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**Migration-induced Transfers of Norms.
The Case of Female Political Empowerment**

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Migration-induced Transfers of Norms. The case of Female Political Empowerment

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Abstract

It is recognized that affirmative action, as anti-discriminatory policies whose aim is to benefit an underrepresented group, is a key driver of progress for women. However, the role of migrants in helping female voice from abroad has not been addressed yet. This paper empirically investigates the effect of international migration on the parliamentary participation of women left behind following the brand new strand of literature on ‘transfers of norms’. Panel data from 1960 to 2000 allows us to take into account selection due to women’s eligibility, observed and unobserved heterogeneity. After having controlled for traditional political and non political factors, we show that total international migration to countries with higher female political empowerment significantly increases the female parliamentary shares in sending countries.

Keywords: International Migration, Gender Discrimination, Panel Data, Sample Selection

JEL Classification: J16, D72, F22, C33

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1 Introduction

Is international migration promoting women's empowerment at origin through the change in female parliamentary participation? This is the issue we empirically investigate in this paper following the new strand of literature on 'transfers of norms' (Spilimbergo, 2009; Beine, Docquier and Schiff, 2008; Fargues, 2007).

Sociological research shows that migrants progressively assimilate in terms of cultural choices (Gordon, 1964)¹ or they, at least, come into contact with destinations' new values. Political socialization is likely to occur and migrants are willing to accommodate themselves to new political practices (Correa, 1998). At the same time, they remain attached to their country of origin (Boyd, 1989) where they could be willing to foster some favourable political change.

The literature refers to 'Diasporas for Development', for describing, among others, the political achievements² brought by diaspora individuals. The so called HTAs (Home Town Associations) and OSIMs (*Organisations de Solidarité Internationale de Migrants*) are, for example, immigrant informal organizations based on a common hometown that bring members together for social, cultural, political empowerment and economic development goals. The Centro Romero is an HTA made up of Latino migrants set up in 1984 and operating in Chicago that offers women's empowerment projects. Under the so called Women Leadership Project, they organize workshops, trainings, activities and community events to increase the leadership potential of the Latinas. On the same wavelength, the Initiatives de Femmes Africaines de France et d'Europe (IFAFE) is an OSIM funded in 1993 which pursues home country development objectives linked to female political empowerment.

Similarly, the South Sudan Women's Empowerment Network (SSWEN), created by Sudanese United States-based migrants, has been deeply involved in building the new South Sudanese nation state whose independence dates back to the 9th of July 2011. The role of the Sudanese diaspora has been so relevant in seeking to support and even center women in development practices (with particular emphasis on political decision-making), that Erickson and Faria (2011) describe diasporic Sudanese women as 'new and increasingly important citizens and activists in the post-CPA (Comprehensive Peace Agreement) era'.

Beside these collective actions³, an important actor who shaped from abroad female political empowerment in her origin country has also been the 2011 Nobel Peace Prize Leymah Roberta Gbowee.⁴ She is a Liberian peace activist responsible for having lead a women's peace movement that brought an end to the Second Liberian Civil War in 2003 and contributed to the election of Ellen Johnson Sirleaf, the first African female President.

Identifying the exact channel through which the transfer of political values through migration occurs is beyond the scope of this paper so we will restrict our analysis to simply address whether this mechanism is in place and its causal direction. To this end, we are using a comprehensive database on female parliamentary representation (Paxton et al., 2006) and a newly released bilateral migration database (Ozden et al., 2011) from year 1960 to 2000. To describe the propagation of political values, we rely with

¹Even if family experience may sometimes prevent from total assimilation (Fernandez and Fogli, 2006).

²See Ionescu (2005).

³From a broader perspective, affirmative action, as policies that take factors including race, color, religion, gender, or national origin into consideration in order to benefit an underrepresented group, is about to be fostered by International Governmental and Non-Governmental Organizations (NGOs) through advocacy, communications and capacity building activities. See <http://www.un.org/esa/coordination/ngo/>.

⁴Mrs Leymah Roberta Gbowee spent some time in Virginia where she got a Master Degree in Peace Building at the Eastern Mennonite University (EMU). At the moment, she resides in Ghana where she moved before the independence of Liberia.

some insights on the work by Spilimbergo (2009). We control for endogeneity and reflection problem⁵ thanks to a system GMM estimation. We address selection issues due to female political eligibility through a two step Heckman estimation strategy in dynamic panel data. After some due robustness checks and counterfactual exercises, we show that total international migration to countries where the share of female parliamentary seats is higher increased source country female political voice between 1960 and 2000.

These findings are of great value for many reasons.

‘Promote Gender Equality and Empower Women’ is one of the Millennium Development Goals. Women make up more than half of the global population and female electorate yet continue to be under-represented in all economic and political decision-making bodies at all levels. According to 2010’s Interparliamentary Union (IPU) data, the international average representation of women in parliaments has increased slowly from 11 to 19% between 1995 and 2010 but this is far short of gender parity. Parliamentary elections in 2009 contributed to rising gains for women in sub-Saharan Africa and Latin America and the Caribbean, where 29% and 25% of the renewed seats went to women, respectively. But 58 countries still have 10 per cent or fewer female members of parliament. Moreover, the gap between countries is high with the Swedish Chamber being the most ‘feminized’ with 45% of women in the Parliament, then Netherlands with 40.7% and Belgium 39.3%. While the lowest shares pertain to the Arab Countries with 11.7%.

It has been put forward how women in politics result in tangible gains for democracy, including greater responsiveness to citizen needs, increased cooperation across party and ethnic lines, and more sustainable peace. On the empirical side, Thomas (1991) shows that the states in US with higher female representation introduce and pass more priority bills dealing with issues of women, children and families than their male counterparts or than women in states with lower female representation. Besley and Case (2000) find that women in the legislature apply pressure to increase family assistance and to strengthen child support. With Indian data, Clots-Figuera (2011) finds that female legislators have a differential impact on public goods, policy and expenditure decisions compared to the male counterparts. They invest more than men in schools, female teachers, primary education and bed in hospitals and dispensaries. Moreover, female legislators in seats reserved for lower castes and disadvantaged tribes invest more in health and early education and favor ‘women friendly’ laws. Along the same lines, Iyer et al. (2011) find that an increase in female representation in local government induces large and significant effects on reporting of crimes against women in India, thus favoring access to justice for women. On the theoretical side instead, De la Croix and Vander Donckt (2010) recognize, from a more general viewpoint, the importance of female empowerment as a multidimensional concept including economic participation and opportunity, educational attainment, political empowerment, health and survival. They argue that a range of socioeconomic virtues are widely attached to gender equality, including improved children’s development (through better health and education) and growth.⁶

The remainder of the paper is organized as follows. Section 2 describes the related literature on ‘transfers of norms’. Section 3 presents the econometric model. Section 4 deals with the datasets used to conduct the empirical analysis. Section 5 goes through the two estimation methods adopted in order to deal with the selection problem and the observed/unobserved heterogeneity. Section 6 provides the empirical results plus some robustness checks. Finally, Section 7 concludes.

⁵See Manski (1993).

⁶However, different forms of women empowerment may lead to more controversial results (see Doepke and Tertilt, 2011; and Dynan and Rouse, 1997).

2 Literature Review

To investigate the role of diaspora individuals in shaping female political empowerment we rely on the recent strand of international migration literature on ‘transfers of norms’. The work on democracy and foreign education by Spilimbergo (2009), and that of fertility and migration by Fargues (2007) and Beine, Docquier and Schiff (2008) will be our main references.⁷ According to them migrants act as preferential channel for fostering changes in the home country. In particular, Spilimbergo (2009) shows that foreign-educated individuals promote democracy in their home country, but only if the foreign education is acquired in democratic countries. Fargues (2007) and Beine et al. (2008) apply the same mechanism of migration-induced transfers of behavioral norms to fertility. Fargues’ analysis is based on fertility behavior in three source countries, namely Morocco, Turkey and Egypt. Discriminating among destinations’ high and low fertility behaviour, he shows that fertility rates in sending countries are affected by the rates prevailing in their migrants’ host countries, with rates declining in case of migrants sent to low fertility destinations and increasing in case of migrants sent to high fertility ones. Beine et al. (2008) extend Fargues’ conclusions using a rigorous econometric model. They provide evidence of a transfer of fertility norms from migrants to their 208 countries of origin.

Linked to the very recent strand of literature of migration induced ‘transfers of norms’ is also the study by Neumayer and De Soysa (2011) in which an analysis of *spatial dependence*⁸ puts forward the role of trade and FDI in fostering the empowerment of women. The authors test for the propagation of women’s economic and social rights through trade and FDI. Specifically, it is suggested that the incentive to raise women’s rights is stronger where, firstly, major trading partners and secondly, the major source countries for FDI themselves provide strong rights. Economic and social rights are taken from the Cingranelli and Richards’ 2009 Human Rights Database. Among the economic rights the ‘free choice of profession’ as well as ‘the equality in hiring and promotion practices’ are listed but there is no direct reference to political rights. Nonetheless, the role of other globalized outcomes such as migration has been not touched.

Our study contributes to the above findings showing that total international migration to countries where the share of female parliamentary seats is higher increased source country female political voice between 1960 and 2000.

3 The Model

To test for the impact of international migration on female parliamentary seats at origin ($seats_{i,t}^F$) through a ‘transfer of norms’ mechanism, we use the following dynamic specification:

$$seats_{i,t}^F = \alpha seats_{i,t-1}^F + \beta \sum_j \left[\frac{mig_{ij,t-1}}{pop_{i,t-1}} \times (seats_{j,t-1}^F - seats_{i,t-1}^F) \right] + \sum_{i=1}^n \rho_i R_{i,t} + \mu_i + \varphi_t + \epsilon_{i,t} \quad (1)$$

⁷For the sake of information, the mechanism of ‘transfers of norms’ has also been dealt with at micro level by the recent studies of Omar Mahmoud et al. (2011) where it is shown how Westward migrants contributed to topple the Communist party in 2009; the one by Kapur (2010) on the effect of international migration on Indian democracy; Perez- Armendariz and Crow (2010) shows how migration alters the political participation and behavior of Mexicans living in Mexico; finally, Batista and Vicente (2011) finds that migration to countries with better governance increases demand for political accountability in Cape Verde. At the macro level, instead, Docquier et al. (2011) study the general effect of migration toward the major six OECD receiving countries on institutional quality in developing sending countries.

