

# Gender Progress and Government Expenditure as Determinants of Femicide

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**PURPOSE:** We sought to explore the effect of economic/political factors and gender progress on femicide.

**METHODS:** An ecological and retrospective study was undertaken that focused on 61 countries and analyzed the relationships of femicide with the following statistics from the period 1990 to 1999: economic indicators (domestic consumption, gross capital formation, imports and exports per capita, unemployment rate and percentage of urban population), political indicators (government final consumption expenditure, GINI coefficient—a summary measure of the extent to which the actual distribution of income or consumption expenditure or a related variable differs from a hypothetical distribution in which each person receives an identical share—civil liberties and political rights index), and gender progress indicators (female and male unemployment rates, percentage of girls in primary education, gender ratio for primary and secondary education, and percentage of parliamentary seats occupied by women). Bivariate and multivariate logistic regression analyses (likelihood ratio) were performed to explore the relationships between these variables.

**RESULTS:** The bivariate analysis revealed strong links between reductions in government final consumption expenditure per capita (odds ratio [OR] 20.83;95% confidence interval [95% CI] 5.622–77.205), domestic consumption and gross capital formation (both with OR 16.67, 95% CI 4.715–58.911), and the civil liberties and political rights index (OR 7.91, 95% CI 2.526–24.747). In the multivariate stage, statistically significant associations were only observed between government expenditure per capita (OR 61.75;95% CI 7.064–539.81) and occupation of parliamentary seats by women (OR 10.95;95% CI 1.26–95.06).

**CONCLUSION:** The reduction in government final consumption expenditure and democratic backwardness in terms of gender equality appear to be relevant factors in deaths caused by gender-based violence. To fight femicide effectively, gender-related structural, political, and economic responses should be considered.

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**KEY WORDS:** Intimate Partner Violence, Health Disparities, Epidemiology.

## INTRODUCTION

In its First Report on Violence and Health, the World Health Organization defined intimate partner violence (IPV) as “any behaviour within a current or past intimate relationship that causes physical, psychological or sexual harm” (1). This type of violence has become a priority in scientific research and in political and media campaigns because of an increasing incidence and mortality rates (2–6).

Despite the increasing importance of IPV, there is a certain tendency to focus purely on developing measures to

tackle the possible individual psychological or criminal causes, without taking into account other structural factors, such as cultural, economic, and political issues, which may also have an impact on this problem (7–9). The study of such structural determinants could help to develop useful new approaches aimed at preventing IPV (10).

Although IPV is an attack on women’s rights and freedoms, both of which are widely assumed to have been achieved through politics, the political determinants of this problem are not clear. Social policies of the welfare state have been identified as a relevant determinant of homicide. For example, the cost-of-living-adjusted benefits paid to individuals with dependent children has a direct negative impact on homicide rates and an indirect negative relationship with homicide rates because of its association with household status (11, 12). However, no empirical studies have examined the influence of this type of political determinant on IPV in general and specifically on femicide rates.

The risk of homicide also seems to be determined by other macroeconomic variables, such as gross domestic product per capita, the GINI coefficient (a summary measure of the extent to which the actual distribution of income

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**Selected Abbreviations and Acronyms**

IPV = intimate partner violence  
 BI/E = balance of imports and exports  
 RAFE = relative advance in female employment  
 OR = odds ratio  
 95% CI = 95% confidence interval

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or consumption expenditure or a related variable differs from a hypothetical distribution in which each person receives an identical share) (13), percentage change in gross domestic product per capita, and female economic activity as a percentage of male economic activity (14, 15). Although such macroeconomic indicators are considered here and in other studies about the etiology of mortality caused by external causes (16–18), there is still no firm evidence to prove their relationship with IPV and femicide.

Certain studies have shown that gender inequality—in terms of education, economic level, and employment—increases the risk of women being subjected to violent acts (19, 20), sexual violence (21), and femicide (22). However, there is also empirical evidence concerning the relationship between women’s higher socioeconomic status, especially in terms of income and employment, and an increase in the risk of IPV (23) and femicide (24–26). This contradictory relationship, born out of the “patriarchal backlash” against women’s progress (27), proves that the combined effect of economic, political, and gender progress related factors should be taken into account when dealing with the issue of IPV and femicide.

Given the information concerning mortality attributed to external causes, sexual violence, and gender-based violence, by measuring the impact of economic, political, and gender progress factors on femicide, important contributions could be made to existing knowledge on the etiology of IPV. This paper explores the effect of economic and political factors and gender progress as universal determinants of femicide.

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**METHODS**

We conducted an ecological, retrospective study in which we analyzed the association between femicide and economic and political factors, as well as gender progress around the world during the period 1990–1999.

**Data Collection and Variables**

Sixty-one countries were included in this study, providing information about femicide rates according to the First World Report on Violence and Health from the World Health Organization (1); economic indicators (domestic final consumption expenditure, gross capital formation, imports and exports per capita, general unemployment rates,

and percentage of urban population); political indicators (government final consumption expenditure per capita, the GINI coefficient, civil liberties and political rights index); and gender progress indicators (female and male unemployment rates, percentage of girls in primary education, gender ratio in primary and secondary education and percentage of parliamentary seats occupied by women). The group of countries studied represented 54% of the world population for the aforementioned period.

