religious, ethnic, linguistic, and cultural diversity may also play an important role in the explanation of FLFP. Hence this study empirically examines the impact of religion, ethnic, linguistic, and cultural diversity on FLFP by using a cross-section data of 109 countries in a multivariate regression model. We hypothesize that societies with higher level of religion, ethnic, linguistic, and cultural diversity experience higher level of FLFP owing to the fact that interaction across different religions, ethnicities, languages, and cultures in daily routine life in a society may enhance female labor force participation.

According to our empirical estimation results, there exists a statistically significant positive association between diversification in religion, ethnicity, language and FLFP in an economy. On the other hand, we are unable to identify a significant relationship between culture and FLFP.

Meanwhile, to the best of our knowledge, this is the first empirical study in the literature examining the impact of religion, ethnic, linguistic, and cultural diversity on FLFP.

The remaining parts of the article are organized as follows: section 2 provides a brief literature review; part 3 describes the data and methodology used in the study; the empirical results are reported and discussed in section 4, and the last part concludes.

2. Literature

In the literature, it is possible to reach various studies investigating the effects of ethnic, religious, cultural and linguistic influence on women's employment. As the elements such as country, culture and religion change, it is observed that different results have been reached about women employment. The related literature is shown in Table-1.

Table 1. *Literature Summary*

Author	Period / Countries	Results
Kızılgöl (2012)	Turkey (2002-2008)	Elements affecting the participation of married and single women in urban and rural areas to the workforce have been researched. As a result, married and single women are more likely to participate in their workforce; Education level, household income, dependency ratio, ownership status (rent or own house) and age of the woman were found to be effective. In addition, while the number of children owned has reduced participation in the workforce in urban areas; It has been observed to increase participation in the workforce in rural areas.
Lahoti & Swaminathan (2013)	India 1983-1984 2011-2012	This study examines the relationship between economic development and female labor supply. Unlike a few literatures that have been shown in the study, no systematic relationship has been observed. Besides, the addiction to growth may not be enough to increase the economic activities of women and that the composition of the grown up could also be remarkable.
Cooray, Gaddis, &Wacker (2012)	191 Countries 1980-2005	In the study, in the 80 developing countries in the last 20 years, two important sectors of globalization have been considered, by examining the participation of women in the workforce and the impact of global foreign direct investment and trade. The effect of both variables was negatively observed. It is said that the industrial structure of the economy affects this result.
H'madoun (2010)	48 Countries 2005	This paper has conducted an empirical examination of the effect of religiosity on the workforce of women.
Felldmann (2007)	80 Countries	The relationship between women's workforce and Protestantism has been studied. We see that the largest part of the population is the Protestant workforce and their participation rates are significantly higher.
Besamusca,Tijdens, Keune & Steinmetz	117 emerging economy	Worldwide women's work force and age effect are addressed. Participation in the workforce is higher in areas with less religious,

(2015)	2010	paid maternity leave, and high pre-school enrollment rates.
Yalçınkaya Koyuncu, Yilmaz, Ünver (2016)	111 countries 2016	A positive correlation between female labor force participation indicators and labor productivity is identified in the study. This finding is statistically significant and valid for three different productivity indicators and three different female labor force participation indicators.
Evans & Kelley (2008)	Australia 184-2002	In the study on the tendency of women to participate in the workforce, education, income, income of spouses, marital status, number of children was taken up. These variables are related to workforce participation in the results obtained.
Kapsos, Bourmpoula & Silberman (2014)	India 1994-2012	The study, which addresses the sharp decline in women's participation in the workforce, addresses the variables of marital status, education, and household consumption. It has been found that the outcome is inadequate job opportunities. The study was carried out in two models, rural and urban.
Berik & BilginSoy (2000)	Turkey 1985-1990	The existence of a relationship between female labor force participation and child sex at work was researched and at the end of the study the existence of this relationship was identified.
Lee & Lee (2014)	Japan 1971-2009	Fertility and female labor force participation have been examined in the study. Different results were obtained on different age groups.

