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## What do women want? Female suffrage and the size of government

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### ABSTRACT

The economic literature has attributed part of the increase in government expenditure over the 20th century to female voting. This is puzzling, considering that the political science literature has documented that women tended to be more conservative than men over the first half of the 20th century. We argue that the current estimates of this relationship are afflicted by endogeneity bias. Using data for 46 countries and a novel set of instruments related to the diffusion of female suffrage across the globe, we find that, on average, the introduction of female suffrage did not increase either social expenditures or total government expenditure.

### 1. Introduction

Since the 1970s, economists have tried to understand the political economy of taxation and redistribution (see [Romer, 1975](#); and [Roberts, 1977](#)) and how voters influence the scope of government (see [Persson and Tabellini, 2002](#), for a thorough review of this literature). Moreover, during recent decades, the impact of the size and scope of government on economic growth and development has generated a heated empirical debate (see [Barro, 1991](#); [Barro and Sala-i-Martin, 2004](#); [Lindert, 2004](#), among others, for a survey). Thus, understanding the determinants of the size of government is relevant for both the developed and the developing world.

After the Second World War, the size and scope of governments grew significantly ([Lindert, 2004](#)) and never went back to pre-war expenditure levels. The recent economic literature has argued that women's suffrage was one of the determinants of such growth. Indeed, [Lott and Kenny \(1999\)](#) found that the introduction of women's suffrage in U.S. states increased state government expenditure immediately by 14%, followed by a 28% increase over the next 45 years. [Aidt and Dallal \(2008\)](#) found that, in six Western European countries, women's suffrage was associated with a 0.6–1.2% increase in the fraction of social spending as a share of GDP in the short run, with a long-run effect three to eight times larger. The previous findings were sustained in a context that has found important differences between the voting patterns of women and men, particularly in the U.S., since the 1980s (see, for example, [Norander, 2008](#)).

These econometric results are puzzling in light of political science findings of the 1950s and 1960s, which concluded that women were more conservative, religious and prone to support right-wing parties than men (for a thorough discussion, see [Duverger, 1955](#); [Lipset, 1960](#); and [Inglehart and Norris, 2000](#)). One possible explanation for this contradictory evidence would be the presence of endogeneity in the estimations from previous research. For example, previous levels of government expenditure on education and health might have influenced the role of women in society and thus could have influenced the political forces behind the introduction of female suffrage. For this reason, in this paper we investigate the role of the introduction of female suffrage with respect to the size

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of government, using an instrumental variable approach to address the possible endogeneity. We use a sample of 46 countries in three geographical regions of the world.

To address endogeneity, we use a set of carefully selected instruments related to the geographical diffusion of female voting across the globe. In our first stage regression, we use the fact that ideas and political reforms spread slowly around the world, and that this diffusion happens more easily in countries that are closer to each other and/or speak the same language. Our proposed set of instruments passes most over-identification tests, as well as [Stock and Yogo's \(2005\)](#) test of the null hypothesis of weak instruments. Specifically, our estimations are computed using limited information maximum likelihood, which makes our estimations unbiased in the presence of weak instruments.

Contrary to the existing consensus among economists, our main findings show that the introduction of female suffrage has no impact or a negative impact on the size of government. Thus, our results are in line with the political science literature and suggest that the contradictions between the political science literature and the economic literature were due to a strong endogeneity bias that affected the results of the latter.

Our paper is structured as follows. Section 2 contains a brief literature review. Section 3 discusses how geographical and linguistic proximity can help the diffusion of women's suffrage. Section 4 presents an event case study about the introduction of female suffrage across different regions of the world. Section 5 discusses the empirical approach of our estimations. Section 6 discusses the results and Section 7 concludes.

## 2. The voting gender gap and the size of the government

If women and men vote differently, then granting women the right to vote should have an impact on different policy outcomes, such as fiscal policy. This idea has been explored in a number of articles that studied the effect of women's suffrage on the size of government. For example, [Lott and Kenny \(1999\)](#) argue that women's suffrage caused a substantial increase in the size of government in the U.S. The authors study the effect of women's suffrage on a range of different indicators of the size of government, from revenues and expenditures of the federal government to voting indices of the House of Representatives and the Senate from 1870 to 1940, and find that an increase in female political participation is positively related to an expansion in the size of the government.

[Aidt et al. \(2006\)](#) estimate a model for 12 Western European countries for the period 1830–1938 and find that lifting restrictions on suffrage based on property or income contributed to the growth in public expenditures, mainly by increasing expenditure on infrastructure and public safety. They find that the lifting of gender restrictions had a positive but quite weak effect on expenditures for health, education and welfare. A subsequent study carried out by [Aidt and Dallal \(2008\)](#) for six Western European countries for the period 1869–1960 provides evidence that social spending as a portion of GDP increased by 0.6–1.2% in the short run as a consequence of women's suffrage, while the long-run effect is three to eight times larger.

Other than for the U.S. and Western Europe, the literature on women's suffrage is rather limited. [Aidt and Eterovic \(2011\)](#), in a study of the effect of political participation and political competition on the size of government, also examine women's voting for a panel of 18 Latin American countries for the period 1920–2000. They find that women's suffrage does not seem to have significant effects on the size of the government.

These studies motivate the question which differences between men and women cause them to prefer different policy platforms in some circumstances. As pointed out by [Lott and Kenny \(1999\)](#), there are a number of reasons for this, including the marital status. Related to the marital status, men are prone to take more risks when they choose career paths and are more focused on accumulating resources, while women tend to acquire household abilities and take on most of the burden of child rearing. Marriage can be regarded as a means of internalizing the gains from marital specialization and statistical discrimination in the labor market, with divorced women finding it difficult to return to the labor market and single women facing labor market discrimination. In this context, single women and those likely to become single may prefer a more progressive tax system and more wealth transfers to low income people, as an alternative to the uncertainty of having a male partner to provide income. As divorced women are more likely to assume the costs of child rearing, they will tend to seek legal guarantees in order to obtain some income through alimony, but this entails additional risk, given the difficulties in tracking the men and securing payments. Keeping this in mind, relatively risk-averse women may prefer a minimum guaranteed income provided by the state relative to the risky income from the men to whom they were previously married. Thus, women can rely either on the income of their former husbands (presuming these gains can be appropriated) or on a minimum guaranteed income. Faced with this choice, women will be more likely to support publicly provided goods, such as education and healthcare, as insurance against unexpected unemployment or marital disruption ([Lott and Kenny, 1999](#)).

Another reason why women may prefer a larger government<sup>1</sup> is found in [Cavalcanti et al. \(2011\)](#). They argue that the demand for social services naturally rises when women enter the workforce in increasing numbers because of a growing need to shift part of the burden of household obligations, such as childcare, to the state.

The political science literature has also found differences in preferences between women and men regarding other public policies. [Norander \(2008\)](#) shows that these manifested themselves in nearly 10 percentage points difference between men and women on a variety of subjects in post-1970s surveys. For example, when questioned on whether “the government in Washington should see to it

<sup>1</sup> Most of the recent economic literature has argued that women prefer greater social spending and transfers. In principle, this could imply a larger size of the government, but this might not always be the case. Indeed, recent evidence has found that, although women have different public spending preferences than men, under a constrained public budget this could imply that social spending crowds out other items of public spending, such as infrastructure. This was found by [Chattopadhyay and Duflo \(2004\)](#) for the case of India. Thus, when looking at aggregate social spending, one should be cautious in asserting that women prefer larger governments.

that every person has a job and a good standard of living,” compared to the option that “the government should just let each person get ahead on his own,” 53% of men preferred the individualistic option, whereas just 43% of women did. The gap is maintained when a similar question is proposed regarding the provision of public services, where 45% of women preferred more services, compared to 34% of men. A similar gap occurs regarding the need to solve problems in the domestic society, compared to the option to use the same resources for military activities.