According to the classification of World Bank member states, the group of 61 countries included in this study covers 91.3% of all industrialized countries, 58.9% of all countries in transition, 44.4% of Latin America and the Caribbean countries, 17.2% of Middle Eastern countries, 6.7% of Asian countries, and 1.9% of African countries.

The following sources of information were referenced for the aforementioned variables: the United Nations database for general unemployment, female and male unemployment, percentage of girls in primary education, gender ratio in primary and secondary education, and the percentage of parliamentary seats held by women (28). The UN database also was consulted for variables relating to government final consumption expenditure, domestic final consumption expenditure, gross capital formation, and imports and exports per capita (29). The World Bank databases were used for the GINI coefficient (30), the percentage of urban population (31), and the classification of countries according to their national income level (32). Finally, information on the world population was obtained from the Census Bureau International Database (33) and the civil liberties and political rights index (Table 1) was obtained from Freedom House (34).

Additionally, 2 compound variables were constructed: Balance of Imports and Exports (BI/E) and relative advance in female employment (RAFE). The BI/E was constructed to analyze the impact of commercial imbalances between countries as a possible economic determinant of femicide and was obtained by subtracting the export values from the imports. The result expresses the profit or loss for each country during the given period as:  $BI/E = \sum \text{exp. for period} - \sum \text{imp. for period} = \text{profit or loss}$ . The RAFE was obtained by subtracting the mean percentage of female employment during the 1990–1999 period from the percentage of female employment corresponding to the year of the reported femicide rate. The resulting values provide information about the positive or negative position of female employment in the year of the reported femicide rate compared with the entire period from 1990 to 1999 (Table 1).

**Statistical Analysis**

For each economic growth indicator (domestic final consumption expenditure, gross capital formation, imports and

**TABLE 1.** Operative definitions of the studied economic, political and gender progress variables

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**FEMICIDE:** The homicide of women because of their gender. This is the most extreme form of violence based on gender inequality, which is understood as the violence exerted by men against women to obtain power, domination or control. It includes the murders committed because of intrafamily violence, and sexual violence, whether or not they have been committed by men with whom the victim has or had an intimate, family or cohabiting relationship, or acquaintances.<sup>a</sup>

**GOVERNMENT FINAL CONSUMPTION EXPENDITURE:** Government incurred expenditure, including the imputed expenditure on individual and collective consumption goods and service.<sup>b</sup>

**DOMESTIC CONSUMPTION EXPENDITURE:** Imputed expenditure of household inhabitants, including those for individual consumer goods and services as well as those sold at economically insignificant prices.<sup>b</sup>

**GROSS CAPITAL FORMATION:** Total value of producer's acquisitions less disposals of fixed assets during a given period and changes in inventories.<sup>b</sup>

**IMPORTS OF GOODS AND SERVICES:** Purchases, barter or receipts of gifts or grants of goods and services by the resident from the non residents.<sup>b</sup>

**EXPORTS OF GOODS AND SERVICES:** Sales, barter or income from gifts or grants of resident goods to nonresidents.<sup>b</sup>

**BALANCE OF IMPORTS AND EXPORTS (BI/E):** It was obtained by subtracting the exports values from the imports values, with their result, profit or loss for each country in the corresponding period being:  $BI/E = \sum \text{exp. for period} - \sum \text{imp. for period} = \text{gain or loss}$ .

**CIVIL LIBERTIES AND POLITICAL RIGHTS INDEX:** Numerical expression from 1 to 7 of the degree of development of political rights and civil liberties in a country. One is the highest degree of liberty and 7 is the worst condition for liberty.<sup>c</sup>

**GINI COEFFICIENT:** Numerical expression from 0 to 1 or from 0 to 100 that expresses the differences in the distribution of family incomes in a country. The most equal distribution is represented by 0 and the worst is 1 or 100.<sup>d</sup>

**GENERAL UNEMPLOYMENT:** All those people who, during a specified reference period, are not employed even though they are available for work and who have taken actions to find a paid employment or become self employed in a recent period.<sup>e</sup>

**MALE UNEMPLOYMENT:** Men who, during a specified reference period, are not employed even though they are available for work and who have taken specific actions to find a paid employment or become self employed in a recent period.<sup>e</sup>

**FEMALE UNEMPLOYMENT:** Women who, during a specified reference period, are not employed even though they are available for work and who have taken specific actions to find a paid employment or become self employed in a recent period.<sup>e</sup>

**RELATIVE ADVANCE IN FEMALE EMPLOYMENT (RAFE):** It is calculated by subtracting the mean women's employment during the 1990-1999 period from the percentage of women employed in the year of the reported femicide rate. Its values show the advantageous or disadvantageous position women's employment had in the year of the reported femicide rate with respect to the 1990-1999 period.

