**E.-U. A. Tulubyeva, V. Khatib, A. Rivière**

*Graduate students*
*Institut d'Etudes Politiques de Paris*

# WOMEN IN THE PARLIAMENTS OF POST-COMMUNIST EU MEMBER STATES

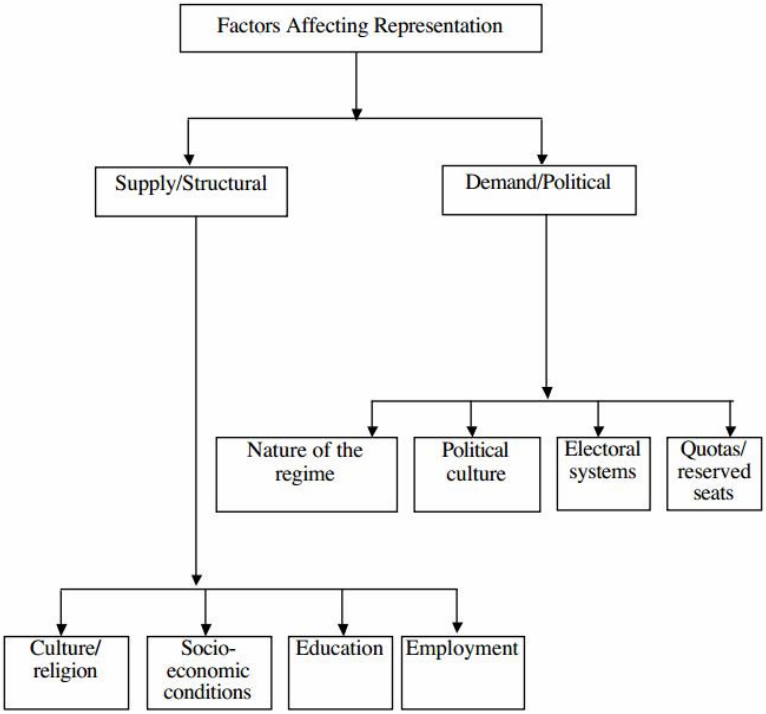
**Abstract.** The aim of the paper is to provide a comprehensive overview of the representation of women in the parliaments of post-communist EU member states. We have chosen nine countries to study: Bulgaria, Estonia, Slovak Republic, Slovenia, Hungary, Czech Republic, Lithuania, Romania and Poland. The observation period extends from 1997 to 2011. The object is to find observable factors that could explain the participation rate for women in the parliament. Our results have shown that female participation in politics may have different drivers in ex-communist countries and western European countries.

**Keywords:** women, parliaments, post-communist EU member states.

The aim of the paper is to provide a comprehensive overview of the representation of women in the parliaments of post-communist EU member states. We have chosen nine countries to study: Bulgaria, Estonia, Slovak Republic, Slovenia, Hungary, Czech Republic, Lithuania, Romania and Poland. The countries are today part of the European Union; prior to EU these countries were communist states. The observation period extends from 1997 to 2011. Bulgaria and Romania became part of the EU in 2007 while the others became members in 2004 (Europe.eu, 2013). The object is to find observable factors that could explain the participation rate for women in the parliament. Over the last decade Europe's average women's participation has been 20,3 % in the parliament (Inter-Parliamentary Union, 2012). We want to see if the new members of the European Union could augment the number of women participating in the parliament. These countries has experienced communist era, a centralized political movement, they have different historical, economic and religious backgrounds than west-European countries as well as the totalitarian regimes were also radically different. Therefore women who are new-comers in politics may have difficulties in entering the parliament.

Our dependent variable will be: the percentage rate for women's participation in the parliament (*womenpar*). From the figure 1, it can be seen which factors affect the representation in the parliament.

Using the framework above as a basis for our experiment, we have selected variables that may affect female representation through both the demand/political aspect and the supply/structural aspect of the issue. The independent variables will be the following:




*Source: Nomita Halder, "Female Representation in Parliament: A Case Study From Bangladesh", New Zealand Journal of Asian Studies, 2004*

Figure 1. Factors Affecting the Representation in the Parliament

1. From the demand/political side:

- Cabinet composition: right-wing parties as a percentage of total cabinet posts, weighted by the number of days the government was in office in a given year (*gov_right1*).
- Cabinet composition: central parties as a percentage of total cabinet posts, weighted by the number of days the government was in office in a given year (*gov_centr1*).
- Cabinet composition: left-wing parties as a percentage of total cabinet posts, weighted by the number of days the government was in office in a given year (*gov_left1*).