These differences in preferences suggest that granting women the right to vote should have a significant impact on the size of government. However, these surveys were taken well after women got the right to vote. By contrast, the earlier political science literature found that women in both the U.S. and Western Europe (the UK, Germany, France, and Austria, among other countries) were more likely than men to support center right-wing parties.<sup>2</sup> As stated by Inglehart and Norris (2000), “The early classics in the 1950s and 1960s established the orthodoxy in political science; gender differences in voting tended to be fairly modest but nevertheless women were found to be more apt than men to support center-right parties in Western Europe and in the United States...” This finding was named the “*traditional gender gap*” in the political science literature.<sup>3</sup> Additionally, women’s voter turnout was significantly lower than that of men.<sup>4</sup> Thus, the small gender differences in preferences were even less likely to change election outcomes, given women’s lower participation in elections. The small size of the gap and the low participation decrease the likelihood that women could have affected the size and scope of government in the pre-1970 period.

It was only in the 1980s that women started moving toward the left with respect to men. This pattern of gender dealignment was found in Britain, Germany, the USA, the Netherlands and New Zealand, among other countries.<sup>5</sup> This new evidence challenged the view that women were more conservative than men, giving rise to what has been named the “*modern gender gap*”.

Inglehart and Norris (2000), using a sample of nearly 60 countries, find that, as recently as the 1980s, women tended to be more conservative than men in established democracies regarding both ideology and voting. The traditional gender gap continued to be detected in postindustrial societies in the 1980s, a situation that prevails even today in many countries. But Inglehart and Norris also find that, in many postindustrial societies, women have moved to the left since the 1990s. The modern gender gap is stronger in younger cohorts, while the traditional gender gap prevails among older women, a fact that allows us to anticipate the development of the modern gender gap in many countries in the future. Based on this and other evidence, Inglehart and Norris conclude that the modern gender gap is linked to the process of economic and political development.

Thus, the recent economic literature is in conflict with political science evidence that, even in countries where women lean to the left today, they used to lean toward the right, even as late as the 1980s. Post-1980s evidence has been used by the previous economic literature to explain the supposed behavior of women sixty or seventy years earlier – at the moment they gained the right to vote. However, there is evidence on the traditional gender gap that does not support the extrapolation of current circumstances and women’s behavior, such as the modern gender gap, to explain the introductory period of women’s suffrage. Our hypothesis is that the results of the economic literature have a strong endogeneity bias. When this endogeneity is addressed, we see that the introduction of women’s suffrage in the early period did not increase social spending. In other words, our findings are consistent with the traditional gender gap.

### 3. Data sources

Our goal is to test whether, consistently with the traditional gender gap, the introduction of women’s suffrage in fact did not increase social spending. We want to show that the positive correlation between public expenditure and women’s suffrage is due to the endogeneity of this relationship, and that when we address this endogeneity using an instrumental variable approach, the positive relationship disappears. We obtained the dates of the introduction of women’s right to vote across the globe from the Inter-Parliamentary Union website. We use historical books in order to gather expenditure data (International Historical Statistics 1750–1993–International Historical Statistics Africa, Asia and the Americas and Oceania, B.R Mitchell). We also use the dataset from the Finnish Social Science Data Archive, University of Tampere (2000) (Vanhanen, Democratization and Power Resources 1850–2000). In addition, we also use the Cross-National Time-Series Data Archive, by Arthur S. Banks, 2000.

In particular, we use government expenditure as a share of GDP and population over 60 years from Mitchell (several editions). Urban population and percentage of students and literacy are taken from Vanhanen (2000). From Banks (2000) we use the railroad kilometers. From the Inter-parliamentary Union, we obtained the years in which female suffrage was enacted. From Polity IV by Marshall and Jaggers (2000), we obtain the variable polity2 that we use to classify governments as democratic or not. We use geographical distance, neighboring countries, colonies and language from the website of the French research center CEPIL. The dataset used by Aidt and his co-authors (2006–2014) was generously provided directly by Toke Aidt.

<sup>2</sup> See Duverger (1955), Lipset (1960), Pulzer (1967), Goot and Reid (1984) and other references also included in the review of the literature by Inglehart and Norris (2000).

<sup>3</sup> Inglehart and Norris (2000) explain this difference in preferences and voting behavior by differences in religiosity, longevity and labor force participation, which make women more conservative in values and hence politically more conservative than men.

<sup>4</sup> Indeed, in Sweden, women’s turnout was between 7% and 15% lower than men’s between 1919 and 1934; in Norway it was between 7% and 18% lower for the period 1909–1933; in Denmark between 11% and 12% lower for the period 1919–1926; in Iceland between 13% and 39% lower for the period 1916–1933; in Finland between 5% and 11% lower for the period 1908–1931; and in Australia between 7% and 14% lower for the period 1903–1922. All figures were obtained from Tingsten (1937).

<sup>5</sup> See Baxter and Lansing (1983), Rose and McAllister (1990) and Rusciano (1992), among others cited in Inglehart and Norris (2000). For an alternative survey on the US see Norander (2008).

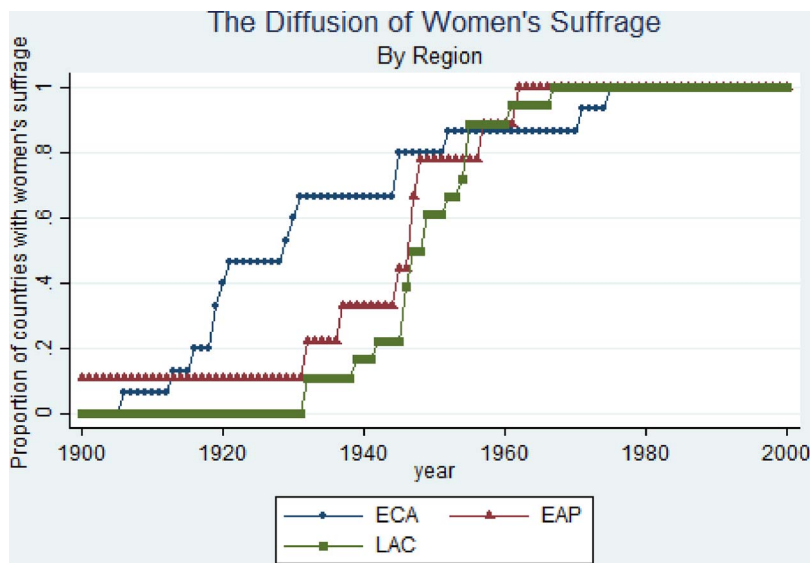


Fig. 1. Diffusion of Women Suffrage by Region.

#### 4. The introduction of women's suffrage

To address the endogeneity of women's suffrage, we follow an instrumental variable approach, where the selected instruments need to be correlated to the introduction of female voting and have no direct effect on public expenditure. Our selected instruments are related to spatial dependency and the geographical diffusion of female voting across the globe.