**RATIO WOMEN/MEN ENROLLED IN PRIMARY SCHOOL:** The proportion of women enrolled in private or public primary schools in relationship to the number of male students.

**RATIO WOMEN/MEN ENROLLED IN SECONDARY SCHOOL:** Enrolment ratio of women to men in public or private secondary education.<sup>e</sup>

**PERCENTAGE OF WOMEN ENROLLED IN PRIMARY EDUCATION:** Percentage of girls within the official ages of mandatory schooling (defined by the national education systems) that are enrolled in primary education in relationship to the entire population of girls who are within the mandatory school ages.<sup>e</sup>

**PERCENTAGE OF URBAN POPULATION:** Percentage of the population residing in urban areas (defined by the demography of the countries, basically by the size of the populated area) in relationship to the total population.<sup>f</sup>

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<sup>a</sup>Radford J, Russell DE. *Femicide. The Politics of Woman Killing*. New York: Twayne Publishers; 1992.<sup>b</sup>Handbook of the International Comparison Programme. Studies in Methods, Series F, No. 62 (United Nations publication, Sales No. E.92.XVII.12). (Glossary) [cited 2006 Feb 8]. Available at: <http://unstats.un.org/unsd/mi/mi>.<sup>c</sup>Freedom in the World Country Ratings 1972-2004 [homepage on the Internet]. Washington, D.C: Free dome House [cited 2006 Oct 21]. Available in: <http://www.freedomhouse.org/ratings/allscores2005.xls>.<sup>d</sup>Economic Growth Research (30).<sup>e</sup>United Nations Development Group. *Indicators for monitoring the Millennium Development Goals*. New York: United Nations Publication; 2003.<sup>f</sup>United Nations Statistics Division. *Urban population definition*. [homepage on the Internet]. New York: United Nations [cited 2006 Oct 21]. Available in: [http://unstats.un.org/unsd/cdb/cdb\\_dict\\_xrxx.asp?def\\_code=151](http://unstats.un.org/unsd/cdb/cdb_dict_xrxx.asp?def_code=151).

exports per capita) and the political indicator, government final consumption expenditure, an average series of data was prepared that was adjusted to the population and year in which the femicides took place. For the gender progress indicators (female and male unemployment rates, percentage of girls in primary education, gender ratio in primary and secondary education, and percentage of parliamentary seats held by women) and political indicators (government final consumption expenditure, the GINI coefficient, civil liberties, and political rights index), the mean value corresponding to the 1990–1999 period was calculated.

To analyze the information, each variable was dichotomized, depending on its position in relation to the median of the corresponding series of values, thereby creating 2 classes or categories for each one. For femicide rates and

the independent variables GINI coefficient, civil liberties and political rights index, general, female and male unemployment rates, 0 is low and 1 is high. For the independent variables, percentage of urban population, percentage of parliamentary seats held by women, RAFE, percentage of girls in primary education, and gender ratio in primary and secondary education, 0 is high and 1 is low.

Because economic processes undergo changes in short periods of time, for the economic variables examined in this study (government final consumption expenditure, domestic final consumption expenditure, gross capital formation, imports and exports), information was taken for the year of the reported femicide rate in each country. Hence, for each economic variable, there are different data for each country in the 1990–1999 period.

Data for imports and exports were used to construct the variable “balance of imports and exports,” by subtracting the value of imports from the value of exports in each country. This variable was dichotomized in terms of gains or losses registered by the different countries in the 1990–1999 period; 0 is equivalent to gains and 1 to losses. The data obtained for the other economic variables could be subtracted because there is one datum per country and corresponding to 1 year. Hence, the median was used to establish dichotomies, 0 being high and 1 being low.

A multiple logistic regression (likelihood ratio) was used to analyse the link between femicide rates and the aforementioned economic, political, and gender progress indicators, based on a 2-stage analysis model. This process included a bivariate stage—to assess the significance of the relationship between each variable and femicide rates—and a second multivariate stage, in which the multiple logistic regression model was only applied to variables that were found to have statistically significant associations ( $p < 0.05$  or 0.06) with femicide rates in the bivariate stage. Finally, the Wald Test was applied to analyse interactions between variables by calculating the odds ratio (OR) and the 95% confidence intervals (95% CIs) in the strata of each one defined above and below each variable’s mean value. The Excel 2000 and SPSS12.0 statistical packages were used to conduct the aforementioned analyses and to prepare the necessary databases.

## RESULTS

Table 2 describes the central and dispersion tendency values for each variable included in the study. Both the femicide

rate and macroeconomic figures fluctuate greatly, as do the mean urban population, RAPE, the GINI coefficient and freedom index. Only a very slight difference was observed between female and male employment figures.

The average femicide rate was 2.89 per 100,000 women, with a varying distribution between the different countries (Table 3). As regards to national income, femicide rates were greater in countries with a medium-high income (5.27), low income (4.32), and low-medium income (3.60), and lowest in high income countries (1.37).