⁸The phenomenon where policies, standards or similar choices of one unit of analysis depend on the choices of other units of analysis is commonly known as spatial dependence.

where:

- Subscript t refers to the year of interest and goes from 1961 to 2000 (40 years).⁹ Subscript i refers to origin country and subscript j to destination country.¹⁰ The final panel is not balanced.¹¹
- $seats_{i,t}^F$ represents the female parliamentary share at time t in the country of origin i .
- $seats_{i,t-1}^F$ represents the female parliamentary share at time $(t-1)$ in the country of origin i .
- $mig_{ij,t-1}$ is the bilateral total migration stock from i to j at time $(t-1)$. The reason why we consider total migration instead of female migration is threefold. First of all, according to the message given in occasion of the 100th International Women’s Day by the Director of the Secretariat of the International Strategy for Disaster Reduction (UN/ISDR) Salvano Briceno, ‘Advancing gender perspectives and women’s rights is not just a job for women, more men must advocate at a high level for the empowerment of women, and for the incorporation of gender budgeting into national and local development plans’. Secondly, if we look at the gender composition of HTAs and OSIMs there is no evidence that efforts to improve females’ conditions are just pursued by female migrants. Recent developments have shown that policies and work towards gender equality face new challenges related to men’s role and demands.¹² Thirdly, according to Doepke and Tertilt (2009), men care about the other gender in facing a trade-off between the rights they want for their own wives (namely none) and the rights of other women in the economy.
- $pop_{i,t-1}$ is the total population at time $(t-1)$ in country i .
- $\left[\frac{mig_{ij,t-1}}{pop_{i,t-1}} \times (seats_{j,t-1}^F - seats_{i,t-1}^F) \right]$ is the ‘norm’ at time $(t-1)$ through which foreign female parliamentary participation is propagated at origin. Differently to previous works, we multiply the migration rate component $\frac{mig_{ij,t-1}}{pop_{i,t-1}}$ with the difference between the parliamentary share at destination and that in the country of origin. We expect a positive effect if $seats_j^F > seats_i^F$. In other terms, the origin country takes advantage from the political environment at destination just if the female political conditions at destination are better than those at origin (we will have instead a ‘negative transfer of norm’ if $seats_j^F < seats_i^F$ and no transfer if $seats_j^F = seats_i^F$). Moreover, the greater the difference, the stronger the effect.
- $\sum_{i=1}^n \rho_i R_{i,t}$ contains other traditional covariates of interest. In the baseline model, we control for the female skill ratio in country i at time $t-1$ computed as the ratio of tertiary educated over illiterate females; the presence of democratic values in the origin country i at time t ; a political variable for the occurrence of legal elections at time t in country i and the nature of country i ’s electoral system at time t . Then in the extended specification, the CEDAW (Convention on the Elimination of all Forms of Discrimination against Women) ratification, GDP and trade data, and female population at time $t-1$ in country i are accounted for.
- μ_i and φ_t are country of origin and time fixed effects.

⁹ $t-1$ goes from 1960 to 1999.

¹⁰In our baseline specification, our sample consists in 87 countries. With t equal to 40 and i equal to 87 we can consider our macro panel as a micro one in which N is large and T small. In this case there is no need to test for unit root (see Ch. 12 in Baltagi, 2008).

¹¹See Appendix A for the countries’ list and Appendix B for the construction of the norm when some values are missing.

¹²From the the European Women Lobby’s website: <http://www.womenlobby.org> (Brussels, 7th October 2011).

The main references to Eq. (1) are the works by Spilimbergo (2009) and Beine et al. (2008). To determine the impact of students' migration on democracy at origin, Spilimbergo (2009) regresses the index of democracy¹³ at time t in country i over the five years' lagged value of democracy in country i , the number of students¹⁴ abroad as a share of total population in the sending country, the average level of democracy in the host countries, and the interaction between the two latter terms. The average level of democracy in the host countries is constructed as the weighted average of the institution in the host countries where the weights are given by the share of students from country i to country j over all students from country i . Beine et al. (2008), also apply the same specification in a cross section setting to assess the impact of migration on source country fertility. The norm is constructed as the interaction between the (log of) fertility rate¹⁵ at destination with the size of the diaspora.¹⁶ With respect to previous studies, our norm differs in two aspects. First of all, it is able to control for asymmetries between source country and destination's female political empowerment and secondly, its weights are given by emigration rates in order to control for collinearity problems.¹⁷

4 Data

4.1 Political Data

Political data come from the database by Paxton, Green and Hughes (2006) titled 'Women in Parliament, 1945-2003: Cross-National Dataset'.¹⁸ This data collection provides yearly information on women's inclusion in parliamentary bodies in 204 countries from 1945 to 2003. The dataset allows for extensive, large-scale, cross-national investigation of the factors that explain women's attainment of political power over time and provides comprehensive international and historical information on women in a variety of political positions. Information is provided on female suffrage, the first female member of parliament, yearly percentages of women in parliaments (data refer to the percent of parliamentary female body in the lower or single house of each country's national legislature), when women reached important representational milestones, such as 10 percent, 20 percent, and 30 percent of a legislature, and when women achieved highly-visible political positions, such as prime minister, president, or head of parliament. In order to be consistent with migration data, we keep political data from 1960 to 2000. Then, as far as the final country list is concerned, the original sample shrinks to 87 from 204 countries.¹⁹

¹³The author uses three measures of democracy: the Freedom House's Political Rights Index, which summarizes a number of dimensions, including the existence of free elections, of competitive parties; the composite polity II index from the Polity IV dataset, which combines the Polity's democracy and autocracy indices; and the dichotomous democracy index proposed by Przeworski, Alvarez, Cheibub, and Limongi (1990) and extended by Boix and Rosato (2001). According to this index a country is not considered a democracy unless a political party has lost power.

¹⁴These data are constructed from the cross country student migration database as reported in the UNESCO Statistical Yearbook. The database covers the time period 1950 to 2003 and refers to students' migration at the third tier of education (university education and higher).

¹⁵Data on fertility rates are taken from the World Development Indicators. The fertility rate is the average number of children that women have during their lives, from age 15 to age 50.

¹⁶Migration data are from the data set developed by Parsons, Skeldon, Walmsley and Winters (2007).

¹⁷See Appendix C for a more detailed description of the differences with previous studies.

¹⁸<http://www.icpsr.umich.edu>.

¹⁹Only 173 countries out of the 204 in the original political data are available in the migration dataset. The final country sample shrinks then to 87 countries in accordance with the geographical sample of the other data described in subsection 3.3. See Appendix A.

4.2 Migration Data

Migration information rely on a new released bilateral database described in Ozden et al. (2011). They provide decennial global matrices of bilateral migrant stocks spanning the period 1960-2000, disaggregated by gender and based primarily on the foreign-born concept. Over one thousand separate census and population register records are combined to construct decennial matrices corresponding to census rounds for the entire period. In doing so, the authors provide for the first time, a complete picture of bilateral global migration over the second half of the twentieth century.²⁰

Since migration data are available by decade for years 1960, 1970, 1980, 1990 and 2000, while political data contains yearly observations, in order to get annual migration data, we extended the original migration decennial matrix by interpolation. We computed the missing migration yearly data applying a constant annual rate of growth within each decade (according to persistence in migration stocks).

4.3 Other Data

Additional explanatories have been collected using the following databases.

Data on total and female population, GDP per capita are from the World Bank Development Indicators 2008. Female human capital indicators used to construct the female skill ratio are from the new released version of Barro and Lee (2010). Barro and Lee's data are available every five years. We made them compatible with the political one (that are yearly data) thanks to the same interpolation technique we dealt with migration missing data.²¹ The indicator for democracy is from the POLITY IV data set while data on legal elections and electoral systems (proportional, majoritarian, mixed and multi-tier) are from Golder (2005). Data on CEDAW (Convention on the Elimination of all Forms of Discrimination against Women) ratification have been collected by ourselves. We construct a dummy variable that changes from 0 to 1 from the year in which the convention has been ratified by the country.²² Religion data to identify countries with more than 80 percent of Muslin population are taken from LaPorta et al. (1999). For the exogenous instruments, data on natural disasters come from the International Disaster Database by the Centre on the Epidemiology of Disasters. EM-DAT contains essential core data on the occurrence and effects of over 18,000 mass disasters in the World from 1900 to present. The database is compiled from various sources, including UN agencies, non-governmental organisations, insurance companies, research institutes and press agencies.²³ Data on trade are taken from Feenstra et al. (2004) who provide yearly World trade flows from 1962-2000.

5 Empirical Methodology

We estimate Eq.(1) adopting two methods. We use first the Blundell and Bond system GMM estimator and we then apply an Heckman strategy to dynamic panel data (Jimenez-Martin, 2006 and Jimenez-

²⁰See Appendix B for the construction of missing migration data.

²¹We basically computed a five-yearly growth rate and apply it as constant to each missing human capital yearly observation.

²²The Convention was opened for signature at the United Nations Headquarters on 1 March 1980. Although the United States never ratified the convention, CEDAW has become the main international legal document on women's rights.

²³EM-DAT defines a disaster as a natural situation or event which overwhelms local capacity, necessitating a request for external assistance. For a disaster to be entered into the EM-DAT database at least one of the following criteria must be fulfilled: (1) 10 or more people reported killed; (2) 100 people reported affected; (3) declaration of a state of emergency; or (4) call for international assistance.

Martin, Labeaga and Rochina-Barrachina, 2009, and Wooldridge, 2002). The latter prevents our results from sample selection bias²⁴ due to female political eligibility.

5.1 System GMM without accounting for selection

When using the system GMM estimator (Blundell and Bond, 1998) without accounting for selection the estimation sample is restricted to cases in which the probability for a woman to ‘*be eligible*’ is equal to 1 (4766 cases out of 7093). This probability is 1 under two conditions: if the female parliamentary share is positive (90% of the eligible sample) or if the female parliamentary share equals zero because women have the right to stand for office but nobody vote for them²⁵ (10% of the eligible sample). The probability for a woman to ‘*be eligible*’ is instead equal to 0 if women have not the right to be voted yet or in case of absence of the Parliament (i.e. coup d’état, dictatorship war, ‘false elections’, no sovereignty or colonialism).²⁶

The system GMM estimator combines the regression in differences with the regression in levels in a single system. It allows us to overcome endogeneity issues due to the lagged dependent and other lagged explanatory variables as well as possible reflection problems (Manski, 1993), instrumenting endogenous variables with internal instruments. This estimator includes country-specific fixed effects and it is preferable to a standard fixed-effects estimator since the inclusion of the lagged dependent variable in a fixed effects model would lead to so-called Nickell (1981) bias because the lagged dependent variable is correlated with the error term. In addition, the system GMM is the most appropriate estimator when time series are very persistent as in our case (see Bond et al., 2001). Using too many instruments can bias the GMM estimation results (Roodman, 2009). We have, therefore, restricted the maximum lag of instruments and collapsed the instrument sets in order to keep the number of instruments lower than the number of groups.²⁷

As far as reflection issues are concerned, the ‘norm’ can be endogenous because if the equations for each country i were written in a system, the female parliamentary share would appear either as regressand for country i and as regressor within the norm for country $(i + 1)$, $(i + 2)$, etc. In addition to that it can be argued that the relationship between female political empowerment and international migration goes in the other way round through female migration. In other words, international female migration can be seen as a way out of political discrimination. However, even if a significant non-economic literature has examined the relationship between international migration and the empowerment of women, the direction of the causality is still an open issue (Hugo, 2000). It can indeed hinge on many factors, such as the context in which the migration occurs, the type of movement, the characteristics of the female migrants, and last but not least on the definition of empowerment used. In our regressions, the ‘norm’ variable is considered as endogenous and instrumented using from its own second lag onward.