Note: *gov_right1, gov_centr1* and *gov_left1* are not dummy variables, since our countries of interest are parliamentary regimes whose cabinet is often made of party coalitions. They do not always add up to 100 % because of independent politicians.

2. From the supply/structural side:

- Urbanization level (*urban*).

- Logged fertility rate (birth per woman) (*logfert*).
- Proportion of women in total tertiary education enrollment (*tert_educ*).
- Proportion of women in total tertiary education enrollment 7 years before of the year of interest (*educ_before*). The reason why we include this variable is that we expect tertiary education enrollment to take some time before affecting female political participation.
- Percentage of women enrolled in the labor force (*labor*).

The data has been collected from the World Bank and CPDS – Comparative Politics Dataset III, everything is expressed in percentage. We will run two different regressions in STATA, which will facilitate a diverse understanding of the impact of the variables on the dependent variable. The first regression will not control for heterogeneity between countries, while the second will include dummy variables capturing country heterogeneity.

We first try to run a multivariate regression without controlling for country heterogeneity. The basic specification is the following:

$$womenpar = \beta_0 + \beta_1 * gov\_right1 + \beta_2 * gov\_cent1 + \beta_3 * gov\_left1 + \beta_4 * urban + \beta_5 * logfert + \beta_6 * labor + \beta_7 * educ\_before + \beta_8 * tert\_educ + \varepsilon$$

Results are presented in the following table 1.

Table 1

RESULTS

Linear regression

| | |
|---|---|
| Number of obs | 121 |
| F( 8, 112) | 13.38 |
| Prob > F | 0.0000 |
| R-squared | 0.2775 |
| Root MSE | 4.5598 |

| womenpar | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| gov_right1 | -.0087914 | .0330258 | -0.27 | 0.791 | -.0742278 | .0566451 |
| gov_cent1 | .003344 | .0373281 | 0.09 | 0.929 | -.0706168 | .0773048 |
| gov_left1 | .0023618 | .0322823 | 0.07 | 0.942 | -.0616014 | .066325 |
| urban | .1137965 | .0736801 | 1.54 | 0.125 | -.0321913 | .2597843 |
| tert_educ | .1122763 | .1120715 | 1.00 | 0.319 | -.109779 | .3343316 |
| educ_before | -.2443408 | .0891254 | -2.74 | 0.007 | -.4209314 | -.0677501 |
| labor | .1380216 | .0665803 | 2.07 | 0.040 | .0061012 | .269942 |
| logfert | 9.40749 | 5.918989 | 1.59 | 0.115 | -2.320228 | 21.13521 |
| _cons | 4.028935 | 5.08819 | 0.79 | 0.430 | -6.052661 | 14.11053 |

From the results of the regression, it can be seen that the only coefficients having significant impact on the analyzed *womenpar* are *educ_before* and *labor*. The other coefficients have no significant effect on *womenpar*. Plus, looking at $R^2$ we can infer that the model itself explains poorly the outcome by the variables. However, p-value for F-statistics for the whole model is really low, which could mean that all together the coefficients are significant in explaining the *womenpar* variable. Thus, we run the F-tests for three

groups of explanatory variables to see which of them are really significant for this model. The results are the following:

```
. test  gov_right1 gov_cent1 gov_left1

 ( 1)  gov_right1 = 0
 ( 2)  gov_cent1 = 0
 ( 3)  gov_left1 = 0

       F(  3,   112) =    0.16
            Prob > F =    0.9205

. test  tert_educ educ_before

 ( 1)  tert_educ = 0
 ( 2)  educ_before = 0

       F(  2,   112) =    4.20
            Prob > F =    0.0174

. test urban  logfert labor

 ( 1)  urban = 0
 ( 2)  logfert = 0
 ( 3)  labor = 0

       F(  3,   112) =   20.31
            Prob > F =    0.0000
```

It can be inferred then that the overall cabinet composition (*gov_right1*, *gov_centr1*, *gov_left1*) still does not have significant effect on the analyzed variable *womenpar*. Then, the overall effect of the tertiary education enrollment (*educ_before* and *tert_educ*) is a useful predictor of female seats in parliament. Similarly, the variables *urban*, *logfert* and *labor* together have a significant impact on the percentage of women in the parliament for the analyzed counties.