In the bivariate analysis stage, the strongest associations with femicide rates were found to be with government final consumption expenditure per capita (OR 20.83;95% CI 5.622–77.205), domestic consumption and gross capital formation (both with an OR of 16.67, 4.715–58.911), and the civil liberty and political rights indices (OR 7.91, 2.526–24.747). There was also a statistically significant between femicide rates and the GINI coefficient (OR 4.20, 95% CI 1.442–12.235) and RAPE (OR 2.98, 95% 1.044-8.527), with a  $p$  value of 0.05. There were also links (0.06) observed with male unemployment rates (OR 2.91, 95% CI 0.960–8.817), percentage of girls in primary education (OR 2.74, 95% 0.970–7.708), and percentage of parliamentary seats held by women (OR 2.74, 95% 0.970–7.708).

In the adjusted multiple logistic regression model, only the variables for government expenditure per capita (OR 61.75, 95% CI 7.064–539.804) and occupation of parliamentary seats by women (OR 10.95, 95% CI 1.261–95.057) were statistically significant at 0.05 (Table 4). Figure 1 shows the relationship between government expenditure per capita, expressed in USD and femicide rates. Countries with greater government expenditure tend to

TABLE 2. Descriptive statistics of femicides and economic, political, and gender progression indicators

Indicators	Number of countries	Measurement units	Lower limit	Upper limit	Median	Mean	Standard deviation
Femicide rates	61	rate *10 <sup>5</sup>	0.20	9.80	1.40	2.42	2.39
Relative advance in female employment	61	Percentage	31.90	54.70	44.80	44.01	5.32
Male unemployment rate	54	Percentage	–3.10	4.80	0.40	0.35	1.25
Female unemployment	54	Percentage	0.70	18.30	7.55	7.74	3.58
General unemployment	57	Percentage	0.90	21.10	7.65	9.04	5.00
Parliamentary seats held by women	61	Percentage	0.80	16.60	7.30	7.91	4.02
Percentage of women enrolled in primary education	61	Percentage	75.60	100.00	94.03	93.15	5.98
Ratio women/men enrolled in primary school	61	Ratio	1.00	40.30	11.75	14.28	8.80
Ratio women/men enrolled in secondary school	61	Ratio	0.90	1.10	0.993	0.998	0.022
Domestic consumption per capita	61	Constant dollars	0.80	1.30	1.023	1.028	0.076
Import-export balance per capita	60	Constant dollars	75.60	100.00	94.03	93.15	5.98
Gross formation of capital per capita	61	Constant dollars	324	18,002	2,294	5,683	5,351
Government final consumption expenditure per capita	61	Constant dollars	-1,746	3,464	–24	160	960
Percentage of urban population in 2000	61	Percentage	121	8,712	1,213	2,589	2,484
Gini coefficient	61	Index <sup>a</sup>	67	7,798	735	1,905	2,133
Civil liberties and political rights index	61	Index <sup>b</sup>	31.60	100.00	67.20	68.88	16.12

<sup>a</sup>From 0 to 100, the best condition of equality corresponds to zero and the worst to 100.

<sup>b</sup>From 1 to 7; 1 is the highest degree of liberty and 7 is the worst condition of liberty.



**TABLE 3.** Classification of the 61 countries according to their femicide rates. 1990-1999

31 countries with the highest femicide rates.			30 countries with the lowest femicide rates		
Name	Rate	Data age	Name	Rate	Data age
Argentina	1.5	1996	Israel	0.2	1997
Poland	1.6	1995	Spain	0.4	1996
South Korea	1.6	1997	Japan	0.4	1997
Slovakia	1.6	1998	United Kingdom	0.4	1999
Romania	1.8	1999	Ireland	0.5	1997
Guyana	1.8	1995	France	0.5	1999
Uruguay	1.9	1990	Greece	0.5	1998
Hungary	2.0	1999	Italy	0.5	1997
Panama	2.0	1997	Norway	0.6	1997
Philippines	2.1	1993	Germany	0.7	1999
Paraguay	2.2	1994	Portugal	0.7	1999
Venezuela	2.3	1994	Austria	0.8	1999
Mauritius Islands	2.5	1999	Chile	0.8	1994
Ecuador	2.5	1996	Denmark	0.8	1999
Cuba	2.7	1997	Netherlands	0.8	1999
Thailand	2.8	1995	Sweden	0.8	1996
United States	3.1	1998	Switzerland	0.8	1996
Mexico	3.1	1997	Singapore	0.9	1998
Kyrgyzstan	3.5	1999	Slovenia	1.0	1999
Lituania	4.0	1999	Australia	1.0	1998
Brasil	4.1	1995	Canada	1.0	1997
Bahamas	5.0	1996	Czech Republic	1.0	1997
Moldova	5.2	1999	Belgium	1.2	1995
Ukraine	6.1	1999	China	1.2	1999
Latvia	6.6	1999	Croacia	1.2	1999
Trinidad and Tobago	6.6	1994	Finland	1.2	1998
Estonia	7.4	1999	Bulgaria	1.3	1999
Kazakhstan	7.9	1999	New Zealand	1.3	1998
El Salvador	8.4	1996	Costa Rica	1.4	1995
Colombia	9.0	1995	Azerbaiján	1.4	1999
Russia	9.8	1998			
Simple mean	3.96		Simple mean	0.84	

have lower femicide rates. This decrease in femicide rates starts to flatten off once government expenditure per capita exceeds \$4000. Figure 2 shows that the relationship between parliamentary seats occupied by women and femicide is clearer when female participation in parliament is at least 20%.