²⁴See Appendix D for details concerning the sample selection issue linked to the nature of political data.

²⁵Actually, the female parliamentary share can also be zero when there are parliamentary sessions but women do not run for any political position. Since we do not have data on female political entry, we assume that there are some women who run for the position in any case.

²⁶After having merged the political data with the other data, the cases in which ‘women are eligible’ shrink to 1774 (1732 if we account for selection) while those for which ‘women are not eligible’ become 978 (677 accounting for selection). Under the first condition, there are 59 cases in which female parliamentary share is equal to 0 (55 if selection is accounted for.)

²⁷Usually, the system GMM estimator includes separate instruments for each time period. In our case, given the number of time periods we have, we would end up with too many instruments. This is why we collapsed the matrix of instruments.

5.2 GMM plus Heckman

The second method to estimate Eq.(1) consists in applying an Heckman strategy to a dynamic panel setting as in Jimenez-Martin (2006), and Jimenez-Martin and Garcia (2010). The first step consists in estimating a selection equation with a year-by-year Probit model where the dependent variable is a dummy equal to 1 if women are eligible and 0 otherwise. We then compute the inverse Mills ratio for each observation in each time period. In the second stage, we estimate with system GMM the initial model (where the female parliamentary share is on the left hand side) on the selected sample, including also the inverse Mills ratio, which controls for the selection bias.

To estimate the selection equation, we need at least one additional exogenous instrument. We have chosen data on natural disasters. The reason is straightforward. The effect of natural disasters can be as strong as those of wars in terms of poverty, dissatisfaction, lack of political stability, but contrary to them, they are heaven sent. Moreover, Wooldridge (2002, Ch. 17, p. 585-587) suggests we can also plug superior lags of initial covariates.²⁸

6 Estimation Results

6.1 General Results

Table 1 reports estimation results using OLS and system GMM (the most appropriate estimator in this context). Our dependent variable is the share of seats held by women in the lower or single house in national parliament. Column (1) and column (3) report respectively OLS and SYS-GMM estimates from our baseline specification which contains the lagged female parliamentary share, the lagged index of female parliamentary share (henceforth the ‘norm’) and other control variables. In particular, we consider a measure of female human capital, a measure of democracy, a variable called legal election which indicates the number of elections to national lower chamber occurred in the year of the same legislature²⁹ and a dummy equal to 1 if the electoral system is proportional.

All the variables in the baseline specification have the expected sign, considering both the estimation methods, and they are stable when adding additional covariates (from column 4 onward). The lagged value of female parliamentary share is positive and significant. The norm is positive and significant, too, implying that total migration is a positive and important channel through which female parliamentary share in the origin country raises.

Female human capital is then positive and statistically significant, meaning that women’s empowerment is dependent on decreasing levels of female illiteracy and increasing female education.³⁰ This is a crucial covariate in explaining female political empowerment: women need human and financial capital (gained through education and work experience) to stand for office (Paxton and Kunovich, 2003). As a proxy for

²⁸Under the assumption that the error term in Eq.(1) is not serially correlated, lags of variables are, in principle, valid internal instruments. They can therefore be included as explanatory variables in the selection Probit equation. However, the validity of superior lags as instruments can be indeed due to the non linear nature of the Probit model once it is plugged into a linear one instead of being due to the real exogeneity of the instruments. That’s why an exogenous instrument is strongly recommended.

²⁹It takes value equal to 1 if one legal election occurs and 0 otherwise. For 8 countries it takes value equal to 2, as two elections were held in the same year.

³⁰Women’s workforce participation may also favor women’s political participation. We indirectly control for workforce participation through human capital (of course, the two variables are highly correlated). We cannot introduce female labor force participation rate as a control variable, as data are available only from the 80’s.

female human capital, we generate the ratio between the number of females aged more than 25 years old with tertiary completed education and females with no schooling.

An indicator of democracy is also considered and estimates are in line with the literature. Indicators of democracy measure the general openness of political institutions and combine several aspects such as: the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders; the existence of institutionalized constraints to the exercise of power by the executive power; and the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation. In our case, we consider a composite index called Polity2 that ranges from -10 to + 10, with 10 corresponding to the most democratic set of institutions. The effect of democracy on women's political representation, may be ambiguous. On the one hand, it may be easy for women to be elected to a powerless parliament or under an authoritarian system, built on egalitarian ideologies like the ex-communist countries where female parliamentary participation was high. On the other hand, more democratic countries may favor women's political participation. Polity II is positive and in general slightly significant, indicating that the average level of democracy enhances female political conditions.

Finally, the election variable is positive and significant as well as the proportional nature of the electoral system. It is recognized in the political science literature that proportional systems, rather than majority ones, help women to access the political system (e.g., Paxton et al., 2010, Jalalzai and Krook, 2010, McAllister and Studlar, 2002). Proportional systems make use of multi-member districts, which implies that more than one candidate can be elected from a particular district, and often have closed party lists, which means that citizens vote for the party lists of candidates rather than individual candidates. Under a list system, parties may feel compelled to nominate women in order to balance the list. Moreover, the higher the district magnitude the greater the probability for a woman to be nominated, if the political party is expecting to win several seats in the district.³¹

As the measure of female parliamentary share is highly persistent (new elections occur on average every five years, therefore it may happen that some values of parliamentary participation do not change year-by-year) we also control for its second lag either in the OLS and in the SYS-GMM specification (column (2) and (4) respectively). The second lag is not statistically significant but what matters is that the sign and the significance of the other covariates do not change.

From columns (5)-(8), other potential traditional explanatory variables are added to the baseline specification. In particular, we consider the CEDAW (Convention on the Elimination of all Forms of Discrimination against Women) ratification, GDP per capita (in log), female population (in log) and a trade variable. The CEDAW ratification implies that countries, which ratified the convention, should meet the minimum standards to reach equal women rights. Moreover, the countries involved should regularly provide the measures they have taken to reach this goal. As in True and Mintrom (2001), CEDAW is not significant (column 5) and this can be due to two reasons. First, some countries decide to ratify just because of international visibility with little intention to change gender relation, secondly some countries ratify later as a consequence of lack of burocratic conditions. In column 6, we control for (the logarithm

³¹Of course, concerning electoral system's characteristics, the introduction of an electoral gender quota may encourage greater representation of women. Unfortunately, we cannot directly control for quotas, as data are available only for the most recent election years (see the Global Database of Quotas for Women at <http://www.quotaproject.org/> by the International Institute for Democracy and Electoral Assistance-IDEA). The rapid diffusion of gender quota across countries has indeed occurred within the last 15 years. The inclusion of time dummies in our specification should capture the general increase in female representation due to the contemporaneous introduction of gender quotas in political systems. In addition, as many studies find that the greatest impact of quotas occur under electoral systems with closed list and higher district magnitude (see Jalalzai and Krook, 2008), controlling for the proportional nature of electoral system means also indirectly controlling for the implementation of gender quotas.

of) GDP per capita because development itself matters for women (Burn, 2005).³² GDP per capita is not statistically significant and this can be due to high correlation with the level of human capital. The same holds for female population, presumably highly correlated with total population in the migration rate. In column 7, we finally control for a trade index, because economic integration may also convey cultural norms supporting women’s political participation. The trade norm is built in a symmetric way as our’s, constructing a weighted average of the difference in female parliamentary share with trading partners where the weights are given by the share of trade between the country of origin and the trading partner over total trade (e.g., $\sum_j \left[\frac{trade_{ij,t-1}}{Trade_{i,t-1}} \times (seats_{j,t-1}^F - seats_{i,t-1}^F) \right]$). Our estimated coefficient is negative, meaning that trade is a measure of openness that goes in opposite direction with respect to migration.³³

In the last column, we include all the explanatory variables (except for the second lagged value of female parliamentary share). Our main results do not change.

In all the empirical specifications just mentioned, we also include country and time fixed effects, therefore the results are robust to all country-specific time-invariant characteristics which may influence female political representation. They encounter religion³⁴, colonial history³⁵ and many other unobservable characteristics.

In the SYS-GMM estimations, the instruments used in the first differentiated equation are the same as in Arellano-Bond (1991), but the instruments for the equation in level are the lagged differences of the corresponding variables.³⁶ In our specifications, the lagged dependent variable is instrumented using from its own fifth to sixth lag. The reason is straightforward. As on average new elections occur every five years, the fifth and the sixth lags allow us to consider as instruments the parliamentary shares of previous elections (in other terms, this allows us to take into account the political change of each legislature). Our variable of interest, i.e. the lagged index of female parliamentary share, and the lagged index in trading partners are treated as endogenous and instrumented using from their own second to sixth lags. The legal election variable, the proportional system dummy and the CEDAW variable are considered as exogenous. All the other explanatory variables are considered as pre-determined and instrumented using from their own first to sixth lags. All the instruments are collapsed, in order to avoid instrument proliferation due to the large number of time periods.³⁷

We test the validity of moments conditions by using the test of overidentifying restrictions proposed by Sargan and Hansen and by testing the null hypothesis that the error term is not second order serially correlated. Furthermore, we test the validity of the additional moment conditions associated with the level equation using the Hansen difference test for all GMM instruments. The tests confirm the validity of our instruments.³⁸

³²As explained in Bertocchi (2011), the logarithm of GDP per capita can be also considered as a proxy for the gender wage gap, given the strong negative correlation between the two measures.

³³This result has to be taken with caution. We have indeed to notice that the trade dataset has much more missing values than the migration one. It could be also the case that when considering trade, the ‘negative’ transfer is prevailing. In unreported robustness checks, we first control for the general openness of the country, using trade/gdp (lagged) as control variable and then for the updated version of Sachs and Warner’s trade policy openness indicator of Wacziarg and Welch (2008). In both cases, the openness indicator is positive but not statistically significant. Finally, plugging all the trade controls together, we do not find any different results.