To conduct a more detailed research and capture heterogeneity between countries, it was decided to add to the analysis the following dummy variables: *bulgaria*, *czech*, *estonia*, *hungary*, *lithuania*, *poland*, *romania*, *slovakia*, *slovenia*, which correspond to the different countries of the dataset. *hungary* was chosen as the reference dummy variable for the following analysis.

```
Linear regression                               Number of obs =     134
                                                F(  8,   125) =   49.04
                                                Prob > F      =  0.0000
                                                R-squared     =  0.4939
                                                Root MSE      =  3.7495
```

| womenpar | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| bulgaria | 10.23333 | 1.588671 | 6.44 | 0.000 | 7.089156 | 13.37751 |
| czech | 6.953333 | .6735412 | 10.32 | 0.000 | 5.620312 | 8.286355 |
| estonia | 9.374761 | .722121 | 12.98 | 0.000 | 7.945594 | 10.80393 |
| lithuania | 7.78 | 1.268119 | 6.14 | 0.000 | 5.270234 | 10.28977 |
| poland | 8.88 | .9674006 | 9.18 | 0.000 | 6.965394 | 10.79461 |
| slovakia | 7.02 | .6876585 | 10.21 | 0.000 | 5.659038 | 8.380961 |
| slovenia | 3.373333 | 1.50832 | 2.24 | 0.027 | .388181 | 6.358485 |
| romania | .573333 | .5083599 | 1.13 | 0.262 | -.4327743 | 1.57944 |
| _cons | 9.646667 | .2978275 | 32.39 | 0.000 | 9.057229 | 10.2361 |

From the table above, we can conclude that the share of women seats in parliament varies greatly between countries. Hungary is the one whose female share of seats in parliament is the lowest, along with Romania whose coefficient is not significantly different from zero. Bulgaria is the one whose female share of seats in Parliament is the highest, for *womenpar* is predicted to be 10,23 % higher than in Hungary.

Of course, we want to investigate how much of the country heterogeneity is explained by our model. Therefore, we add control variables for cabinet composition (*gov_right1*, *gov_centr1*, *gov_left1*), urbanization level (*urban*), fertility rate (*logfert*), labor force participation (*labor*), and tertiary education enrollment (*educ_before*, *tert_educ*):

```
Linear regression                               Number of obs =     121
                                                F( 16,   104) =   47.25
                                                Prob > F      =  0.0000
                                                R-squared     =  0.6559
                                                Root MSE      =  3.2656
```

| womenpar | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| gov_right1 | .0256324 | .0391857 | 0.65 | 0.514 | -.0520743 | .1033391 |
| gov_cent1 | -.0013561 | .0409239 | -0.03 | 0.974 | -.0825097 | .0797975 |
| gov_left1 | .0534924 | .0365281 | 1.46 | 0.146 | -.0189442 | .1259289 |
| urban | -.0337691 | .2855152 | -0.12 | 0.906 | -.5999564 | .5324182 |
| logfert | 13.63088 | 5.485371 | 2.48 | 0.015 | 2.75318 | 24.50857 |
| tert_educ | .1917958 | .0985202 | 1.95 | 0.054 | -.0035734 | .387165 |
| educ_before | -.2054144 | .0972022 | -2.11 | 0.037 | -.3981701 | -.0126587 |
| labor | -.4853039 | .092298 | -5.26 | 0.000 | -.6683344 | -.3022735 |
| bulgaria | 13.8732 | 1.992483 | 6.96 | 0.000 | 9.922033 | 17.82437 |
| czech | 13.96758 | 2.801812 | 4.99 | 0.000 | 8.411482 | 19.52368 |
| estonia | 16.91607 | 1.620933 | 10.44 | 0.000 | 13.7017 | 20.13044 |
| lithuania | 14.26181 | 1.995288 | 7.15 | 0.000 | 10.30508 | 18.21854 |
| poland | 11.0564 | 2.354113 | 4.70 | 0.000 | 6.388106 | 15.72469 |
| romania | 3.785962 | 3.803352 | 1.00 | 0.322 | -3.756227 | 11.32815 |
| slovakia | 14.0763 | 3.335904 | 4.22 | 0.000 | 7.461074 | 20.69152 |
| slovenia | -6.527589 | 4.209587 | -1.55 | 0.124 | -14.87536 | 1.820179 |
| _cons | 31.64038 | 19.47937 | 1.62 | 0.107 | -6.987945 | 70.26871 |

```
. test  gov_right1 gov_cent1 gov_left1

 ( 1)  gov_right1 = 0
 ( 2)  gov_cent1 = 0
 ( 3)  gov_left1 = 0

       F(  3,   104) =    3.74
            Prob > F =    0.0134

. test  urban logfert labor

 ( 1)  urban = 0
 ( 2)  logfert = 0
 ( 3)  labor = 0

       F(  3,   104) =    9.79
            Prob > F =    0.0000
```