Finally, it was observed that the association between femicide and parliamentary seats held by women varied in accordance with government expenditure strata. Thus, an OR of 41.6 was obtained in the high government consumption stratum and 21.7 in the low government consumption stratum. However, this interaction was not statistically significant at 0.05.

### DISCUSSION

Economic, political, and gender progress structural factors all seem to have an impact on femicide rates. After studying these variables, reductions in government expenditure and democratic backwardness in terms of gender equality emerge as potential determinants of femicide. These results suggest that greater attention must be paid to structural responses of a political nature—such as government expenditure or the participation of women in political institutions—to tackle the problem effectively.

The main limitation of this study was the lack of information for certain countries, mainly in the African region, where data were only available for one country. Although the population studied represented more than 54% of the entire world population, the unrepresented countries were those with the greatest economic and social problems. This underrepresentation could lead to potential bias in favor of our hypothesis, because if such information were available for these countries; the associations encountered might be even stronger.

**TABLE 4.** Multivariate associations between the rate of homicides against women and economic, political and gender progression variables (step excluded variables)

Back steps	Independent variables	p-value	Odds ratio	Confidence interval 95%	
				Lower	Upper
Step 1(*)	Gross Formation of Capital per Capita	0.905	1.195	.063	22.620
Step 2(*)	Ratio Women/Men Enrolled in Primary School	.861	1.223	.130	11.531
Step 3(*)	GINI Coefficient	.663	1.549	.216	11.089
Step 4(*)	Domestic Consumption per Capita	.363	4.592	.172	122.625
Step 5(*)	Civil Liberties and Political Rights Index	.210	3.468	.497	24.198
Step 6(*)	Percentage of Women Enrolled in Primary Education	.245	.253	.025	2.572
Step 7(*)	Male Unemployment Rate	.150	4.072	.602	27.556
Step 8(*)	Relative Advance in Female Employment	.254	2.533	.514	12.491
Step 9(*)	<b>Parliamentary Seats Held by Women</b>	<b>.030</b>	<b>10.947</b>	<b>1.261</b>	<b>95.057</b>
	<b>Government Final Consumption Expenditure per Capita</b>	<b>.000</b>	<b>61.750</b>	<b>7.064</b>	<b>539.804</b>
	Constant	.002	.038		

(\*)Variable(s) entered on step 1: relative advance in female employment, parliamentary seats held by women, ratio women/men enrolled in primary school, percentage of women enrolled in primary education, gini coefficient, civil liberties and political rights index, domestic consumption per capita, gross formation of capital per capita, government final consumption expenditure per capita, male unemployment rate.

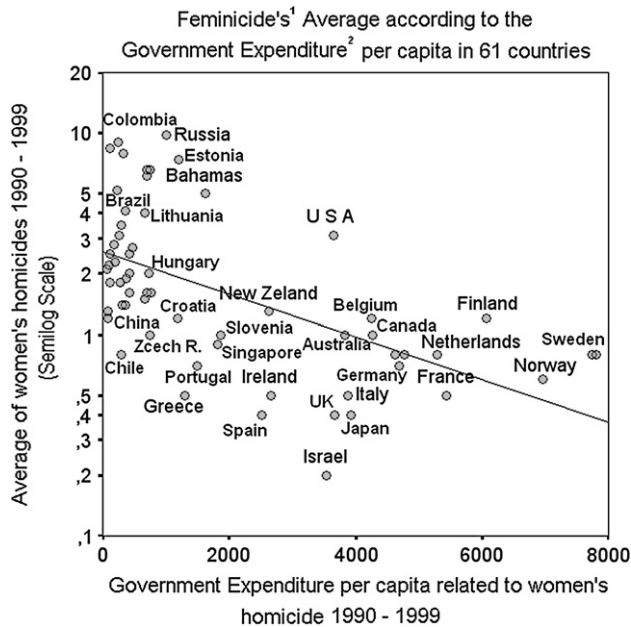


FIGURE 1. Femicide's average (1) according to the government expenditure (29) per capita in 61 countries.

An additional limitation is the use of pre-existing secondary information, which has limited our capacity to control the quality of data and also restricted our initial theoretical framework to the availability of existing information. Thus, the cross-sectional design of our study is explained by the fact that femicide data for the countries studied were only available for 1 year. Despite these limitations, no cross-national study has previously explored the possible combined effects of several structural determinants such as those proposed in our study (35-38).

Moreover, the limitations of an ecological study should also be mentioned because of the difficulty of inferring relationships at an individual level and the fact that ecologic data contain only marginal observations on the joint distribution of individually defined confounders and outcomes (35). These problems could be better addressed by future multilevel studies performed maybe at the country level. Multilevel and ecological study designs, however, also share certain problems due to aggregation and changes in covariate distribution (35). Despite these limitations, we feel ecologic approaches as an acceptable tool to explore structural factors related to femicide determinants at the social levels.