Spatial dependence exists whenever the expected utility of one unit of analysis is affected by the decisions or behavior made by other units of analysis. From a theoretical perspective, spatial dependence can arise from a number of sources, namely coercion, competition, externalities, learning, or emulation (Simmons and Elkins, 2004; Elkins and Simmons, 2005; Franzese and Hays, 2010). Agents change their behavior because others exert pressure on them (Levi-Faur, 2005), because the strategies carried out by other agents affect the gains they generate from their own behavior (Simmons and Elkins, 2004; Franzese and Hays, 2006), because agents emulate strategies that are proven to be more successful (Meseguer, 2005), or because they want to mimic the behavior of others (Weyland, 2005).

In the context of women's suffrage acquisition, it may be the case that the acquisition of women's suffrage in one country was affected by the successes and failures of franchise movements in other countries. As argued by Ramirez et al. (1997), "Victories in New Zealand, Australia and Finland were not regarded elsewhere as examples of local color, but as markers of transnational development of worldwide significance. Nor did these early successful movements operate as if they were localized."

The first country that introduced women's suffrage was New Zealand in 1893, followed by Australia and Finland in 1902 and 1906, respectively. There was an early wave of suffrage extension that occurred mostly in Europe between 1900 and 1930, but the largest wave of countries extending the franchise to women occurred after 1930 (Ramirez et al., 1997). As Paxton and Hughes (2007) claim, "as increasing numbers of countries increasingly granted women suffrage, the pressure on surrounding countries that had not yet extended rights to women mounted".

We share the hypothesis of Ramirez et al. (1997) that suffrage rights were partly forged by international movements. Moreover, we believe that a country's decision to grant women the right to vote was mostly influenced by countries with historically shared ties (such as language or colonial history) or high levels of interaction. Therefore, in this study, we use the number of countries, weighted by distance, that allowed women to vote as an instrument for women's suffrage.<sup>6</sup> As a second set of instruments, we use the number (and the number weighted by distance) and percentage of countries that share the same language and have women's franchise.

The idea that agents are influenced not only by geographically proximate units, but also by historically shared ties, is not new. Dow et al. (1984) consider dependence from geographical distance as well as language similarity in an application to the diffusion of gambling. Simmons and Elkins (2004) model the diffusion of economic liberalization partially as a function of the liberalization of one's neighbors, where neighborhood is defined by either trade or group membership, not by geography. Aidt and Jensen (2014) tested the hypothesis that the extension of the voting franchise was caused by the threat of revolution, as proposed by Acemoglu and Robinson (2000). As opposed to previous studies that attempted to test this hypothesis by using proxies of the threat of revolution, such as measures of strikes, riots and demonstrations, the authors instead use records of revolutionary events in neighboring countries, based on the logic of the international transmission of information. The underlying argument suggests that the governing elites would learn from revolutionary events closer to home and would interpret this as an increase in the probability of revolution in

<sup>6</sup> We also use the number of neighboring countries that allowed women to vote as an instrument for women's suffrage

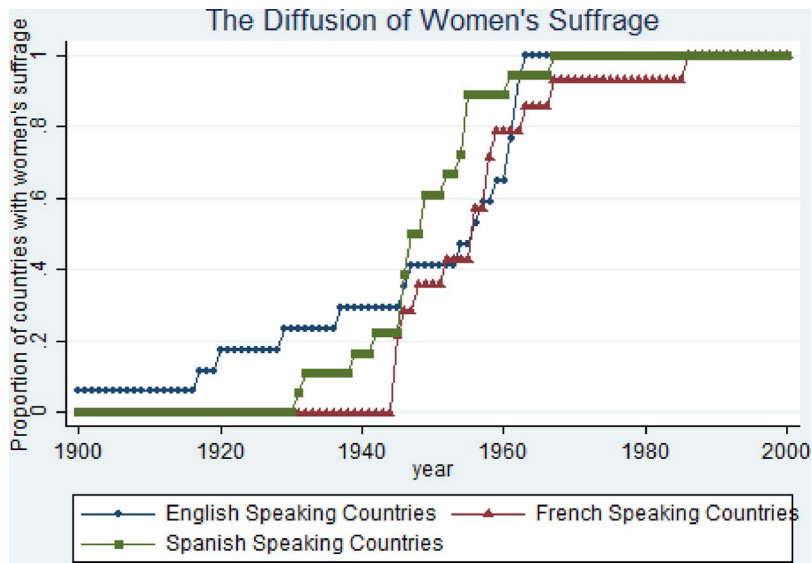


Fig. 2. Diffusion of Women Suffrage by Language.

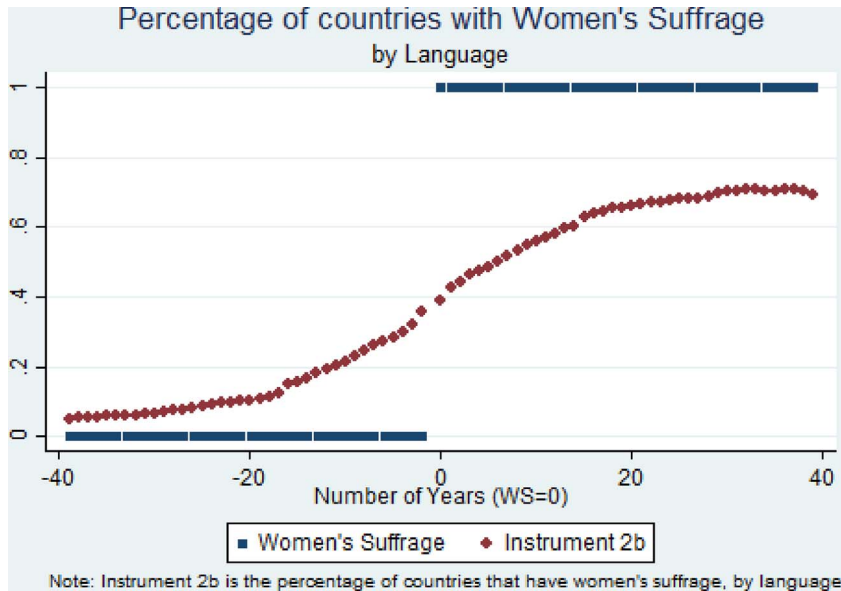


Fig. 3. Evolution of the introduction of women's suffrage.

their own country. They construct threat measures based on the geographical and linguistic distances to events.

In Fig. 1, countries are classified within three regions according to the World Bank geographical classification: Europe and Central Asia (ECA), Latin America and the Caribbean (LAC), and East Asia and the Pacific (EAP). Countries in other regions are excluded from the graph. Before 1900, the only region with women’s franchise was EAP. By 1980, women’s suffrage was approved in every country in these three regions.

Fig. 2 classifies countries into three groups that share the same language: French speaking countries, English speaking countries and Spanish speaking countries. Countries that speak other languages are excluded from this graph. We can see that, for both French and Spanish speaking countries, women’s suffrage was introduced in every country within approximately 40 years. The time span is longer for English speaking countries, with New Zealand introducing women’s suffrage before 1900 and Kenya in 1963.

The previous graphs don’t provide clear evidence that language or geographic proximity helps the diffusion of women’s suffrage. To show how proximity can help the diffusion, Fig. 3 shows the relationship between the time women’s suffrage was introduced and the percentage of countries that share the same language, and Fig. 4 shows the percentage of neighboring countries with women’s suffrage. Both graphs show that, on average, countries introduced women’s suffrage when 40% of their neighbors had done so and when 40% of the countries that share the same language had granted women the right to vote.