The results of the regression above are interesting. First, the coefficients associated with country dummies are all statistically significant in explaining variation in *womenpar*, except for Romania and Slovenia. This means that our model is not sufficient to explain heterogeneity between countries. Sec-

ond, the coefficients associated with *gov_right1, gov_cent1, gov_left1* are still non-significantly different from zero. However, the overall effect of cabinet composition is useful to predict the variation of female representation in parliament, as showed by the result F-test of the three variables together. Besides, coefficients associated with *tert_educ* and *educ_before* are both statistically significant, but of opposite signs. While we expected a positive relation between tertiary education enrollment 7 years before the year of interest and political representation, we were surprised to observe that *educ_before* was negatively correlated with women seats in parliament when *tert_educ* was controlled for. We also expected the impact of *tert_educ* to be non-significant, while the coefficient is actually significant and positive. Finally, while both fertility rate and labor force participation are useful predictors of women seats in parliament, the signs of the coefficients are surprising as well. We expected *labor* to be positively related with *womenpar* (i.e. the higher the labor force participation of women, the higher their representation in parliament), and *logfert* to be negatively related with *womenpar* (i.e. the lower the fertility rate of women, the higher their representation in parliament). However, the results of the regression showed opposite impacts of *labor* and *logfert* on *womenpar*.

We investigate the correlation between *labor*, *logfert* and *urban*. The table below shows that there is a positive relation between the three variables. *Labor* and *urban* are strongly correlated, which may explain why the coefficient associated with *urban* was not statistically significant in the regression above, when *labor* was controlled for. The correlation between *logfert* and *labor* is weak, but positive, while we expected a negative relation. One hypothesis we can make is that both female participation in the labor force and fertility rate may be positively related to income, i.e. higher participation in the labor force may lead to higher purchasing power of women, who may then be able to afford to raise more children. This may explain the positive relation between fertility rate and labor force participation.

```
. corr  urban labor logfert
(obs=134)
```

| | urban | labor | logfert |
|---|---|---|---|
| urban | 1.0000 | | |
| labor | 0.5968 | 1.0000 | |
| logfert | 0.0856 | 0.1713 | 1.0000 |

In order to get a good sense of the relationships that exist with between urbanization rate, labor force participation, fertility rate and female representation in parliament, we have decided to draw the following graphs, which present the general trend of the regression line on *womenpar* analyzed separately by *urban*, *labor*, and *fertility*, and the 95 % confidence interval for each coefficient (figure 1).

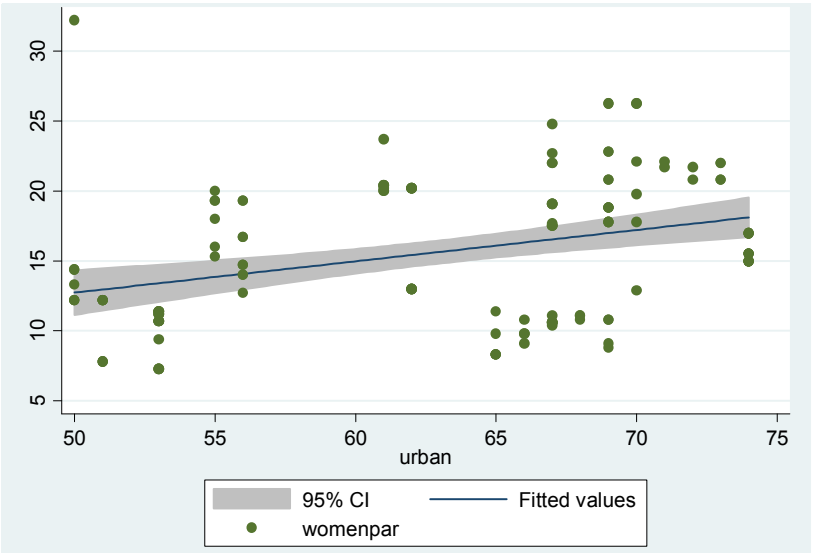



Figure 1. Least-Squares Fit (Womenpar – Urban)