This study provides empirical data suggesting that low government expenditure, in other words, how much governments spend per capita on social needs and services related to citizen welfare (health, safety, education, nutrition, employment), is an important factor in the risk of femicide. In fact, the multivariate model shows the importance of government spending, removing other confounding variables such as democracy, GINI and RAPE. This result points to

the same conclusion as previous studies on national policy variables and the risk of recurring violence against women (36, 37) and other relevant health issues, such as infant mortality and life expectancy (38, 39). In the case of violence against women, and specifically violent deaths among women, the relationship observed with government expenditure could indicate the priority of this issue in general government budgets. In other words, low government expenditure could increase the risk of femicide because it is linked with a lack of governmental plans, laws, and specific policies regarding violence against women that identify interventions that require government investment.

Although a strong link has been found with lower government expenditure, we conclude that the risk of femicide could also be greater in areas with less gender equality. More specifically, the risk of femicide might be greater in contexts in which there is deficient gender equality in terms of employment, education, and political representation. After studying all these indicators, lower female participation in politics emerges as the greatest risk factor for femicide. However, there is a discrepancy between these results and those found in certain previous studies, which not only rejected the relationship with gender inequality (40) but also provided evidence showing precisely the opposite; women's increasing socioeconomic status could be related to a higher risk of suffering this type of violence (19-22). The "patriarchal backlash" against gender progress, seems to be mitigated when the effect of gender progress is studied alongside other related structural determinants.

The impact of the increasing involvement of women in public institutions and executive positions has not yet been addressed by scientific literature. There is evidence in the literature that the presence of women in politics, as members of parliament, increases the probability that women's issues and problems such as gender violence will be included on the political agenda, thereby creating the conditions required to mobilise resources in relation to these issues (4, 41, 42). Also, the significance of an increased female presence in parliaments is related to wider forces of gender progress, their positive effect on the reduction of violence against women, and impact on female mortality. For example, progress in the Gender Development Index has been ecologically associated with reductions in femicide (43). This study shows that the proportion of female representation in parliament can be used as an indicator of women's status within any given society as a means of developing effective approaches to women's health problems, such as femicide. This gender progress indicator could be used in the future to analyse other health problems because it contains valuable and accessible information that is readily available on a global scale and has powerful explanatory potential as a health determinant, not only for women but also for men.

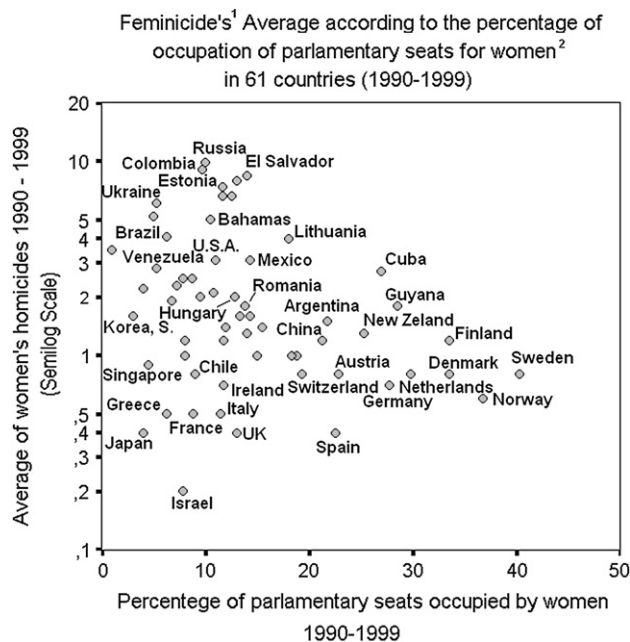


FIGURE 2. Femicide's average (1) according to the percentage of occupation of parliamentary seats for women (28) in 61 countries (1990-1999).

Despite the widely acknowledged complexity of the problem, there is broad agreement regarding the social nature of its roots, especially because studies conducted in the 1980s shifted their focus towards the social aspect of the debate on the biological or social causes of violence against women (9). There is, however, a certain tendency to approach possible preventive measures to the problem of violence against women from a perspective focuses more on individual behaviours (44, 45), without taking enough into account the structural factors behind this epidemic (46, 47). However, according to the results obtained, political strategies against political, social and gender inequalities should also be considered to combat the problem.

The relationship between government final consumption expenditure and the percentage of parliamentary seats held by women is a novel aspect in the study of femicide. This finding might be even more remarkable if it could be proven that the impact of this relationship on femicide rates varies according to government final consumption expenditure per capita. Although the interaction analysis conducted was not statistically significant, the importance of this matter is worthy of further research.

In conclusion, regardless of the treatment and rehabilitation of perpetrators and the assistance given to victims, violence against women must be considered a social pathology. Consequently, further research is needed to complete the map of social determinants regarding this subject and to guide us towards the necessary courses of action and political

decisions required to eradicate this attack against women's civil rights and liberties.