3. Data and Methodology

This study empirically examines the effect of religion, ethnic, linguistic, and cultural diversity on FLFP. Our cross-section data, in the widest sense, cover 109 countries and are constituted by period averaged values for the years between 2000 and 2009.

By using cross-section data, we estimated the following multivariate regression models:

$$FLFP_i = \beta_1 + \beta_2 RELIG_i + \beta_3 AGRI_i + \beta_4 INDUST_i + \beta_5 URBPOP_i + \beta_6 INFL_i + \beta_7 BIRTH_i$$
$$+ \beta_8 ENRPRI_i + \beta_9 ENRSEC_i + \beta_{10} ENRTER_i + \beta_{11} CONSUMP_i + u_i \qquad \text{(Model 1)}$$

$$FLFP_i = \beta_1 + \beta_2 LING_i + \beta_3 AGRI_i + \beta_4 INDUST_i + \beta_5 URBPOP_i + \beta_6 INFL_i + \beta_7 BIRTH_i$$
$$+ \beta_8 ENRPRI_i + \beta_9 ENRSEC_i + \beta_{10} ENRTER_i + \beta_{11} CONSUMP_i + u_i \qquad \text{(Model 2)}$$

$$FLFP_i = \beta_1 + \beta_2 ETHN_i + \beta_3 AGRI_i + \beta_4 INDUST_i + \beta_5 URBPOP_i + \beta_6 INFL_i + \beta_7 BIRTH_i$$
$$+ \beta_8 ENRPRI_i + \beta_9 ENRSEC_i + \beta_{10} ENRTER_i + \beta_{11} CONSUMP_i + u_i \qquad \text{(Model 3)}$$

$$FLFP_i = \beta_1 + \beta_2 CULT_i + \beta_3 AGRI_i + \beta_4 INDUST_i + \beta_5 URBPOP_i + \beta_6 INFL_i + \beta_7 BIRTH_i$$
$$+ \beta_8 ENRPRI_i + \beta_9 ENRSEC_i + \beta_{10} ENRTER_i + \beta_{11} CONSUMP_i + u_i \qquad \text{(Model 4)}$$

where i subscript stands for the *i-th* country's observation value for the particular variable. u_i is error term of the regression.

Our dependent variable is FLFP. It is taken from WDI and measured as labor force participation rate, female (% of female population ages 15+) (modeled ILO estimate).

The list of independent variables, their definitions, and the data sources are given in Table 2 below.

Table 2. *List of Independent Variables*

Variables	Definition	Source
RELIG	Religious fractionalization	A. Alesina, E. La Ferrara (2005), "Ethnic Diversity and Economic Performance", Journal of Economic Literature.
LING	Linguistic fractionalization	A. Alesina, E. La Ferrara (2005), "Ethnic Diversity and Economic Performance", Journal of Economic Literature.
ETHN	Ethnic fractionalization	A. Alesina, E. La Ferrara (2005), "Ethnic Diversity and Economic Performance", Journal of Economic Literature.
CULT	Cultural diversity index	James Fearon (2003), "Ethnic and Cultural Diversity by Country", Journal of Economic Growth.
AGRI	Employment in agriculture (% of total employment)	WDI

INDUST	Employment in industry (% of total employment)	WDI
URBPOP	Urban population growth (annual %)	WDI
INFL	Inflation, GDP deflator (annual %)	WDI
BIRTH	Number of births	UN data
ENRPRI	School enrollment, primary, female (% gross)	WDI
ENRSEC	School enrollment, secondary, female (% gross)	WDI
ENRTER	School enrollment, tertiary, female (% gross)	WDI
CONSUMP	Household final consumption expenditure, etc. (constant 2010 US$)	WDI

While logarithmic values for BIRTH and CONSUMP variables are utilized, level values are used for the other independent variables in our analyses.

We anticipate to having a positive association between the level of religion, ethnic, linguistic, and cultural diversity and FLFP due to the fact that interaction across different religions, ethnicities, languages, and cultures in daily routine life in a society may promote female labor force participation in that society.