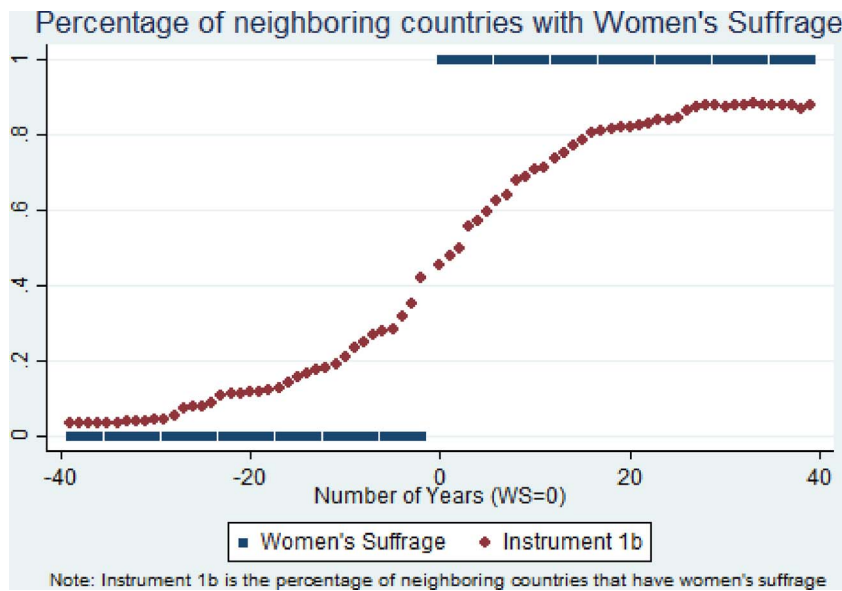


Fig 4. Diffusion of Women Suffrage in neighboring countries.

Table 1  
Correlation matrix.

	Women's Suffrage	Instrument 2a	Instrument 2b
Women's Suffrage	1.0000		
Instrument 2a	0.5940***	1.0000	
Instrument 2b	0.7409***	0.7720***	1.0000
Instrument 2c	0.6125***	0.6950***	0.6962***

Notes: Instrument 2a is the number of countries that have women's suffrage, by language. Instrument 2b is the percentage of countries that have women's suffrage, by language. Instrument 2c is the number of countries, weighted by distance, that have women's suffrage, by language.

\*\*\* Significant at 1%.

Finally, Table 1 presents the correlation between a women's suffrage dummy, which takes the value of one after the country granted women the right to vote and a value of zero before, and the three instruments that we will use in our estimations. We can see that all correlations are significant at 1%.

### 5. Women's suffrage and public spending

In our analysis, we will use the whole sample of countries and their geographical locations as subsamples. We count countries with sufficient data in Europe and Central Asia (ECA), Latin America (LAC), East Asia and the Pacific (EAP) and the Middle East and North Africa (MENA). Countries are classified within these regions according to the World Bank geographical classification. Table A1 in the Appendix A shows the complete sample of countries included in the analysis, including the region and language.

Figs. 5–8 show our event analysis for the whole sample and for the three regions specified. We consider the year in which female suffrage was enacted as year 0, and on the x-axis we plot the period between 20 years previous to the reform and the 20 years that followed. On the y-axis, we plot the share of GDP that corresponds to total government expenditure.

These graphs show no clear pattern. While in some regions – ECA and LAC – we observe an upward trend in the share of government expenditure, in general this trend starts before the reform. Moreover, we also observe one region (EAP) in which there is a clear downward trend that, again, starts before the reform. These trends may be explained in part by other things that were changing at the time female suffrage was enacted. For example, the EAP decline in government spending after suffrage appears likely to be caused by the end of WWII, since this region mostly gave women the franchise just after the war. Therefore, we will need to consider these other factors in order to be able to measure the causal effect of women's suffrage.

The reported graphs are a clear signal that it is not an easy task to disentangle the real effect women's suffrage had on government size. There is no consistent pattern, and the changes in trend in government size precede the voting reform in all cases.

### 6. Econometric framework

To make our results comparable to previous studies, we begin by replicating the methodology presented in Aidt and Dallal (2008).

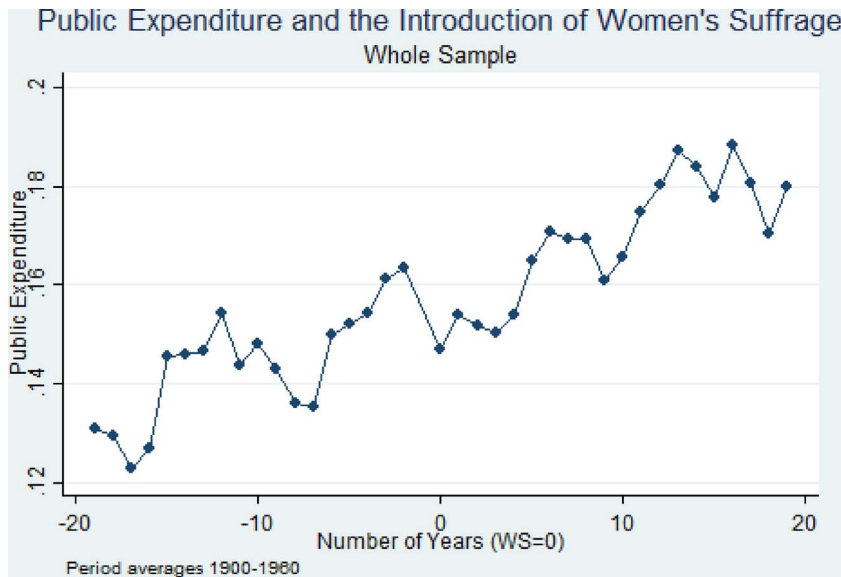


Fig. 5. Public Expenditure around the introduction of women's suffrage.

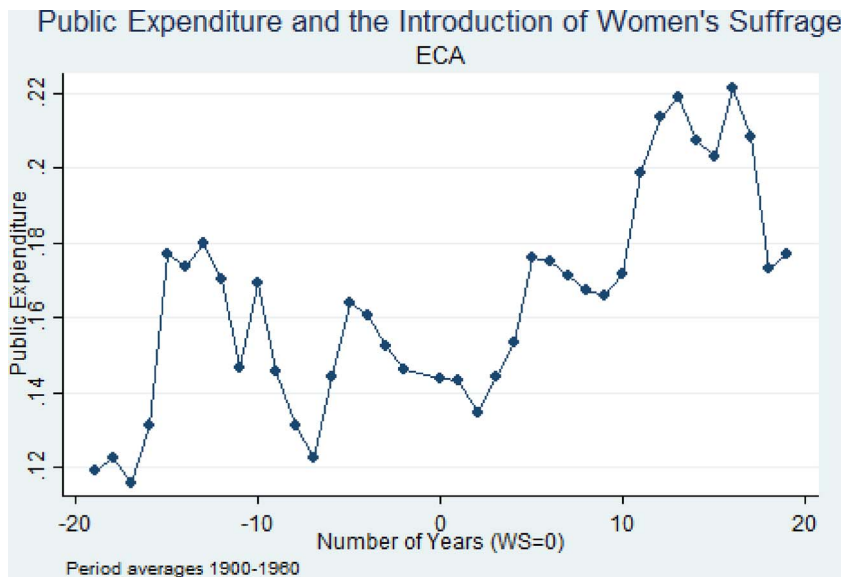


Fig 6. Public Expenditure around the introduction of women's suffrage ECA.