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## REFERENCES

- Krug E, Dahlberg L, Mercy J, Zwi A, Lozano R, eds. Informe Mundial sobre la Violencia y la Salud. Washington: Organización Panamericana de la Salud, Oficina Sanitaria Panamericana, Oficina Regional de la Organización Mundial de la Salud; 2002.
- García-Moreno C (Coord.), et al. Estudio Multipaís de la OMS Sobre Salud de la Mujer y Violencia Doméstica. Primeros Resultados Sobre Prevalencia, Eventos Relativos a la Salud y Respuestas de las Mujeres a Dicha Violencia. Ginebra: Organización Mundial de la Salud; 2005.
- Vives-Cases C, Ruiz MT, Álvarez-Dardet C, Martín M. Recent history of the news coverage of violence against women in Spain, 1997-2001. *Gaceta Sanitaria*. 2005;19:22-28.
- Vives-Cases C, Gil-Gonzalez D, Carrasco-Portiño M, Álvarez-Dardet C. Gender based violence in the Spanish Parliamentary Agenda (1979-2004). *Gaceta Sanitaria*. 2006;20:142-148.
- Kruttschnitt C, McLaughlin BL, Petrie CV, eds. Advancing the Federal Research Agenda on Violence Against Women. Washington: The National Academy Press; 2004.
- Velzeboer M, Ellsber M, Clavel Arcas C, García Moreno C, eds. Violence Against Women: The Health Sector Responds. Washington, DC: PAHO; 2003.
- Wathen CN, MacMillan HL. Intervention for violence against women: Scientific review. *JAMA*. 2003;289:589-600.
- Ramsay J, Rivas C, Feder G. Interventions to reduce violence and promote the physical and psychosocial well-being of women who experience partner violence: a systematic review of controlled evaluations. Centre for Health Sciences. Barts and The London Queen Mary School of Medicine and Dentistry. 2005. (accedido 2006 Marzo 15; citado 2006 Marzo 15) Available at: <http://www.dh.gov.uk/assetRoot/04/12/74/26/04127426.pdf>. Accessed January 9, 2007.
- Sanday P. The socio-cultural context of rape. *J Social Issues*. 1982;37:5-27.
- García-Moreno C (Coord.), et al. Multi-country Study of the WHO on Women's Health and Domestic Violence. First Results on Prevalence, Events Relating to Health and Responses of Women to Such Violence. Geneva: World Health Organization; 2005.
- DeFronzo J. Welfare and homicide. *J Res Crime Delinquency*. 1997;34:395-406.
- Gawryszewski VP, Costa LS. Social inequality and homicide rates in Sao Paulo City, Brazil. *Rev Saúde Pública*. 2005;39:191-197.
- Economic Growth Research. World Bank [homepage on the Internet]. NW Washington, DC: The World Bank Group [Updated 2006 Jun 26; cited 2006 Oct 26]. Available at: <http://www.worldbank.org/research/growth/dddeisqu.htm>. Accessed January 9, 2007.
- Butchart A, Engström K. Sex and gender specific relations between economic development, economic inequality and homicide rates in people aged 0-24 years: A cross-sectional analysis. *Bull WHO*. 2002;80:797-805.
- Kennedy B, Kawachi I, Prothrow-Stith D. Income distribution and mortality: cross sectional ecological study of the Robin Hood Index in the United States. *Br Med J*. 1996;312:1004-1007.