³⁴Conservative religious ideologies usually prevent women from public activities. The Islamic law, for example, is typically acknowledged for its limited women’s role in public; or catholicism which has been historically in opposition to women’s enfranchisement, a first step in the achievement of equal political rights (Bertocchi, 2011).

³⁵Since a country with a history of colonialism may exhibit slower incorporation of women into the political realm than countries never colonized (Paxton et al., 2006).

³⁶In order to use these additional instruments, a moment condition for the level equation, which implies that first

Table 1: Estimations without selection

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Fem. parliamentary share (lagged)	0.994*** (0.0172)	0.989*** (0.0177)	0.958*** (0.0796)	0.966*** (0.194)	0.959*** (0.0805)	0.779*** (0.122)	0.861*** (0.0971)	0.946*** (0.0686)	0.640*** (0.137)
Fem. parl. share (lagged twice)		0.00501 (0.0142)		-0.0110 (0.211)					
Index of fem. parl. share (lagged)	0.795** (0.327)	0.787** (0.328)	2.623*** (0.421)	2.665*** (0.434)	2.644*** (0.433)	1.976*** (0.611)	2.640*** (0.681)	2.585*** (0.489)	1.684** (0.654)
Skill ratio for females (lagged)	0.00603*** (0.00207)	0.00598*** (0.00208)	0.0142*** (0.00384)	0.0140*** (0.00397)	0.0141*** (0.00383)	0.0137* (0.00816)	0.0194*** (0.00511)	0.0157*** (0.00384)	0.0210** (0.00815)
Democracy Index	0.0462** (0.0207)	0.0487** (0.0222)	0.239* (0.141)	0.315 (0.240)	0.244* (0.144)	0.187 (0.136)	0.295 (0.179)	0.191* (0.109)	0.147 (0.156)
Legal election	0.767*** (0.214)	0.768*** (0.218)	0.660*** (0.199)	0.648*** (0.191)	0.656*** (0.198)	0.435 (0.281)	0.652*** (0.209)	0.610** (0.237)	0.478* (0.275)
Proportional electoral system	0.813*** (0.314)	0.831*** (0.321)	0.972*** (0.314)	1.073*** (0.380)	0.984*** (0.314)	1.244*** (0.419)	0.988*** (0.342)	1.044*** (0.390)	1.138** (0.490)
CEDAW					-0.458 (0.442)				0.566 (1.204)
GDP in log (lagged)						1.012 (0.918)			1.007* (0.538)
Norm in trading partner (lagged)							-0.00627** (0.00305)		-0.00761 (0.00530)
Female population in log (lagged)								0.340 (1.137)	-0.546 (1.710)
Country fixed effects			yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	1774	1711	1774	1711	1774	1746	1629	1774	1604
R^2	0.939	0.939							
Number of Groups			87	86	87	87	84	87	84
Number of Instruments			65	64	66	72	69	72	84
Arellano-Bond test for AR(2)			0.861	0.945	0.825	0.962	0.861	0.886	0.613
Hansen test p-value			0.288	0.565	0.272	0.304	0.144	0.261	0.516
Difference Hansen test p-value			0.496	0.246	0.495	0.346	0.12	0.254	0.385

* Significant at the 10% level ** 5% level *** 1% level

Robust standard errors in parentheses. Column (1) and (2) OLS estimations. Column (3) and onwards SYS GMM estimations.

6.2 Results accounting for selection

Table 2 reports estimation results after having controlled for selection. Columns (1) and (2) report estimates from a standard two-step Heckman selection model (in which the inverse Mills ratio is derived from a probit estimation in the full sample, and is then added into the model estimated by OLS in the selected sample) applied to our baseline specification (both with and without the second lag of female parliamentary share). Then, in columns (3) and (4), the same specification is estimated applying the Heckman selection strategy to a SYS-GMM as described in sub-section 5.2.

In the probit model, we consider as regressors the index for democracy (lagged once), the skill ratio for females (lagged twice) and the number of natural disasters which occur in the country.³⁹ The first two regressors are internal instruments⁴⁰ used in the SYS-GMM estimation, not correlated with the female parliamentary share, but presumably correlated with the probability for a woman to be eligible and/or to have parliamentary session in the country. The number of natural disasters is used as external instrument. While we do not see any direct correlation with female parliamentary share, natural disasters are likely to affect the probability for a women to be eligible or, in a broader sense, the probability to have parliamentary session in the country. Natural disasters could indeed affect the likelihood of radical political revolutions.⁴¹ They could increase the risk of violent civil conflict (Nel and Righarts, 2008), and foster political changes and/or democratization (see Axelrad, 2011). As countries with poor and less democratic institutions usually suffer more from natural disasters, being less able to manage the situation (Kahn, 2005), natural events can be crucial in showing the weakness of bad governments and be therefore a key factor for catalyzing political change in an authoritarian regime (Axelrad, 2011). Indeed, when natural events lead to transitory negative income shocks, they cause autocratic regimes make democratic concessions in order to avoid costly repression (Bruckner and Ciccone, 2011).⁴² In our probit regressions, the frequency of natural disasters statistically increases the probability for a women to be eligible and/or to have a parliament in the country.

After having estimated the Probit model, the inverse Mills ratios have been added into the baseline model as additional regressors. They are negative and statistically significant in all the estimated specifications.⁴³

After having controlled for sample selection, we still find that total migration is a positive and significant channel through which female parliamentary share in the country of origin raises. The additional explanatory variables still have the expected sign. The proxy for female human capital variable is positive

differences of pre-determined explanatory variables are orthogonal to the country fixed effects, must be satisfied.

³⁷It has to be noticed that results are robust to different instrument sets regarding the length of lags used.

³⁸A particular concern related to this method is the risk of instrument proliferation. Indeed, if on the one hand the use of the entire set of instruments in a GMM context gives significant efficiency gains, on the other hand, a large collection of instruments could overfit endogenous variables as well as weaken the Hansen test of the instruments' joint validity. The instrument proliferation problem is particularly important in small samples, but unfortunately there is no formal test to detect it, even if a possible rule of thumb is to keep the number of instruments lower than or equal to the number of groups.

³⁹We consider the logarithm of the number of natural disaster plus 1, in order not to loose observations for which natural disasters are zeros.

⁴⁰See Wooldridge (2002).

⁴¹It has been argued, for instance, that the 1972's earthquake which devastated Managua in Nicaragua played a role in the fall of Somoza dictatorship; or that the 1978's earthquake in Iran caused the revolution that occurred just after (see Cavallo et al., 2010).

⁴²Bruckner and Ciccone (2011) consider data on rainfall shocks in Sub-Sahara African countries to empirically test the effect of transitory economic shocks on democratic transition.

⁴³In Table 2 only the pooled probit is reported. In SYS-GMM estimations, the inverse Mills ratios are obtained from a year-by-year model of the probability for a women to be eligible. Year-by-year estimations are not reported, but available upon request.

and significant at 1%. The election variable is positive and significant as well as the proportional nature of the electoral system. Only the indicator of democracy now turns out to be negative, and not statistically significant in the GMM estimations. The AR(2) test, the Hansen test and the difference Hansen test confirm the validity of the instruments used in the SYS-GMM regressions.

Table 2: Heckman Estimation

	(1)	(2)	(3)	(4)
	Fem. parl. share	Eligibility	Fem. parl. share	Eligibility
Female parliamentary share (lagged)	1.001*** (0.00846)		0.997*** (0.0235)	
Female parliamentary share (lagged twice)			0.00515 (0.0231)	
Index of female parliamentary share (lagged)	0.773*** (0.112)		0.769*** (0.113)	
Skill ratio for females (lagged)	0.00642*** (0.00172)		0.00633*** (0.00174)	
Democracy index	-0.0755*** (0.0244)		-0.0796*** (0.0252)	
Legal election	0.793*** (0.124)		0.812*** (0.125)	
Proportional electoral system	0.884*** (0.188)		0.863*** (0.189)	
Inv. Mills ratio	-1.747*** (0.247)		-1.783*** (0.249)	
Country fixed effects				
Year fixed effects	yes		yes	
Natural disasters (log(1+))		0.327*** (0.0836)		0.337*** (0.0839)
Democracy index (lagged)		0.205*** (0.00718)		0.206*** (0.00724)
Skill ratio for females (lagged twice)		-0.00188 (0.00279)		-0.00176 (0.00284)
Year fixed effects		yes		yes
Censored Observations	677		677	
(Uncensored) Observations	1732		1703	
Number of Groups			86	85
Number of Instruments			65	65
Arellano-Bond test for AR(2)			0.914	0.278
Hansen test p-value			0.242	0.676
Difference Hansen test p-value			0.570	0.432

* Significant at the 10% level ** 5% level *** 1% level

Robust standard errors in parentheses. Column (1) and (2) Heckit estimations. Column (3) and (4) SYS GMM estimations with selection. Mills derived from year-by-year Probit.

6.3 Robustness tests

6.3.1 Heterogeneity in sample

In order to test out the robustness of our empirical results, we estimate our baseline specification (under selection and with and without the second lag of female parliamentary share) in selected subsamples. First of all, we exclude socialist countries (i.e. countries which belonged to the Iron Curtain) to be sure that their presence does not boost estimation results. In the former Communist Bloc, indeed, the proportion of women in parliaments was very high, given the fact that these authoritarian systems were built on egalitarian ideologies. After the fall of Communism, as parliaments in post-communist countries gained real power, the percentage of female seats sharply fell. Table 3 shows that our main results are preserved when excluding socialist countries. Another concern refers to the presence of Sub-Saharan Africa countries. Looking at the Global Gender Gap Index 2010 (Hausmann et al., 2010), which considers how equitably the available income, resources and opportunities are distributed between women and men, Sub-Saharan African countries have the lowest value after Mena countries. Since we do not have Mena countries in our initial sample, we exclude Sub-Saharan African countries. Our results are preserved. The last concern is whether Muslim countries, where women are sometimes prevented from public activities, may affect our results. Countries with more than 80 percent of Muslim population are excluded from our sample.⁴⁴ Again, there is no evidence that heterogeneity plays any role in explaining our results.

6.3.2 5-year data

In Table 4 we test for the robustness of our results, considering a 5-year panel data set instead of yearly data. The reason is threefold. The persistence in the political data is reduced, as the values considered better proxy the elections in the previous legislature. Secondly, five year data allow us to deal with less persistent human capital and migration data. Thirdly, a longer period for the occurrence of a ‘transfer of norm’ mechanism is taken into account. However, there is a drawback in this procedure which consists in losing some information regarding the annual political evolution in each country. Column (1) and column (2) show respectively OLS and SYS-GMM results from our baseline specification without accounting for selection. In SYS-GMM estimation the lagged dependent, human capital and democracy are instrumented with their own first to second lags, while for the norm variable its own second lag is used. All the other variables are considered as exogenous.⁴⁵ In column (3), (4), (5) we account for selection using respectively the Heckit and SYS-GMM estimations.⁴⁶ Across different estimation methods, we show how our main results are preserved.