That is, we estimate the following regression:

$$y_{i,t} = \eta_i + \delta_t + TREND_i + \beta WS_{i,t}^T + \gamma X_{i,t} + \theta y_{i,t-1} + \varepsilon_{it}, \tag{1}$$

where  $\eta_i$  is the country fixed effect,  $\delta_t$  is a time fixed effect,  $TREND_i$  is a country time trend variable,  $y_{i,t-1}$  is the lagged endogenous variable, and  $X_{i,t}$  is a number of control variables, including the country's divorce rate, the log of single women, female labor force participation, economic franchise, political competition, proportional rule,<sup>7</sup> age structure, the log of GDP per capita, education and the log of population. The dependent variables that we consider in our analysis,  $y_{i,t}$  are total spending as a percentage of GDP, social spending as a fraction of GDP, and security spending as a fraction of GDP. Finally, we construct the women's suffrage variable as a spline function, where  $WS_i$  takes the value one once the female voting right was enacted, and then increases linearly to T, with  $T = \{0, 10, 15, 20\}$ . Then, if  $T = 20$  and women's suffrage was introduced in  $t = t^*$ ,

<sup>7</sup> The proportional rule variable is equal to one if the electoral system is based on proportional representation and equal to zero if it is based on majority rule.

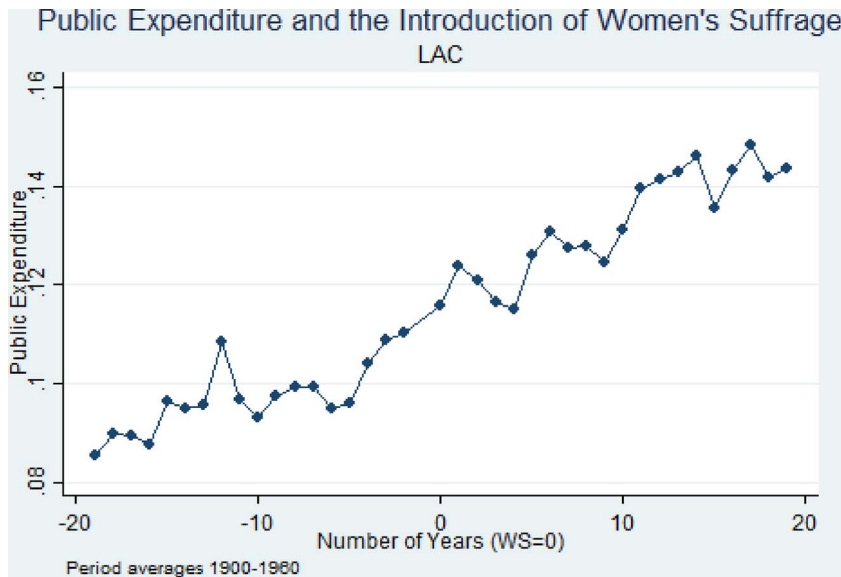


Fig. 7. Public Expenditure around the introduction of women's suffrage LAC.

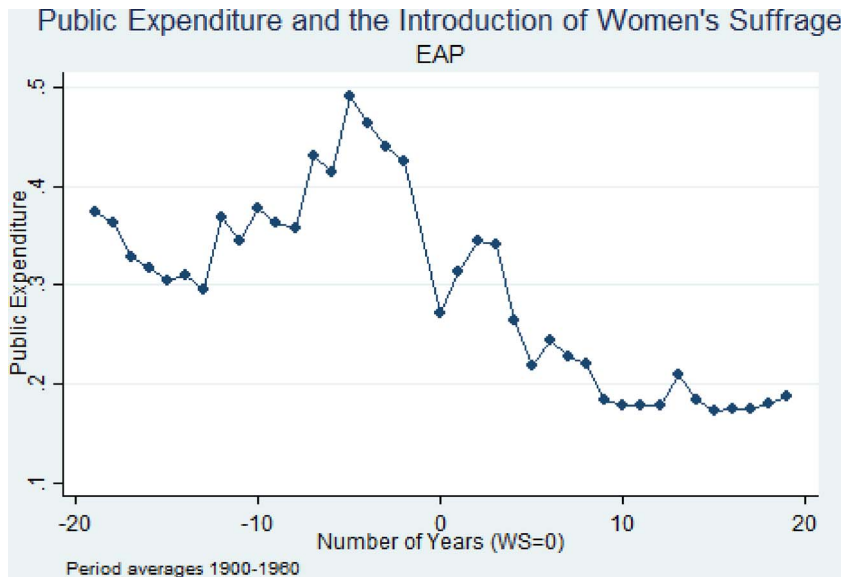


Fig. 8. Public Expenditure around the introduction of women's suffrage EAP.

$$W_{i,t}^* = \begin{cases} 0 & \text{if } t < t^* \\ i & \text{if } t = t^* + i < T \\ T & \text{if } t \geq t^* + T \end{cases}$$

Finally,  $\varepsilon_{it}$  is the error disturbance term.

The previous estimations are biased in the presence of endogeneity. For this reason, we proceed to estimate a model using instrumental variables, which can be expressed as follows:

$$y_{i,t} = \eta_i + \delta_t + TREND_i + \beta WS_{i,t}^T + \gamma X_{i,t} + \theta y_{i,t-1} + \varepsilon_{it} \tag{2}$$

$$WS_{i,t}^T = \eta_i + \delta_t + TREND_i + \zeta X_{i,t} + \varphi Z_{i,t} + \varepsilon_{it} \tag{3}$$

where  $Z_{i,t}$  corresponds to our set of instrumental variables related to the voting reform diffusion across countries that speak the same language or are neighbors of country  $i$ . These three diffusion variables can enter the estimation either as level, as a share of the corresponding total, or weighted by distance.



**Table 2**  
Effect of past public expenditure in neighboring countries on public expenditure.

VARIABLES	OLS		
	(1)	(2)	(3)
Lagged average public expenditure in neighboring countries	−0.008 (0.037)	0.013 (0.032)	−0.091 (0.058)
Lagged endogenous	0.628*** (0.078)	0.580*** (0.049)	0.316*** (0.062)
ln(population)	−0.132 (0.121)	0.137 (0.160)	0.137 (0.086)
Age structure	0.000 (0.000)	0.000 (0.000)	0.000* (0.000)
ln(gdp per capita)	0.068** (0.029)	0.071*** (0.021)	0.023 (0.021)
Literacy	0.41 (0.350)	1.590*** (0.579)	−0.115 (0.200)
Political competition	0.005 (0.008)	0.022* (0.012)	0.001 (0.003)
Observations	745	379	267
R-squared	0.852	0.843	0.869
Countries	34	13	15

Notes: Model (1) includes all countries in the sample. Model (2) includes countries in ECA and model (3) includes countries in LAC

This empirical strategy will provide consistent estimators, given that the variables contained in  $Z_{i,t}$  don't have a direct effect on the country's public expenditure. To test this exclusion restriction, we replace the variable  $WS_{i,t}^T$  in Eq. (1) with the average past public expenditure in neighboring countries. If the exclusion restriction holds, then this variable should have no significant effect on public