16. Kawachi I, Kennedy B, Gupta V, Prothrow-Stith D. Women's status and the health of women and men: a view from the Status. *Soc Sci Med*. 1999;48:21-32.
17. Moniruzzaman S, Andersson R. Relationship between economic development and risk of injuries in older adults and the elderly. *Eur J Public Health*. 2005;15:454-458.
18. Moniruzzaman S, Andersson R. Relationship between economic development and suicide mortality: A global-sectional analysis in an epidemiological transition perspective. *Public Health*. 2004;118:346-348.
19. Yllo K. Sexual equality and violence against wives in American States. *J Comp Family Studies*. 1983;14:67-86.
20. Pallitto CC, O'Campo P. Community level effects of gender inequality on intimate partner violence and unintended pregnancy in Colombia: Testing a feminist perspective. *Soc Sci Med*. 2005;60:2205-2216.
21. Yodanis C. Gender Inequality, Violence against Women, and Fear. A Cross-National Test of the Feminist Theory of Violence against Women. *J Interpersonal Violence*. 2004;19:655-675.
22. Bailey WC, Peterson RD. Gender inequality and violence against women: The case of murder. In: Hagan J, Peterson RD, eds. *Crime and Inequality*. Stanford, CA: Stanford University Press; 1995.
23. Riger S, Krieglstein M. The Impact of Welfare Reform on Men's Violence against Women. *Am J Community Psychol*. 2000;28:631-647.
24. Gartner R, Baker K, Pampel F. Gender stratification and the gender gap in homicide victimization. *Social Problems*. 1990;37:593-612.
25. Gauthier DF, Bankson WB. Gender equality and the sex ratio of intimate killing. *Criminology*. 1997;35:577-600.
26. Whaley RB, Messner SF. Gender equality and gendered homicides. *Homicide Studies*. 2003;6:188-210.
27. Dutton DG. Patriarchy and wife assault: The ecological fallacy. *Violence and Victims*. 9:167-182.
28. Statistical Database. Millennium indicators database [homepage on the Internet]. New York, NY: United Nations [Updated 2006 Jun 26; cited 2006 Oct 26] Available at: [http://unstats.un.org/unsd/mi/mi\\_series\\_results.asp?rowId=562](http://unstats.un.org/unsd/mi/mi_series_results.asp?rowId=562). Accessed January 9, 2008.
29. Statistical Database. National Accounts main aggregates Database [homepage on the Internet]. New York, NY: United Nations [Updated 2006 Jun 26; cited 2006 Oct 26] Available at: <http://unstats.un.org/unsd/snaama/resultsBreak.asp?Slevel=1&Cseries=Code14&Year=2003%2C2004&IndCount=8&Selection=basic>. Accessed January 9, 2008.
30. Economic Growth Research. World Bank [homepage on the Internet]. NW Washington, DC: The World Bank Group [Updated 2006 Jun 26; cited 2006 Oct 26]. Available at: <http://www.worldbank.org/research/growth/dddeisqu.htm>. Accessed January 9, 2008.
31. HNPstats - the World Bank's Health, Nutrition and Population data platform [homepage on the Internet]. NW Washington, DC: The World Bank Group [Updated 2006 Jun 26; cited 2006 Oct 26]. Available at: <http://devdata.worldbank.org/hnpstats/query/default.html>. Accessed January 9, 2008.
32. Country Classification. The World Bank Group. The World Bank [homepage on the Internet]. NW Washington, DC: The World Bank Group [Updated 2006 Jun 26; cited 2006 Oct 26]. Available at: <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/0,,pagePK:180619~theSitePK:136917,00.html>. Accessed January 9, 2008.
33. Population and Household Economic Topics. IDB [homepage on the Internet]. Washington DC: U.S. Census Bureau, Population Division, Population Projections Branch [Updated 2006 Jun 26; cited 2006 Jun 26]. Available at: <http://www.census.gov/cgi-bin/ipc/idbsprd>. Accessed January 9, 2008.
34. Freedom in the World Country Ratings 1972-2004 [homepage on the Internet]. Washington, D.C: Free dome House [Updated 2006 Jun 26; cited 2006 Jun 26]. Available at: <http://www.freedomhouse.org/ratings/allscores2005.xls>. Accessed January 9, 2008.
35. Greenland S. Ecologic versus individual-level sources of bias in ecologic estimates of contextual health effects. *Int J Epidemiol*. 2001;30:1343-1350.
36. Morrow M, Hankivsky O, Varcoe C. Women and violence: The effects of dismantling the welfare state. *Critical Social Policy*. 2004;24:358-384.
37. Elman A. Unprotected by the Swedish welfare state revisited: Assessing a decade of reforms for battered women. *Women's Studies Int Forum*. 2001;24:39-52.
38. Franco-Giraldo A, Palma M, Álvarez-Dardet C. The effect of structural adjustment on health conditions in Latin America and the Caribbean, 1980-2000. *Rev Panam Salud Publica*. 2006;19:291-299.
39. Franco-Giraldo A, Álvarez-Dardet C, Ruiz MT. Effect of democracy on health: ecological study. *Br Med J*. 2004;329:1421-1423.
40. Brewer VE, Smith MD. Gender inequality and rates of female homicide victimization across US cities. *J Res Crime Delinq*. 32:175-190.
41. Freedman J. Women in the European Parliament. *Parliam Aff*. 2002; 55:179-188.
42. Paxton P, Kunovich S. Women's political representation: The importance of the ideology. *Soc Forces*. 2003;82:87-114.
43. Vives-Cases C, Álvarez-Dardet C, Carrasco-Portiño M, Torrubiano-Domínguez J. Gender based violence in the Spanish Parliamentary agenda. *Gac Sanit*. 2007;21:242-246.
44. Knight RA, Remington PL. Training internal medicine residents to screen for domestic violence. *J Women's Health Gender Based Med*. 2000;9:167-174.
45. Paranjape A, Liebschutz J. Stat: A Three-question screen for Intimate partner violence. *J Women's Health Gender Based Med*. 2003;12:233-238.
46. Wathen CN, MacMillan HL. Intervention for violence against women: Scientific review. *JAMA*. 2003;289:589-600.
47. Ramsay J, Rivas C, Feder G. Interventions to reduce violence and promote the physical and psychosocial well-being of women who experience partner violence: a systematic review of controlled evaluations. Centre for Health Sciences. Barts and The London Queen Mary School of Medicine and Dentistry [report on the internet]. 2005. [Cited 2006 Jun 26]. Available at: <http://www.dh.gov.uk/assetRoot/04/12/74/26/04127426.pdf>. Accessed January 9, 2007.