Women are more prone to prefer jobs possessing more flexible working hours or days because of interruptions in their life such as giving birth, child caring, daily housework etc.. Therefore women may be more inclined to work in agricultural sector than industrial sector since agricultural sector offers more flexible working periods than industrial sector. The expected sign for the coefficient of AGRI is positive whereas it is negative for INDUST.

An increase in urban population growth may force women to join labor force due to higher cost of living of urban area relative to rural area. Hence we expect to have a positive sign for the coefficient of URBPOP variable.

Inflation in our model is proxy for the rate of increase of cost of living. If cost of living rises as a result of an increase in inflation, we anticipate women to participate in labor force more.

Giving birth and thus having children hold a significant portion in a woman's life and this type of interruptions discourages women to join labor force. The anticipated sign for the coefficient of BIRTH variable is negative.

Higher education level encourages women to take part in labor force and for that reason we expect to have a positive relation between ENRPRI, ENRSEC, and ENRTER variables and FLFP.

An increase in household consumption expenditure may compel women to participate in labor force. Therefore a positive association between CONSUMP and FLFP variables is predicted.

4. Estimation Results

The multivariate estimation results are depicted in Table 3 below.

Table 3. *Multivariate Estimation Results*

	Model 1	Model 2	Model 3	Model 4
Constant	-14.2051	-13.4292	-18.6735	-3.8516
Std. Error	25.5562	27.5272	25.1951	31.6973
P-value	0.5796	0.6267	0.4604	0.9036
RELIG	19.9098			
Std. Error	4.4957			
P-value	0.0000			
LING		9.5167		
Std. Error		4.4323		
P-value		0.0343		
ETHN			10.6555	
Std. Error			5.5960	
P-value			0.0598	
CULT				8.2028
Std. Error				6.1493
P-value				0.1857
AGRI	0.4958	0.4889	0.5261	0.4317

Std. Error	0.1552	0.1475	0.1189	0.1758
P-value	0.0019	0.0013	0.0000	0.0160
INDUST	-0.3999	-0.5571	-0.5598	-0.8322
Std. Error	0.1624	0.1879	0.1940	0.2737
P-value	0.0156	0.0038	0.0048	0.0031
URBPOP	1.3828	0.7000	0.6293	-0.4572
Std. Error	0.5265	0.6264	0.7949	1.1581
P-value	0.0100	0.2665	0.4305	0.6940
INFL	0.0038	0.0395	-0.0043	0.1102
Std. Error	0.1502	0.1634	0.1768	0.1824
P-value	0.9801	0.8097	0.9807	0.5472
BIRTH	-5.8014	-6.6581	-6.9137	-7.8065
Std. Error	1.8927	2.0537	1.8432	2.0427
P-value	0.0028	0.0016	0.0003	0.0002
ENRPRI	0.3130	0.3678	0.3141	0.3518
Std. Error	0.0716	0.0848	0.0881	0.0889
P-value	0.0000	0.0000	0.0006	0.0002
ENRSEC	-0.1161	-0.1190	-0.0983	-0.2012
Std. Error	0.0877	0.0883	0.0925	0.0915
P-value	0.1886	0.1810	0.2908	0.0306
ENRTER	0.2127	0.2174	0.2121	0.1919
Std. Error	0.0613	0.0704	0.0679	0.0824
P-value	0.0008	0.0026	0.0023	0.0222
CONSUMP	3.7173	4.2595	4.6996	5.2400
Std. Error	1.7168	1.8981	1.7292	1.9448
P-value	0.0328	0.0271	0.0078	0.0085
Num. Of Obs.	109	109	109	98
R-square	0.5312	0.4626	0.4607	0.4807
F stat.	11.1029	8.4362	8.3712	8.0535
Prob(F stat.)	0.0000	0.0000	0.0000	0.0000
B-G stat.	0.0077	0.5602	1.3370	3.9463
Prob(B-G stat.)	0.9302	0.4542	0.2476	0.0470
White stat.	17.7003	17.9371	14.6555	20.3616
Prob(White stat.)	0.0602	0.0560	0.1451	0.0260