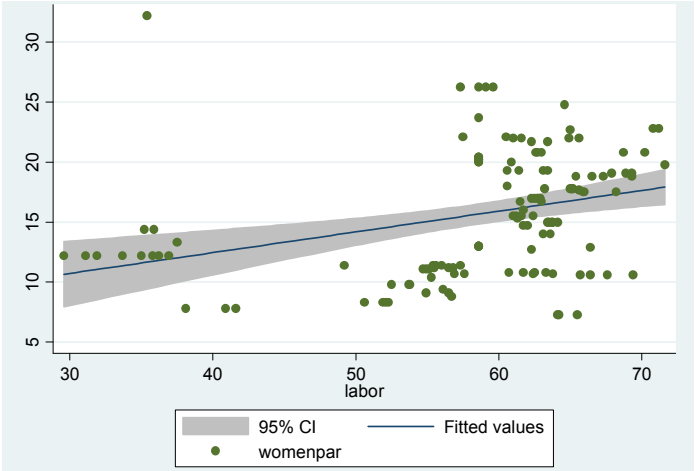



Figure 2. Least-Squares Fit (Womenpar – Labor)

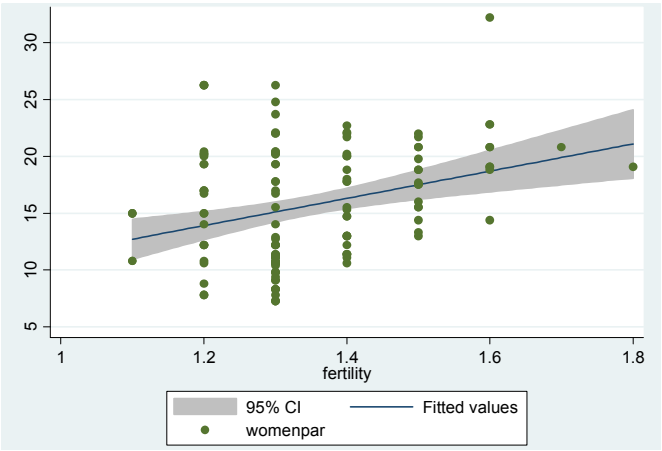



Figure 3: Least-Squares Fit (Womenpar – Fertility)

We can draw a few conclusions from our analysis, some of which are surprising. First, while our model was overall useful to predict female participation in parliament, it only captured a small part of the heterogeneity between the countries of our dataset. Adding country dummies did not affect much the coefficients associated with the explanatory variables, except from some of them which became statistically significant (*tert_educ* and *logfert*). Second, although the coefficients associated with cabinet composition (*gov_right1, gov_cent1, gov_left1)* have not been found to be significantly different from zero, it is not sufficient to conclude that demand/political factors have no impact on female representation. Indeed, the result of the F-test showed that overall cabinet composition was a useful predictor of women seats in parliament, and there may also be factors that we did not observe (e.g. "political culture"). Third, we have found that supply/structural factors had a clear impact on women seats in parliament, but some of the relations were very surprising. In particular, while we expected *tert_educ* to have no significant impact and *educ_before* to have a positive impact on *womenpar*, we have found a positive coefficient for *tert_educ* and a negative coefficient for *educ_before*. One possible explanation may be that university enrollment does not favor women political participation per se, but is a proxy for a general "culture" that favors female empowerment. One other explanation may be that the choice of 7 years is not accurate. Finally, we have found that labor force participation was negatively related to women seats in parliament, while fertility rate had a positive impact, which was surprising as well. This result might be explained by an omitted variable bias, for example we did not observe income or economic growth which may be positively related to women political representation, labor force participation and fertility rate at the same time.

Overall, our results have shown that female participation in politics may have different drivers in ex-communist countries and western European countries. A qualitative analysis would be necessary to go further.

## References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