⁴⁴We exclude from the sample: Bangladesh, Mali, Niger, Pakistan, Turkey.

⁴⁵Here, the matrix of instruments is not collapsed, as in the standard SYS-GMM estimator.

⁴⁶For robustness in column (5) the matrix of instruments is collapsed.

Table 3: Sample heterogeneity

	(1)	(2)	(3)	(4)	(5)	(6)
	no Socialist countries		no SSA countries		no Muslim countries	
Female parliamentary share (lagged)	1.013*** (0.0519)	0.543** (0.264)	0.983*** (0.0751)	0.732*** (0.141)	0.996*** (0.0680)	0.877*** (0.136)
Female parliamentary share (lagged twice)		0.478 (0.300)		0.277* (0.158)		0.132 (0.138)
Index of female parliamentary share (lagged)	2.444*** (0.222)	2.458*** (0.235)	2.207*** (0.376)	2.270*** (0.373)	2.256*** (0.384)	2.302*** (0.376)
Skill ratio for females (lagged)	0.0117*** (0.00244)	0.0124*** (0.00248)	0.0142*** (0.00353)	0.0145*** (0.00342)	0.0137*** (0.00310)	0.0139*** (0.00304)
Democracy index	-0.0238 (0.0793)	-0.0594 (0.107)	-0.0728 (0.104)	-0.143 (0.140)	-0.131 (0.131)	-0.162 (0.160)
Legal election	0.967*** (0.172)	0.742*** (0.154)	0.668*** (0.194)	0.603*** (0.153)	0.797*** (0.195)	0.756*** (0.170)
Proportional electoral system	0.660** (0.295)	0.534* (0.292)	0.946*** (0.300)	0.832*** (0.309)	0.925*** (0.314)	0.888*** (0.330)
Inv. Mills ratio	-1.390 (1.444)	-1.702 (1.674)	-5.445** (2.733)	-6.188** (3.065)	-6.616** (2.956)	-6.980** (3.203)
Country fixed effects	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
Observations	1599	1576	1638	1616	1666	1641
Number of Groups	69	68	73	73	81	80
Number of Instruments	65	65	65	65	65	65
Arellano-Bond test for AR(2)	0.807	0.136	0.984	0.103	0.990	0.363
Hansen test p-value	0.386	0.797	0.259	0.793	0.343	0.722
Difference Hansen test p-value	0.598	0.978	0.728	0.849	0.500	0.505

* Significant at the 10% level ** 5% level *** 1% level

Robust standard errors in parentheses. Different samples SYS GMM estimations with selection. Mills derived from year-by-year Probit.

Table 4: 5-year panel

	(1)	(2)	(3)	(4)	(5)	
	Fem. parl. share	Fem. parl. share	Fem. parl. share	Eligibility	Fem. parl. share	Fem. parl. share
Female parliamentary share (lagged)	0.884*** (0.0740)	0.905*** (0.0758)	0.908*** (0.0394)		0.960*** (0.0543)	1.062*** (0.114)
Index of female parliamentary share (lagged)	1.471*** (0.379)	1.623*** (0.341)	1.362*** (0.379)		1.523*** (0.313)	2.388*** (0.726)
Skill ratio for females (lagged)	0.0229*** (0.00550)	0.0222*** (0.00551)	0.0215** (0.00857)		0.0179*** (0.00464)	0.0167*** (0.00644)
Democracy index	0.325** (0.135)	0.364 (0.224)	0.0679 (0.115)		-0.0440 (0.246)	-0.0676 (1.055)
Legal election	-0.974 (0.723)	-0.985 (0.751)	-0.846 (0.615)		-0.776 (0.699)	-0.786 (0.732)
Proportional electoral system	3.709*** (1.157)	4.340*** (1.111)	3.907*** (1.002)		4.693*** (1.112)	4.535*** (1.075)
Inv. Mills ratio			-4.588*** (0.953)		-17.86*** (5.885)	-18.85*** (7.207)
Country fixed effects		yes			yes	yes
Year fixed effects	yes	yes	yes		yes	yes
Natural disasters (log(1+))				0.301** (0.151)		
Democracy index (lagged)				0.173*** (0.0158)		
Skill ratio for females (lagged twice)				-0.000720 (0.00721)		
Year fixed effects				yes		
Censored Observations			109			
(Uncensored) Observations	351	351	319		319	319
R-squared	0.757					
Number of Groups		84			83	83
Number of Instruments		84			79	21
Arellano-Bond test for AR(2)		0.379			0.257	0.281
Hansen test p-value		0.646			0.674	0.228
Difference Hansen test p-value		0.927			0.862	0.138

* Significant at the 10% level ** 5% level *** 1% level

Robust standard errors in parentheses. Column (1) OLS estimation. Column (2) SYS GMM estimations. Column (3) Heckit estimation. Column (4) SYS-GMM estimation with selection. Mills derived from year-by-year Probit. In column (5) SYS-GMM estimation with collapsed instruments.

6.4 Counterfactual analysis

From standard analysis and robustness checks the impact of migration in transferring political norms appears to be statistically relevant. In order to further investigate and assess the importance of this effect at country-specific level, we simulate the counterfactual female parliamentary share obtained in two extreme cases. We consider first a simulated scenario in which migration is set equal to 0 (i.e. no transfers of norms occur). Secondly, we consider another scenario where we assume that all migrants are sent to the destination country with the highest female parliamentary share in our sample (Sweden). The latter case allows us to assess the possible maximum effect of the norm in transferring political values.

To set up the two environments, we start from our empirical model (1), and we consider the estimated coefficients in the baseline regression when we account for selection in SYS-GMM regressions. In particular, we focus on the short run coefficients obtained in the estimations with yearly data.

As we outlined in subsection 6.3.2, both 1-year and 5 years panel data regressions are imperfect. When using 5-year data, persistency is reduced, a longer period for the occurrence of a ‘transfer of norm’ mechanism is considered, and the political data better proxy legislatures. However, a 5-year panel data set does not take into account important information regarding the political evolution in each country. For example, many countries, and above all developing countries, are characterized by political instability which may translate in more than one election within five years. At the same time, when taking 5-year data, we are likely to miss important information concerning the occurrence of coup d’etat, false election, and all the other cases proxied through the missing values we generated if parliamentary sessions are not observed. Yearly data, instead, allows us to consider the livelong political evolution of each country, and that’s the reason why we prefer estimations using yearly data than 5-year data. However, since both the estimations (with yearly and five year data) have some shortcomings in their dynamics, we prefer to focus our counterfactual analysis on short-run coefficients instead of long-run predictions.

Let us set up the first counterfactual environment considering the baseline empirical model (1):

$$seats_{i,t}^F = \alpha seats_{i,t-1}^F + \beta * indexseats_{i,t-1}^F + \sum_{i=1}^n \rho_i R_{i,t} + \mu_i + \varphi_t + \epsilon_{i,t}$$

where $indexseats_{i,t-1}^F = \sum_j \left[\frac{mig_{ij,t-1}}{pop_{i,t-1}} \times (seats_{j,t-1}^F - seats_{i,t-1}^F) \right]$

Assuming no migration, we have:

$$\widetilde{seats}_{i,t}^F = \alpha seats_{i,t-1}^F + \beta * \widetilde{indexseats}_{i,t-1}^F + \sum_{i=1}^n \rho_i R_{i,t} + \mu_i + \varphi_t + \epsilon_{i,t} \quad (2)$$

where $\widetilde{indexseats}_{i,t-1}^F = 0$. Taking the difference between (1) and (2) gives us the change in the female parliamentary seats:

$$\Delta seats_{i,t}^F \equiv \widetilde{seats}_{i,t}^F - seats_{i,t}^F = -\beta * indexseats_{i,t-1}^F \quad (3)$$

which can be re-written as:

$$\widetilde{seats}_{i,t}^F = seats_{i,t}^F - \beta * indexseats_{i,t-1}^F \quad (4)$$

For simplicity, we consider data for the year 2000 and $\beta = 2.204$ and we construct the counterfactual values for female parliamentary seats ($\widetilde{seats}_{i,t}^F$) in each country in the case of no migration (i.e. no transfers of norms). The dashed line in figure 6.4 shows the counterfactual value for female parliamentary seats in the case of no migration. As we can see from the graph, for some countries the counterfactual value for female parliamentary participation in 2000 is lower than the observed value in the same year of interest. This is especially true for countries with lower female political empowerment, in particular developing countries, for which migration is shown to be particularly relevant in improving women conditions. For other countries with a high share of females in parliament, like Sweden, Denmark, the Netherlands, instead, the counterfactual value is higher than the observed one, meaning that migration may decrease in some cases female political empowerment.⁴⁷

In a second and symmetric counterfactual experiment, we compute the maximum effect the transfer of norm mechanism could have. We assume that all migrants are sent to the country with the most feminized parliament (i.e. all migrants are sent to Sweden which has 42.7 percent of female parliamentary seats in 2000). As the dotted line in Figure 6.4 shows, all the countries have a higher share of female parliamentary seats, with an average increase of 4.35 percentage points.⁴⁸

⁴⁷To give some numerical examples, the countries that ‘lose’ the most without migration are Cyprus, Albania, Armenia, where no transfers of norm/migration will cause female parliamentary seats to go from a positive value to 0 (we set it to 0, as for the simulations it became negative). For Turkey, instead, female parliamentary seats would decrease from 4.2 to 1.84 (i.e. a decrease of more than 50 percent). For countries like Namibia or Central African Republic, there are almost no changes (female parliamentary share would change respectively respectively from 25 to 24.988, and from 7.3 to 7.297). On the other hand, the countries which would gain more from a ‘no transfer of norm’ environment, are Sweden, with an increase in female parliamentary seats from 42.7 to 44.23; the Netherlands from 36 to 37.67; but also New Zealand (from 29.2 to 31.45) and Guyana (from 18.5 to 21.51).

⁴⁸The maximum effect would occur for Guyana with an increase of 27.91 percentage points (from 18.5 to 46.41), and the minimum effect pertains to Mongolia from 10.5 to 10.67.