**Table 3**  
Total government spending as a share of GDP – Aidt's sample (1860–1960).

	OLS			IV		
	(1)	(2)	(3)	(1)	(2)	(3)
WS, 10 years lag	−0.017 (0.013)			−0.075* (0.030)		
WS, 15 years lag		−0.014 (0.011)			−0.058* (0.026)	
WS, 20 years lag			−0.008 (0.010)			−0.052* (0.022)
Divorce Rate	−0.009 (0.008)	−0.009 (0.008)	−0.008 (0.008)	−0.022 (0.012)	−0.019 (0.010)	−0.018 (0.010)
ln(single women)	−0.161 (0.123)	−0.161 (0.124)	−0.174 (0.123)	0.047 (0.260)	0.050 (0.264)	0.004 (0.252)
Female labor force participation	−0.901*** (0.336)	−0.894*** (0.338)	−0.906*** (0.342)	−0.625 (0.387)	−0.596 (0.533)	−0.537 (0.591)
Economic franchise	−0.001 (0.001)	−0.001 (0.001)	−0.001 (0.001)	−0.002 (0.002)	−0.002 (0.002)	−0.003 (0.002)
Political competition	−0.018 (0.042)	−0.018 (0.043)	−0.022 (0.043)	−0.058 (0.063)	−0.067 (0.060)	−0.076 (0.059)
Proportional rule	−0.039 (0.045)	−0.040 (0.043)	−0.048 (0.043)	0.042 (0.074)	0.031 (0.061)	0.034 (0.061)
Age structure	0.021 (0.017)	0.019 (0.018)	0.020 (0.018)	0.037 (0.044)	0.029 (0.039)	0.022 (0.037)
ln(gdp per capita)	−0.219 (0.142)	−0.199 (0.148)	−0.233 (0.157)	−0.119 (0.302)	−0.077 (0.298)	−0.045 (0.346)
Education	−0.239 (0.197)	−0.267 (0.198)	−0.250 (0.199)	−0.633 (0.388)	−0.769* (0.380)	−0.837* (0.404)
ln(population)	−0.417 (0.488)	−0.449 (0.485)	−0.462 (0.485)	0.327 (1.426)	0.218 (1.257)	0.057 (1.140)
Lagged endogenous	0.657*** (0.050)	0.658*** (0.049)	0.664*** (0.049)	0.602*** (0.050)	0.613*** (0.050)	0.615*** (0.051)
Observations	409	409	409	351	351	351
R-squared	0.966	0.966	0.966	0.581	0.587	0.580
Countries	6	6	6	6	6	6
Hansen J test				0.821	0.257	0.408
F-test, weak Ident				763.300	23.840	10.490

**Table 4**  
Broad definition of social expenditure as a share of GDP – Aidt's sample (1860–1960).

	OLS			IV		
	(1)	(2)	(3)	(1)	(2)	(3)
WS, 10 years lag	0.037** (0.017)			−0.070 (0.068)		
WS, 15 years lag		0.031** (0.014)			−0.031 (0.022)	
WS, 20 years lag			0.026** (0.012)			−0.019 (0.017)
Divorce Rate	−0.001 (0.010)	−0.003 (0.010)	−0.002 (0.010)	0.005 (0.018)	0.004 (0.014)	0.003 (0.011)
ln(single women)	−0.045 (0.161)	−0.041 (0.160)	−0.015 (0.161)	−0.053 (0.198)	−0.112 (0.063)	−0.169* (0.082)
Female labor force participation	0.578 (0.591)	0.542 (0.583)	0.488 (0.591)	1.016 (0.581)	0.875 (0.571)	0.839 (0.587)
Economic franchise	0.002* (0.001)	0.002* (0.001)	0.003* (0.001)	0.001 (0.001)	0.002 (0.002)	0.002 (0.002)
Political competition	−0.073 (0.077)	−0.073 (0.077)	−0.069 (0.078)	−0.010 (0.077)	−0.024 (0.072)	−0.028 (0.077)
Proportional rule	−0.154*** (0.055)	−0.154*** (0.055)	−0.153*** (0.056)	−0.026 (0.090)	−0.067 (0.091)	−0.079 (0.101)
Age structure	−0.053 (0.042)	−0.046 (0.042)	−0.040 (0.043)	−0.090 (0.060)	−0.096* (0.046)	−0.102* (0.046)
ln(gdp per capita)	−0.753*** (0.236)	−0.806*** (0.244)	−0.795*** (0.247)	−0.133 (0.409)	−0.278 (0.377)	−0.356 (0.400)
Education	0.767*** (0.269)	0.841*** (0.285)	0.822*** (0.285)	0.382 (0.421)	0.506 (0.337)	0.628 (0.387)
ln(population)	2.229*** (0.769)	2.305*** (0.768)	2.322*** (0.771)	2.263 (1.387)	2.136* (0.978)	2.111* (0.940)
Lagged endogenous	0.749*** (0.045)	0.750*** (0.045)	0.753*** (0.046)	0.736*** (0.056)	0.738*** (0.049)	0.737*** (0.049)
Observations	346	346	346	308	308	308
R-squared	0.98	0.98	0.98	0.636	0.659	0.666
Countries	6	6	6	6	6	6
Hansen J test				0.505	0.477	0.460
F-test, weak Ident				23.79	702.6	33.97

expenditure. Our results, presented in [Table 2](#), show that we cannot reject a zero effect of the past public expenditure in neighboring countries on public expenditure.

## 7. Results

We estimate both models for two different samples. First, we use the same data as in [Aidt and Dallal \(2008\)](#). This sample includes 6 European countries versus the 46 countries in the second sample. Despite the smaller sample of countries, this sample includes better control variables, and we can distinguish between different types of spending. In our second sample, we have more countries but a shorter time period and fewer control variables, and we only observe total spending.

### 7.1. Aidt's sample

[Table 3](#) replicates the specification used by [Aidt and Dallal \(2008\)](#) but with total government expenditure as a share of GDP as the dependent variable. The first three columns show an OLS set of estimations. We observe that the introduction of women's suffrage does not seem to increase total government expenditure at 10, 15 or 20 years after the introduction. As we have discussed, estimations by OLS are afflicted by endogeneity bias and therefore, in columns 4 to 6, we estimate the same specifications with instrumental variables using limited information maximum likelihood (LIML). This new set of estimates shows a negative impact of the introduction of women's suffrage after 10, 15 or 20 years. This last set of estimates survives the Hansen's overidentification and weak instrument tests. We use Hansen's tests because these and all the estimations of the paper are computed with robust standard errors.

Regarding other controls, the lagged dependent variable is significant in both OLS and LIML estimations, while female labor participation is only significant in the OLS estimates. None of the other controls are significant in any estimation.

[Table 4](#) replicates some of the results presented in [Tables 3–6](#) in [Aidt and Dallal \(2008\)](#). [Table 4](#) uses [Aidt and Dallal's \(2008\)](#) broad definition of social spending as a share of GDP, which includes spending on health, education, public housing, redistribution and insurance programs (retirement benefits, pensions, and child support, among others), plus economic services, transport and communications.

The first three columns of [Table 4](#) show the same results as Aidt because we use the same methodology and data as in his study.