Model 1 in Table 3 reports the estimation results for model using RELIG variable as primary interested variable. Breusch-Godfrey serial correlation LM test statistic shows that there is no serial correlation problem in Model 1. On the other hand White heteroskedasticity test statistic indicates a heteroskedasticity problem in Model 1. Therefore we reported White heteroskedasticity consistent standard errors and covariance in Model 1. Results of Model 1 display that RELIG variable has a highly statistically significant positive impact on FLFP. This finding hints that an increase in religious fractionalization enhances females' participation to labor force. Among the other control variables; only AGRI, INDUST, URBPOP, BIRTH, ENRPRI, ENRTER, and CONSUMP variables are statistically significant at least at %5 significance level and take the priori expected signs.

Model 2 in Table 2 depicts the estimation results for model using LING variable as primary interested variable. Breusch-Godfrey serial correlation LM test statistic implies that there is no serial correlation problem in Model 2. On the other hand White heteroskedasticity test statistic points out a heteroskedasticity problem in Model 2. Thus we reported White heteroskedasticity consistent standard errors and covariance in Model 2. Results in Model 2 hint that LING variable has a statistically significant positive impact on FLFP. This finding reveals that an increase in linguistic fractionalization improves female labor force participation. Among the other control variables; only AGRI, INDUST, BIRTH, ENRPRI, ENRTER, and CONSUMP variables are statistically significant at least at %5 significance level and take the priori expected signs.

Model 3 in Table 2 shows the estimation results for model using ETHN variable as primary interested variable. Breusch-Godfrey serial correlation LM test statistic shows that there is no serial correlation problem in Model 3. Moreover White heteroskedasticity test statistic indicates no heteroskedasticity problem in Model 3. Results in Model 3 imply that ETHN variable has a statistically significant positive impact on FLFP. This finding reveals that an increase in ethnic fractionalization augments females' participation to labor force. Among the other control variables; only AGRI, INDUST, BIRTH, ENRPRI, ENRTER, and CONSUMP variables are

statistically significant at least at %1 significance level and take the priori expected signs.

Model 4 in Table 2 reports the estimation results for model using CULT variable as primary interested variable. Breusch-Godfrey serial correlation LM test statistic shows that there is serial correlation problem in Model 4. Also White heteroskedasticity test statistic indicates a heteroskedasticity problem in Model 4. Therefore we reported heteroskedasticity and autocorrelation consistent standard errors and covariance in Model 4. Results of Model 4 point out that CULT variable has no a statistically significant impact on FLFP. Among the other control variables; only AGRI, INDUST, BIRTH, ENRPRI, ENRSEC ENRTER, and CONSUMP variables are statistically significant at least at %5 significance level and take the priori anticipated signs except ENRSEC variable.

5. Conclusion

There are numerous studies analyzing female labor force participation in the literature. However, to the best of our knowledge, there is no study in the literature questioning the impact of religion, ethnic, linguistic, and cultural diversity on FLFP. In addition to other identified determinants of FLFP, religious, ethnic, linguistic, and cultural diversity may also play a significant role in the explanation of FLFP. Therefore in this study we empirically analyze the possible effect of religion, ethnic, linguistic, and cultural diversity on FLFP by utilizing a cross-section data of 109 countries in a multivariate regression model. Our research hypothesis is that societies with higher level of religion, ethnic, linguistic, and cultural diversity may have higher level of FLFP due to the fact that interaction across distinct religions, ethnicities, languages, and cultures in daily routine life in a society may augment female labor force participation.

Empirical estimation results reveal there exists a statistically significant positive association between diversification in religion, ethnicity, language and FLFP in a country. However, we did not find a statistically significant relationship between culture and FLFP.

As a result, as the degree of religious fractionalization, linguistic fractionalization, and ethnic fractionalization increases in a society, then female's participation to labor force increases as well.

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