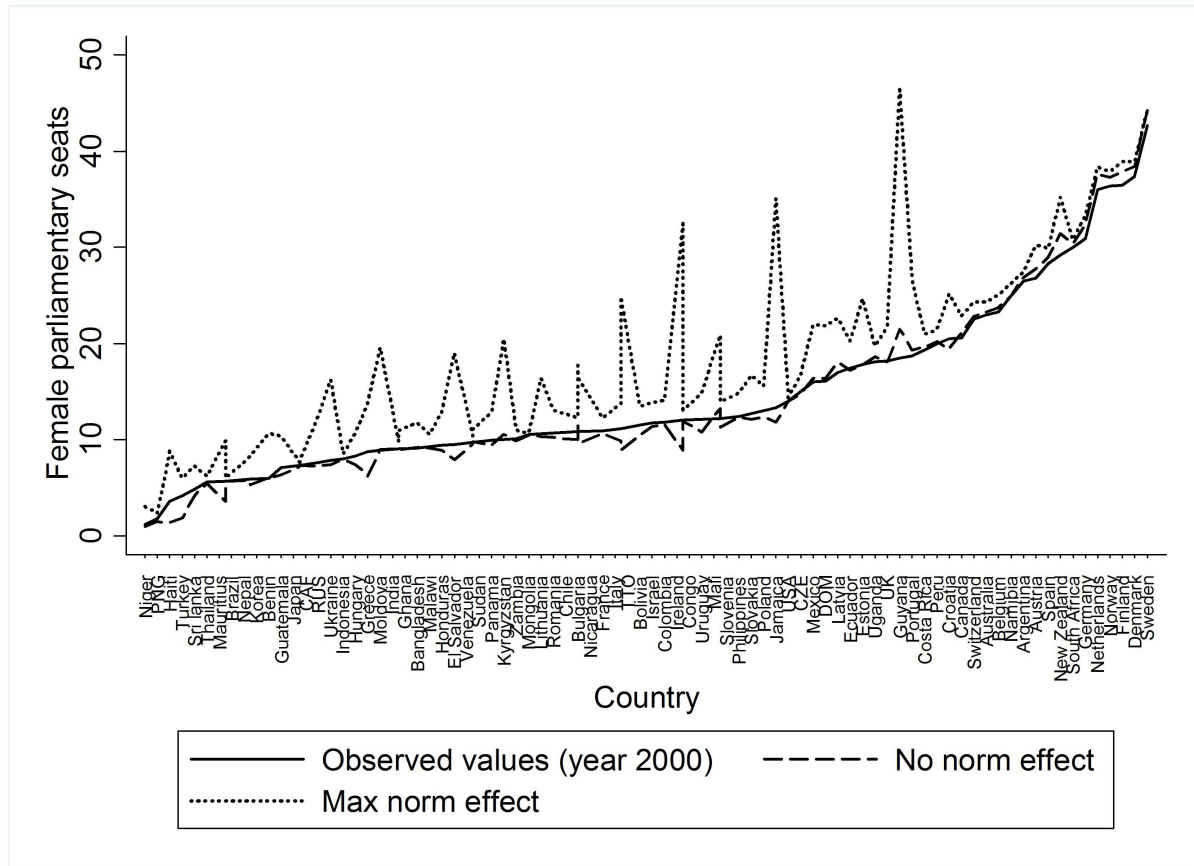


Figure 1: Predicting the female parliamentary shares using two counterfactuals

7 Conclusion

Women make up more than half of the population in the World. Female electorate have globally grown up in the last two decades but yet continue to be under-represented in political decision-making bodies at all levels. The very recent World Development Report 2012 states that gender equality matters for development enhancing productivity, creating a better environment for the next generation and making institutions more representative. In addition to that, there is evidence (Clots-Figueras, 2011; Thomas, 1991) that women in politics improve development outcomes for women themselves, children and families. The World Bank (2011) wonders whether ‘globalization can help’ in fostering gender equality. In this paper we have partly answered to this providing some evidence on how a globalized outcome such as international migration has contributed to the increase of female parliamentary participation from 1960 to 2000. In other terms, international migrants have acted as ‘informational’ channels able to transfer foreign values, create favorable opportunities, reshape attitudes and create new norms about women in the origin country.

Following the brand new strand of literature on ‘transfers of norms’ (Spilimbergo, 2009; Beine et al.,

2008 and Fargues, 2007), we have applied the same mechanism to female political participation. To this end, we estimated a dynamic model in which female access to Parliament depends on traditional covariates plus international migration. The empirics contains three important insights. First of all, the norm (through which foreign female parliamentary participation is propagated at origin) has been constructed in such a way that the origin country takes advantage from the political environment at destination just if the female political conditions at destination are better than those at origin. Secondly, in order to control for selection due to women's political eligibility, we have estimated our model using an Heckman selection strategy applied to dynamic panel data (Jimenez-Martin, 2006 and Jimenez-Martin, Labeaga and Rochina-Barrachina, 2009, and Wooldridge, 2002). Thirdly, in the first step of the Heckman procedure, an external instrument has been used exploiting the emerging works on natural disasters and political outcomes (Brückner and Ciccone, 2011).

Results, which are robust to different time and geopolitical specifications, show that female political emancipation can be accounted as another migration non economic externality, suggesting that the launch of domestic public actions can be also supported by the role of active national people from abroad.

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8 References

- Arellano, M., and S. R. Bond, 1991. Some Specification Tests for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *Review of Economic Studies*, 58(2), 277-298.
- Arellano, M., and O. Bover, 1995. Another Look at the Instrumental Variable Estimation of error-Components Models. *Journal of Econometrics*, 68(1), 29-51.
- Armigeon, K., and R. Careja, 2008. Institutional change and stability in postcommunist countries, 1990–2002. *European Journal of Political Research*, 47(4), 436-466.
- Axelrad, E., 2011. Disaster Entrepreneurs: Policy Entrepreneurs and Crisis Exploitation as Catalysts for Political Change in Authoritarian Countries. Paper presented at the AGS conference 2011, <http://www.theglobaldiscussion.org/ags-conference>.
- Baltagi, B.H., 2008. *Econometric Analysis of Panel Data*. New York: John Wiley and Sons, Ltd.
- Barro, R., and J. Lee (2010). A New Data Set of Educational Attainment in the World, 1950-2010. NBER Working Paper No. 15902.
- Batista, C., and P.C. Vicente, 2011. Do Migrants Improve Governance at Home? Evidence from a Voting Experiment. *World bank Economic Review*, 25(1), 77-104.
- Beine, M., Docquier, F., and M. Schiff, 2008. International Migration, Transfers of Norms and Home Country Fertility. UCL Discussion Paper 2008-43.
- Bertocchi, G., 2011. The enfranchisement of women and the welfare state. *European Economic Review*, 55(4), 535–553.
- Besley, T., and A. Case, 2000. Unnatural Experiments? Estimating the Incidence of Endogenous Policies. *Economic Journal*, 110(467), 672-694.
- Blundell, R., and S. Bond, 1998. Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics*, 87(1), 115-43.
- Burn, S.N., 2005. *Women across Culture*. New York: 2nd edition, McGraw-Hill.
- Bond, S., Hoeffler, A., and J. Temple, 2001. GMM Estimation of Empirical Growth Models. CEPR Discussion Paper No. 3048, London: CEPR.
- Boyd, M., 1989. Family and Personal Networks in International Migration: Recent Developments and New Agendas. *International Migration Review*, 23(3), 638-670.

- Brückner, M., and A. Ciccone, 2011. Rain and the Democratic Window of Opportunity. *Econometrica*, 79(3), 923–947.
- Cavallo, E., Galiani, S., Noy, I., and J. Pantano, 2010. Catastrophic Natural Disasters and Economic Growth. RES Working Papers 4671, Inter-American Development Bank, Research Department.
- Cingranelli, D. L., and D. L. Richards, 2009. Cingranelli and Richards Human Rights Dataset.
- Clots-Figueras, I., 2011. Women in politics. Evidence from the Indian States. *Journal of Public Economics*, 95(7-8), 664-690.
- Correa, M. J., 1998. Different Paths: Gender, Immigration and Political Participation. *International Migration Review*, 32(2), 326-349.
- De la Croix, D., and M. Vander Donckt, 2010. Would Empowering Women Initiate the Demographic Transition in Least-Developed Countries?. *Journal of Human Capital*, 4(2), 85-129.
- Docquier, F., Lodigiani, E., Rapoport, H., and M. Schiff, 2011. Emigration and democracy. Policy Research Working Paper Series 5557, The World Bank.
- Doepke, M., and M. Tertilt, 2009. Women’s liberation: What’s in it for men?. *Quarterly Journal of Economics*, 124(4), 1541-1591.
- Doepke, M., and M. Tertilt 2011. Does Female Empowerment Promote Economic Development?. IZA Discussion Paper, N. 5637.
- Dynan, K. E., and C. E. Rouse, 1997. The Underrepresentation of Women in Economics: A Study of Undergraduate Economics Students. *The Journal of Economic Education*, 28(4), 350-368.
- Erickson, J., and C. Faria, 2011. We want empowerment for our women: transnational feminism, neoliberal citizenship, and the gendering of women’s political subjectivity in post-conflict South Sudan. *Journal of Women in Culture and Society*, 36(3), 627-652.
- Fargues, Ph., 2007. The demographic benefit of international migration: a hypothesis and its application to Middle Eastern and North African countries, in: Ozden, C. and M. Schiff (eds), *International migration, economic development and policy*, World Bank and Palgrave Macmillan: Washington DC.
- Fernandez, R., and A. Fogli, 2006. Fertility: The Role of Culture and Family Experience. *Journal of the European Economic Association*, 4(2-3), 552-561.
- Feenstra, R. C., Lipsey, R. E., Deng, H., Ma, A. C., and H. Mo, 2004. World Trade Flows: 1962-2000. NBER Working Paper no. 11040.