**Table 5**  
 Spending on defense as a share of GDP – Aidt's sample (1860–1960).

	OLS			IV		
	(1)	(2)	(3)	(1)	(2)	(3)
WS, 10 years lag	0.012 (0.021)			-0.061 (0.031)		
WS, 15 years lag		0.016 (0.017)			-0.041 (0.038)	
WS, 20 years lag			0.018 (0.016)			-0.032 (0.032)
Divorce Rate	0.006 (0.013)	0.005 (0.013)	0.004 (0.013)	0.011 (0.014)	0.012 (0.017)	0.010 (0.015)
ln(single women)	-0.307 (0.196)	-0.310 (0.198)	-0.301 (0.198)	-0.151 (0.335)	-0.152 (0.289)	-0.205 (0.227)
Female labor force participation	-0.613 (0.678)	-0.651 (0.670)	-0.715 (0.677)	-0.224 (0.392)	-0.236 (0.435)	-0.216 (0.416)
Economic franchise	0.000 (0.002)	0.000 (0.002)	0.000 (0.002)	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)
Political competition	0.035 (0.094)	0.032 (0.095)	0.032 (0.095)	0.054 (0.088)	0.044 (0.076)	0.041 (0.069)
Proportional rule	0.000 (0.066)	-0.008 (0.065)	-0.017 (0.066)	0.090 (0.060)	0.072 (0.076)	0.068 (0.079)
Age structure	-0.027 (0.053)	-0.023 (0.053)	-0.018 (0.054)	-0.023 (0.064)	-0.026 (0.051)	-0.035 (0.041)
ln(gdp per capita)	-0.494 (0.315)	-0.568* (0.334)	-0.621* (0.352)	-0.031 (0.688)	-0.025 (0.782)	-0.065 (0.737)
Education	-0.395 (0.327)	-0.324 (0.338)	-0.290 (0.336)	-0.850** (0.323)	-0.917 (0.526)	-0.824 (0.508)
ln(population)	0.750 (0.895)	0.787 (0.905)	0.814 (0.911)	0.817 (0.420)	0.733 (0.406)	0.697 (0.479)
Lagged endogenous	0.800*** (0.047)	0.798*** (0.048)	0.794*** (0.049)	0.804*** (0.041)	0.806*** (0.037)	0.811*** (0.039)
Observations	337	337	337	299	299	299
R-squared	0.957	0.957	0.958	0.705	0.706	0.706
Countries	6	6	6	6	6	6
Hansen J test				0.937	0.963	0.846
F-test, weak Ident				68.2	2233	19.55

We observe that the OLS estimates indeed show a positive effect of women's suffrage on the broad definition of social spending 10, 15 and 20 years after the introduction. However, when we estimate the model using instrumental variables, this positive effect becomes insignificant. Again, all LIML estimations survive the Hansen's and weak instruments tests and show robust standard errors.

Regarding other controls, the lagged dependent variable and population are positive and significant in both OLS and LIML estimations, while economic franchise and education are only significant in the OLS estimates and show positive coefficients. GDP per capita and proportional rule are also significant in the OLS estimates, but show negative signs. None of the other controls are significant in any estimation.

We investigate whether female voting has had an impact on other types of public spending such as defense, and find that it does not. In this case, none of the OLS and LIML coefficients linked to the introduction of women's suffrage turn out to be significant. All LIML estimations survive the specifications tests.

Regarding other controls, the lagged dependent variable is positive and significant in both the OLS and the LIML estimations, while education and GDP per capita show a negative and significant coefficient in some of the estimations. None of the other controls are significant in any of the estimations.

## 7.2. Whole sample

We replicate our estimations for the second database, which includes 46 countries. It should be noted that the time period is shorter as it covers only the period 1900–1960, and we have fewer control variables.

In Table 6, as a first exercise, we run a restricted sample that includes the six countries from Aidt and Dallal's (2008) sample. We again see a marginally positive effect of women's suffrage when using OLS, which is significant even ten years after the introduction of women's suffrage. However, this positive effect disappears when using instrumental variables. All LIML estimations survive the Hansen's and weak instruments tests by a wide margin.

Regarding other controls, the lagged dependent variable is positive and significant and age structure is negative and significant in both the OLS and the LIML estimations, while literacy, political competition and GDP per capita show a positive and significant coefficient in the OLS estimations. Population does not show as significant in any estimation.

Because the inclusion of both the lagged endogenous variable and the country-specific trend control may lead to us finding no

**Table 6**  
Total government spending as a share of GDP – Countries included in Aidt's sample (1900–1960).

VARIABLES	OLS			IV			IV					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
WS	0.003 (0.009)				0.010 (0.016)				-0.026* (0.010)			
WS, 10 years lag		0.002* (0.001)				0.001 (0.003)				-0.004 (0.002)		
WS, 15 years lag			0.002 (0.001)				0.000 (0.002)				-0.004 (0.002)	
WS, 20 years lag				0.001 (0.001)				0.000 (0.002)				-0.004* (0.002)
Political competition	0.028*** (0.009)	0.029*** (0.009)	0.030*** (0.009)	0.030*** (0.009)	0.027 (0.015)	0.029 (0.015)	0.029 (0.016)	0.029 (0.016)	0.029 (0.016)	0.029 (0.018)	0.028 (0.019)	0.026 (0.020)
Age structure	-0.000** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000* (0.000)	-0.000* (0.000)	-0.000** (0.000)	-0.000** (0.000)	0.000* (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
ln(gdp per capita)	0.063** (0.026)	0.052* (0.027)	0.052* (0.029)	0.056* (0.031)	0.061 (0.033)	0.057 (0.041)	0.061 (0.047)	0.064 (0.050)	0.061** (0.018)	0.076** (0.029)	0.077* (0.031)	0.076* (0.032)
Literates	1.576*** (0.590)	1.970*** (0.678)	1.990*** (0.706)	1.788** (0.696)	1.710* (0.809)	1.804 (1.069)	1.626 (1.271)	1.529 (1.266)	1.95 (0.306)	0.093 (0.0273)	0.030 (0.194)	-0.217 (0.130)
ln(population)	0.103 (0.161)	0.101 (0.160)	0.115 (0.164)	0.120 (0.171)	0.100 (0.168)	0.102 (0.154)	0.107 (0.174)	0.106 (0.198)	-0.071 (0.071)	-0.059 (0.089)	-0.053 (0.093)	-0.053 (0.088)
Lagged endogenous	0.604*** (0.049)	0.606*** (0.048)	0.600*** (0.048)	0.601*** (0.048)	0.609*** (0.045)	0.605*** (0.039)	0.601*** (0.040)	0.602*** (0.040)	0.623*** (0.019)	0.625*** (0.028)	0.634*** (0.023)	0.634*** (0.022)
Observations	334	334	334	334	334	334	334	334	334	334	334	334
R-squared	0.929	0.929	0.929	0.929	0.646	0.65	0.648	0.647	0.621	0.611	0.614	0.615
Countries	6	6	6	6	6	6	6	6	6	6	6	6
Joint significance of country specific trends (Prob > F)	0.010	0.005	0.005	0.004	0.006	0.000	0.000	0.000	2006.00	41.32	96.32	285.50
Hansen J test					233.60	5.83	101.40	162.90	0.248	0.424	0.506	0.420
Country fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Country specific time trend	yes	yes	yes	yes	yes	yes	yes	yes	no	no	no	no

Notes: Standard errors, clustered at the country level, are presented in parentheses. \*\*\* p < 0.01. \*\* p < 0.05. \* p < 0.1.