- Guarnizo, L.E., Portes, A., and W. Haller, 2003. Assimilation and Transnationalism: Determinants of Transnational Political Action among Contemporary Migrants. *American Journal of Sociology*, 108(6), 1211-48.
- Gibson, J., McKenzie, D., and S. Stillman, 2009. The Importance of Selectivity and Duration-Dependent Heterogeneity When Estimating the Impact of Emigration on Incomes and Poverty in Sending Areas: Evidence from the Samoan Quota Migration Lottery. Work in progress.
- Gibson, J., McKenzie, D., and S. Stillman, 2010. How Important is Selection? Experimental vs Non Experimental Measures of the Income Gains from Migration. *Journal of the European Economic Association*, 8(4), 913-945.
- Golder, M., 2005. Democratic Electoral Systems around the World. *Electoral Studies*, 24(1), 103-121.
- Gordon, Milton M., 1964. *Assimilation in American Life: The Role of Race, Religion, and National Origins*. New York: Oxford University Press.
- Hausmann, R., Tyson, L.D., and S. Zahidi, 2010. *The Global Gender Gap Report 2010*. World Economic Forum 2010, Geneva, Switzerland.
- Hugo, G.J., 2000. Migration and Women's Empowerment. In *Women's empowerment and demographic processes - Moving beyond Cairo*, edited by H.B.Presser and G. Sen. International Studies on Demography. Oxford University Press.
- Ionescu, D., 2005. Engaging Diasporas as Development Partners for Home and Destination Countries: Challenges for Policymakers. Paper presented at the Workshop on the National Strategy for Migration, 21-22 February 2005, Tirana.
- Iyer, L., Mani, A., Mishra, P., and P.B. Topalova, 2011. The Power of Political Voice: Women's Political Representation and Crime in India. Harvard Business School BGIE Unit Working Paper No. 11-092.
- Jalalzai, F., and M. L. Krook, 2010). Beyond Hillary and Benazir: Women's Political Leadership Worldwide. *International Political Science Review*, 31(1), 5-23.
- Jimenez-Martin, S., 2006. Strike Outcomes and Wage Settlements in Spain. *Labour*, 20(4), 673-698.
- Jimenez-Martin, S., Labeaga, J.M., and M. E. Rochina-Barrachina, 2009. Some estimators for dynamic panel data sample selection and switching model. Work in progress.
- Jimenez-Martin, S., and J. Garcia, 2010. Initial offers and outcomes in wage bargaining: who wins?. *Empirical Economics*, 39(3), 815-846.
- Kahn, M. E., 2005. The Death Toll from Natural Disasters: The Role of Income, Geography and Institutions, *The Review of Economics and Statistics*, 87(2), 271-284.

- Kapur, D., 2010. *Diaspora Development and Democracy. The Domestic Impact of International Migration from India*. Princeton, N.J.: Princeton University Press.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and R. Vishny, 1999. The Quality of Government. *Journal of Law, Economics and Organization*, 15(1), 222-279.
- Manski, C. F., 1993. Identification of Endogenous Social Effects: The Reflection Problem. *Review of Economic Studies* 60(3), 531-42.
- McAllister, I., and T. Studlar Donley, 2002. Electoral System and Women's Representation: A Long-Term Perspective. *Representation*, 39(1), 3-14.
- Nel, P., and M. Righarts, 2008. Natural Disasters and the Risk of Violent Civil Conflict. *International Studies Quarterly* 52(1), 159-185.
- Neumayer, E., and I. De Soysa, 2011. Globalization and the Empowerment of Women: an Analysis of Spatial Dependence via Trade and Foreign Direct Investment. *World Development*, 39(7), 1065-1075.
- Nickell, S., 1981. Biases in dynamic models with fixed-effects. *Econometrica*, 49(6), 1417-1426.
- Omar Mahmoud, T., Rapoport, H., Steinmayr, A., and C. Trebesch, 2011. Do migrants remit political change? Evidence from Moldova. *Work in Progress*, The Kiel Institute for the World Economy.
- Ozden, C., Parsons, C., Schiff, M., and T. Walmsley, 2011. Where on Earth is Everybody? The Evolution of Global Bilateral Migration 1960-2000. *World Bank Economic Review*, 25(1), 12-56.
- Paxton, P., and S. Kunovich, 2003. Women's Political Representation: The Importance of Ideology. *Social Forces* 82(1), 87-114.
- Paxton, P., Hughes, M. M., and J. L. Green, 2006. The International Women's Movement and Women's Political Representation, 1893-2003. *American Sociological Review*, 71(6), 898-920.
- Paxton, P., Hughes, M. M., and M.A. Painter, 2010. Growth in women's political representation: A longitudinal exploration of democracy, electoral system and gender quotas. *European Journal of Political Research*, 49(1), 25-52.
- Perez-Armendariz, C., and D. Crow, 2010. Do Migrants Remit Democracy? International Migration, Political Beliefs, and Behavior in Mexico. *Comparative Political Studies*, 43(1), 119-148.
- Roodman, D., 2009. A Note on the Theme of Too Many Instruments. *Oxford Bulletin of Economics and Statistics*, 71(1), 135-158.

Spilimbergo, A., 2009. Democracy and Foreign Education. *American Economic Review*, 99(1), 528-543.

Thomas, S., 1991. The Impact of Women on State Legislative Policies. *The Journal of Politics*, 53(4), 958-976.

True, J., and M. Mintrom, 2001. Transnational Networks and Policy Diffusion: The Case of Gender Mainstreaming. *International Studies Quarterly*, 45(1), 27-57.

Wacziarg, R., and K.H. Welch, 2008. Trade liberalization and growth: New evidence. *The World Bank Economic Review*, 22(2), 187-231.

Wooldridge, J.M., 2002. *Econometric Analysis of Cross Section and Panel Data*. Cambridge (Mass.): The MIT Press.

World Bank, 2011. *Gender Equality and World Development*. World Development Report 2012, Washington DC.

Appendix A Countries' list

We work with 87 countries: Albania, Argentina, Armenia, Australia, Austria, Bangladesh, Belgium, Benin, Bolivia, Brazil, Bulgaria, Canada, Central African Republic, Chile, Colombia, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Czechoslovakia, Denmark, Dominican Republic, Ecuador, El Salvador, Estonia, Finland, France, Germany, Ghana, Greece, Guatemala, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Kyrgyzstan, Latvia, Lithuania, Malawi, Mali, Mauritius, Mexico, Mongolia, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Norway, Pakistan, Panama, Papua New Guinea, Peru, Philippines, Poland, Portugal, Republic of Korea, Republic of Moldova, Romania, Russian Federation, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Thailand, Trinidad and Tobago, Turkey, Uganda, Ukraine, United Kingdom, United States, Uruguay, Venezuela, Zambia.

Appendix B Construction of the norms

In order to construct the ‘norms’ in Equation 1, the final matrix should be perfectly balanced. By final matrix we mean the matrix comprising: migration data (from Ozden et al., 2011), political data (from Paxton et al., 2006), total population (from World Development Indicators 2008).

For migration data, data for Czechoslovakia, the Socialist Federal Republic of Yugoslavia and USSR were not available. We reconstructed missing observations aggregating migration data for the countries belonging to them before the political scission. So for Czechoslovakia before year 1993 (replaced by missing values then), we aggregated data from Czech Republic and Slovakia. For the Socialist Federal Republic of Yugoslavia before year 1992 (replaced by missing values then), we aggregated data from Bosnia and Herzegovina, Croatia, Serbia and Montenegro, Slovenia and the Former Yugoslav Republic of Macedonia. For USSR before year 1991 (replaced by missing values then), we aggregated data from Ukraine, Russian Federation, Uzbekistan, Kazakhstan, Belarus, Azerbaijan, Georgia, Tajikistan, Republic of Moldova, Kyrgyzstan, Lithuania, Turkmenistan, Armenia, Latvia and Estonia. For the 19% of the sample cells (except for missing observations due to the splits we discussed before) which are missing, since the couples concerned do not belong to the main migration routes, we have set these values to 0. For political data, we explained in Appendix E how we deal with ‘true missing values’, while for the other missing cells (about 31% of the sample) due to political instability, coup d’etat, dictatorship war, presence of ‘false elections’, lack of sovereignty due to colonialism, we have set them to 0 because of lack of Parliament. For total population (3% of the sample) missing values have been replaced using UN data. Missing population data are for: Nauru, Afghanistan 1990-2000, Andorra, Antigua and Barbuda, Comoros, Dominica, Iraq 2000, Kiribati, Kuwait 1992-1994, Liechtenstein, Marshall Islands, Monaco, Palau, Saint Kitts and Nevis, San Marino, Seychelles, Tuvalu. We dropped those countries for which all the time span from 1960 to 2000 was missing. We replaced missing total population cells for the other countries with data from United Nations Population Division. UN Population Data are available every five years. We assumed a constant rate of growth within the five years.

Once we have dealt with missing values in each dataset to make each of them balanced, we have merged the three of them to get the final one. Then the norms have been constructed.

Appendix C Difference with previous studies

The main reference to our empirical specification is the work by Spilimbergo (2009). Following step by step the empirical dynamic specification by Spilimbergo (2009), Eq.(1) becomes:

$$\begin{aligned} seats_{i,t}^F = & \alpha seats_{i,t-1}^F + \beta indexseats_{i,t-1}^F + \gamma migrate_{i,t-1} + \eta inter \\ & + \sum_{i=1}^n \rho_i R_{i,t} + \mu_i + \epsilon_{i,t} \end{aligned} \quad (C.1)$$

where:

- $indexseats_{i,t-1}^F = \sum_j \left[\frac{mig_{ij,t-1}}{\sum_i mig_{ij,t-1}} \times (seats_{j,t-1}^F - seats_{i,t-1}^F) \right]$. In Spilimbergo (2009), the exact corresponding variable $indexseats_{i,t-1}^F$ would be constructed as the weighted average of the female parliamentary share in the host countries, e.g. $indexseats_{i,t-1}^F = \sum_j \left(\frac{mig_{ij,t-1}}{\sum_i mig_{ij,t-1}} \times seats_{i,t-1}^F \right)$. Just considering the level of female parliamentary share at destination, would have prevent from taking into account political asymmetries between origin and destination countries. With this specification, indeed, the ‘transfer of norm’ is always positive if $seats_{i,t-1}^F$ is greater than 0, apart from the level of female parliamentary share at origin. In considering the difference between female parliamentary shares between destination and origin countries, instead, we assume that there is a ‘positive transfer’ only when migrants are in countries where female political conditions are better, and that the transfer is higher, the greater the political difference between the two countries.
- $migrate_{i,t-1}$ is the ratio between $\left(\frac{\sum_i mig_{ij,t-1}}{pop_{i,t-1}} \right)$
- $inter$ is the interaction term and corresponds to $(migrate_{i,t-1} \times indexseats_{i,t-1}^F)$

Eq.(1) and Eq.(C.1) are symmetric. The only difference consists in the construction of the ‘norm’. In Eq.(C.1), the average female parliamentary share at destination is computed as:

$$indexseats_{i,t-1}^F = \sum_j \left(\frac{MIG_{ij,t-1}}{\sum_i MIG_{ij,t-1}} \times (seats_{j,t-1}^F - seats_{i,t-1}^F) \right) \quad (C.2)$$

where the weights are given by emigration shares. In Eq.(1), instead, the weights are just given by emigration rates. In other terms, we substitute $\frac{MIG_{ij,t-1}}{\sum_i MIG_{ij,t-1}}$ with $\frac{MIG_{ij,t-1}}{POP_{i,t-1}}$. So the norm in the benchmark specification becomes as follows:

$$indexseats_{i,t-1}^F = \sum_j \left(\frac{MIG_{ij,t-1}}{POP_{i,t-1}} \times (seats_{j,t-1}^F - seats_{i,t-1}^F) \right) \quad (C.3)$$

Obviously, due to the different nature of Spilimbergo’s norm, Eq.(2)also contains the total migration rate calculated as the ratio between total aggregate migration from country i over total population in country i and the interaction term between the total migration rate and the average index of female political

participation at destination.

Table C.1 compares estimation results from estimating Eq.(1) and Eq.(C.1) with System GMM (with and without selection). The first two columns refer to Eq.(1) (as in column (2) of Table 1 and column (4) in Table 2 while the third and the fourth ones refer to Eq.(C.1). As far as estimation results from Eq.(2) are concerned, the lagged index of female parliamentary share à la Spilimbergo affects the female parliamentary participation at time t but the interaction with migration rate is not significant as in Beine et al. (2008) and sometimes in Spilimbergo (2009). The lack of significance can be due to collinearity since migration rate appears three times as regressor: alone, then it is used as weight in the norm, and as multiplicative term (as migration share) in the interaction term. Indeed, the collinearity between the interaction term and the migration rate is more than 90%. A way to avoid collinearity is an alternative construction of the norm as in Eq. (1).

Table C.1: Alternative specification of the ‘norm’ variable

	(1)	(2)	(3)	(4)
Female parliamentary share (lagged)	0.966*** (0.194)	0.828*** (0.139)	0.926*** (0.169)	0.852*** (0.149)
Female parliamentary share (lagged twice)	-0.0110 (0.211)	0.176 (0.148)	0.177 (0.146)	0.253** (0.115)
Index of female parliamentary share (lagged)	2.665*** (0.434)	2.265*** (0.391)		
Total migration rate (lagged)			10.59* (5.980)	10.88 (7.473)
Index of fem parl share a la Spilimbergo (lagged)			0.247** (0.104)	0.196** (0.0945)
Interaction term a la Spilimbergo (lagged)			-0.136 (0.983)	-1.070 (1.351)
Skill ratio for females (lagged)	0.0140*** (0.00397)	0.0142*** (0.00315)	0.0103*** (0.00362)	0.0102*** (0.00262)
Democracy index	0.315 (0.240)	-0.132 (0.128)	0.141 (0.200)	-0.235 (0.159)
Legal election	0.648*** (0.191)	0.712*** (0.163)	0.648*** (0.169)	0.739*** (0.168)
Proportional electoral system	1.073*** (0.380)	0.856*** (0.321)	0.777** (0.303)	0.672** (0.290)
Inv. Mills ratio		-6.096** (2.678)		-7.725** (3.078)
Country fixed effects	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes
Observations	1711	1703	1711	1703
Number of Groups	86	85	86	85
Number of Instruments	64	65	76	77
Arellano-Bond test for AR(2)	0.945	0.278	0.295	0.0560
Hansen test p-value	0.565	0.676	0.611	0.657
Difference Hansen test p-value	0.246	0.432	0.785	0.649

* Significant at the 10% level ** 5% level *** 1% level

Robust standard errors in parentheses. Different specification SYS GMM estimation with and without selection. Mills derived from year-by-year Probit.

Appendix D Sample selection issue

The sample selection issue is linked to the nature of political data. In the original Paxton et al. (2006) political database, there are indeed three types of missing values. There are the so called ‘true missing’ (173 observations) due to the fact that the authors could not find positive data, a second type of missing (83 observations) due to coup d’etat, and a third type of missing due to the absence of the Parliament (4781 values). The absence of the Parliament can be due in her turn to several factors: the presence of a dictatorship, ‘false elections’ or the absence of sovereignty, i.e. colonial reasons.

In the original political database the number of zeroes is 1100. The authors do not discriminate between what we name as ‘true zeroes’ (due to the fact that females are eligible but they are not elected) and ‘false’ zeroes (due to the fact that females are not eligible yet, i.e. they cannot stand for election even if there is a Parliament).

Keeping the political data as they are and estimating directly Eq.(1) with GMM would provide biased estimates because of three reasons. First, the proportion of true missing values, secondly the presence of ‘false’ zeroes and thirdly a possible triple sample selection issue⁴⁹ linked to those missing values due to the lack of Parliament. Concerning ‘true missing’ values, we have transformed them in a historical/political compatible way into either missing values, zeroes or positive observed values using an additional political dataset (Armingeon and Careja, 2008).⁵⁰ Secondly, as far as the zeroes are concerned, we transformed ‘false’ zeroes into missing and kept the ‘true’ ones as they are. Finally, for the selection issue, we set an initial probability in such a way that a well identified initial population of interest can be specified.⁵¹ This makes the triple selection issue boiling down into a common sample selection one.

We set the initial probability as the probability for a woman to ‘*be eligible*’. In other terms, we construct a dummy variable equal to 1 if women are eligible and zero otherwise. According to the political data at our disposal, women are eligible in two cases. When the female parliamentary share is positive or when it is equal to a ‘true’ zero (i.e. women can be elected but they are not⁵²). Women are instead not eligible in two cases: first, in case of missing values due to the absence of the Parliament (i.e. coup d’etat, dictatorship war, ‘false elections’, no sovereignty or colonialism) and secondly in case of ‘false’ zeroes (i.e. women cannot be elected because they haven’t got the right to be voted yet). In other terms, we reasonably assume that the absence of female suffrage (probability for a woman to ‘*be not eligible*’) is as if the Parliament were not there. Table C.2 describes the composition of the political database before and after the changes we have just mentioned in order to control for selection. The first column refers to the original database which goes from 1945 to 2003, while the second column (which refers to the period 1960-2000) takes into account the changes made by ourselves in order to control for selection.

⁴⁹Following Gibson, McKenzie, and Stillman (2009, 2010) a triple selection issue can arise if we kept the political dataset as it is. The first selection would be linked to the probability for a country of having a Parliament, the second one to the probability that a woman can be elected given the presence of a Parliament. Third, there is the endogenous probability that the share of women elected in the Parliament is positive.

⁵⁰See Appendix E.

⁵¹See Ch. 17 in Wooldridge (2002): ‘There is an important general point to remember: sample selection can only be an issue once the population of interest has been carefully specified’.

⁵²Assuming that there are some women who run for the position when the female parliamentary share is equal to zero. Unfortunately we do not have data on political entry.

Table D.1: Composition of the political data

	(1945-2003)	(1960-2000)
Total observations	12036	7093
Positive observed values	5801	4274
True missing values	173	27
Missing Values (due to coup d'état)	83	-
Missing Values (due to absence of Parliament)	4781	-
Missing Values	4864	2327
Zeroes	1100	465

Appendix E Addressing the ‘true missing’ values in Paxton et al. (2006)

Here is the list of countries which contains true missing values:

- Belarus : data from 1995-1999 are true missing. The missing cells have been complemented by the CPDS II (Armingeon and Careja 2008), which covers 28 post-communist countries for the 1989-2008 period.
- Benin: years 1960, 1961, 1962,1964 are true missing. Following Benin political and historical information, we transformed true missing values into missing.
- Bhutan: year 1996 is a true missing. It has been replaced with an observed data from IPU (01/1996 elections).
- Bosnia Herzegovina: true missing for 1996-1999. We replaced years 1996-1997 with missing data in accordance with the female parliamentary share in contiguous countries, e.g. Croatia, Serbia and Montenegro. While years 1998-1999 have been complemented by the CPDS II (Armingeon and Careja, 2008), which covers 28 post-communist countries for the 1989-2008 period.
- Cambodia: year 2003 is a true missing. It has been replaced by the observed positive value from IPU, election 07-2003.
- Democratic Republic of the Congo: true missing data for 1992-1993, 2000-2002 and 2003. The average female parliamentary share between years 1991-1994 replace the first missing biennium since data are quite stable. True missing data from 2000-2002 have been transformed into missing because of political instability and civil war. True missing for 2003 has been replaced by data from IPU election 08/2003.
- Democratic Yemen: the country has been dropped because true missing cells exceed the 50%.
- Gambia: data from 1977 to 1981 are true missing. They have been replaced by 0 as women started to stand for election from 1982.
- Guinea: true missing data from 1981-1984 have been transformed into missing for political instability.
- Guyana: true missing from 1964-1967 have been changed into missing because the first parliamentary election occurs in 1968 (from Golder, 2005).

- Kiribati: true missing for year 2003 has been substituted with the observed positive value from IPU , election 05/2003.
- Latvia: true missing values from 1990 to 1992 have been replaced by missing. Latvia starts its sovereignty in 1991. According to Golder(2005) and to the Comparative Political Data Set II from Armingeon and Careja (2008) 1993 is the year of the first election after the fall of communist rule.
- Liberia: the country has been dropped because true missing cells exceed the 50%.
- Libya: the country has been dropped because true missing cells exceed the 50%.
- Mali: true missing values from 1988 to 1990 have been replaced by missing because of political instability due to the dictatorship of Moussa Traoré, before a coup d'état.
- Marshall Islands: true missing from 1995-1998 have been replaced by values of the previous (1994) and following (1999) elections which are equal.
- MyanMar : true missing from 1960 to 1963 have been replaced by missing because of political instability. While true missing data for 1985-1987 have been complemented by the average value from previous years.
- Nauru: true missing data from 1992 to 1994 have been replaced by the mean between previous and following years. While true missing for 2003 has been replaced by IPU value for election 05/2003.
- Niger: true missing value for year 1992 has been replaced by missing because of political instability.
- Nigeria: all the true missing values have been replaced by missing because of strong political instability and civil wars.
- Pakistan: true missing values from 1960-1972 have been replaced by missing because of political instability and lack of constitution. While the true missing for year 1996 has been replaced by the 1995's value, (stable data in the 90's).
- Peru: the true missing value for year 2000 has been replaced by the observed data from IPU (election 04-2000).
- Rwanda : true missing data from 1966-1971 have been replaced by missing because of political instability.
- Seychelles: true missing data for the biennium 1991-1992 have replaced by the value belonging to year 1990, because of the historical reasons. In 1977, a coup d'état ousted the first president of the republic, James Mancham, who was replaced by France Albert René. The 1979 constitution declared a socialist one-party state, which lasted until 1991. The first draft of a new constitution failed to receive the requisite 60 percent of voters in 1992, but an amended version was approved in 1993.
- Sierra Leone: the country has been dropped because true missing cells exceed the 50%.
- South Vietnam, North Vietnam, Vietnam: the countries have been dropped because true missing cells exceed the 50%.
- Sri Lanka: true missing data for year 2000 has been replaced by the average between 1999 and 2001 values.

- Tonga: true missing data for 2002-2003 have been replaced by the observed value of the election 03/2002 from IPU.
- Uganda: true missing values from 1962 to 1965 have been replaced by missing because of political instability.
- Tanzania: true missing from 1965 to 1969 have been replaced by missing because of political instability.
- Vanatu: true missing values for 1995-1997 have been replaced by missing because of political instability.