**Table 7**  
Total government spending as a share of GDP – Whole sample (1900–1960).

VARIABLES	OLS				IV				IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
WS	–0.006 (0.004)				0.000 (0.011)				0.022 (0.016)			
WS, 10 years lag		–0.001 (0.001)				0.000 (0.001)				0.002 (0.002)		
WS, 15 years lag			–0.001 (0.001)				0.001 (0.001)				0.002 (0.001)	
WS, 20 years lag				–0.001 (0.000)				0.001 (0.001)				0.002 (0.001)
Political competition	0.005 (0.004)	0.004 (0.004)	0.004 (0.004)	0.004 (0.004)	0.004 (0.004)	0.003 (0.003)	0.003 (0.003)	0.002 (0.003)	–0.006 (0.006)	–0.005 (0.006)	–0.005 (0.006)	–0.005 (0.007)
Age structure	–0.000* 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000
ln(gdp per capita)	0.053*** (0.012)	0.054*** (0.012)	0.054*** (0.012)	0.055*** (0.011)	0.054*** (0.015)	0.054*** (0.014)	0.053*** (0.014)	0.052*** (0.014)	0.046*** (0.012)	0.042*** (0.011)	0.040*** (0.011)	0.039*** (0.011)
Literates	0.184** (0.075)	0.185** (0.080)	0.184** (0.081)	0.185** (0.079)	0.198 (0.120)	0.202 (0.121)	0.212* (0.125)	0.218* (0.129)	0.038 (0.031)	0.052 (0.036)	0.063 (0.042)	0.073 (0.048)
ln(population)	–0.052 (0.051)	–0.055 (0.056)	–0.054 (0.055)	–0.055 (0.052)	–0.065 (0.060)	–0.068 (0.058)	–0.076 (0.055)	–0.080 (0.051)	–0.054** (0.023)	–0.049** (0.021)	–0.047** (0.021)	–0.045** (0.021)
War	0.040*** (0.006)	0.041*** (0.006)	0.041*** (0.006)	0.041*** (0.006)	0.040*** (0.010)	0.040*** (0.010)	0.040*** (0.010)	0.040*** (0.010)	0.042*** (0.009)	0.042*** (0.009)	0.041*** (0.009)	0.041*** (0.009)
Lagged endogenous	0.707*** (0.029)	0.707*** (0.029)	0.707*** (0.029)	0.707*** (0.029)	0.708*** (0.032)	0.709*** (0.032)	0.709*** (0.032)	0.710*** (0.032)	0.765*** (0.029)	0.766*** (0.030)	0.766*** (0.030)	0.765*** (0.031)
Observations	1323	1323	1323	1323	1320	1320	1320	1320	1320	1320	1320	1320
R-squared	0.893	0.893	0.893	0.893	0.714	0.714	0.713	0.712	0.69	0.692	0.691	0.69
Countries	46	46	46	46	43	43	43	43	43	43	43	43
Joint significance of country specific trends (Prob > F)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
F-test, weak Ident					5.78	6.78	4.88	3.93	3.92	7.92	5.57	3.73
Hansen J test					0.364	0.378	0.409	0.434	0.209	0.328	0.303	0.281
Country fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Country specific time trend	yes	yes	yes	yes	yes	yes	yes	yes	no	no	no	no

Notes: Standard errors, clustered at the country level, are presented in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

effect, we repeat our instrumental variable regressions without the time trends. Our results show a negative effect on public spending immediately after the introduction of women's suffrage. When we test the joint significance of the country-specific trends we cannot rule out that they are needed; however, the point estimates of the time trends turn out to be not significant. These two results are typically reported when there is multicollinearity. Furthermore, considering that there are two other variables that also move together with the trend (population and GDP), we consider that we can safely rule out estimations without the trends. The same situation occurs again in the following tables with regional samples.

The estimations in Table 7 include all 46 countries. Both OLS and LIML estimations show no effect of women's suffrage on total government expenditure. The LIML estimates survive the Hansen's overidentification and the weak instrument tests, except for the last specification, where the test is between the critical values associated with the 10% and 15% maximal LIML size. Regarding other controls, the lagged dependent variable, literacy and GDP per capita are positive and significant in almost all OLS and LIML estimations. No other variable is significant in any estimation.

Table 8 reports the estimations for Europe and Central Asia. In this case, both OLS and LIML estimates show no effect of the introduction of women's suffrage. In this case, the estimated coefficients are not only not significant, but also have point estimates that are very close to zero. The LIML estimates survive the Hansen's overidentification and the weak instrument tests, except for the second specification. Regarding other controls, the lagged dependent variable, GDP per capita and literacy are positive and significant in both OLS and LIML estimations, while political competition shows a positive and significant coefficient in the OLS estimations and age structure shows a negative sign in the OLS as well. Population is not significant in any estimation.

Table 9 shows the estimations for Latin America and the Caribbean. In this case, we find a positive and statistically significant

**Table 8**  
Total government spending as a share of GDP – Europe and Central Asia (1900–1960).

VARIABLES	OLS				IV				IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
WS	-0.006 (0.005)				0.014 (0.021)				0.013 (0.015)			
WS, 10 years lag		0.000 (0.001)				0.001 (0.003)				0.000 (0.002)		
WS, 15 years lag			0.000 (0.001)				0.000 (0.003)				0.000 (0.001)	
WS, 20 years lag				-0.001 (0.001)				0.000 (0.003)				0.000 (0.001)
Political competition	0.018** (0.007)	0.016** (0.007)	0.016** (0.007)	0.016** (0.007)	0.010 (0.012)	0.014 (0.009)	0.015 (0.009)	0.015 (0.009)	-0.005 (0.013)	-0.002 (0.012)	-0.002 (0.011)	-0.002 (0.011)
Age structure	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
ln(gdp per capita)	0.105*** (0.015)	0.104*** (0.015)	0.105*** (0.015)	0.107*** (0.015)	0.099*** (0.032)	0.101*** (0.029)	0.103*** (0.032)	0.104*** (0.036)	0.060*** (0.018)	0.061*** (0.018)	0.061*** (0.019)	0.060*** (0.019)
Literates	0.613*** (0.173)	0.608*** (0.173)	0.607*** (0.171)	0.605*** (0.170)	0.592** (0.268)	0.603** (0.241)	0.606** (0.232)	0.606** (0.227)	0.004 (0.027)	0.014 (0.038)	0.011 (0.040)	0.012 (0.040)
ln(population)	-0.117 (0.078)	-0.123 (0.081)	-0.119 (0.080)	-0.119 (0.078)	-0.115 (0.136)	-0.138 (0.135)	-0.128 (0.148)	-0.126 (0.146)	-0.115* (0.053)	-0.101 (0.063)	-0.096 (0.068)	-0.100 (0.072)
War	0.040*** (0.005)	0.040*** (0.005)	0.040*** (0.005)	0.040*** (0.005)	0.040** (0.018)	0.040** (0.018)	0.040** (0.018)	0.040** (0.018)	0.039** (0.017)	0.040** (0.017)	0.040** (0.017)	0.040** (0.017)
Lagged endogenous	0.638*** (0.025)	0.641*** (0.024)	0.641*** (0.024)	0.640*** (0.024)	0.649*** (0.055)	0.643*** (0.053)	0.642*** (0.053)	0.641*** (0.053)	0.710*** (0.039)	0.703*** (0.040)	0.703*** (0.040)	0.704*** (0.039)
Observations	597	597	597	597	597	597	597	597	597	597	597	597
R-squared	0.874	0.874	0.874	0.874	0.67	0.673	0.674	0.674	0.653	0.656	0.656	0.656
Countries	14	14	14	14	14	14	14	14	14	14	14	14
Joint significance of country specific trends (Prob > F)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
F-test, weak Ident					1.88	5.63	3.98	4.87	1.86	5.44	10.89	37.56
Hansen J test					0.540	0.599	0.593	0.581	0.339	0.342	0.336	0.343
Country fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Country specific time trend	yes	yes	yes	yes	yes	yes	yes	yes	no	no	no	no

Notes: Standard errors, clustered at the country level, are presented in parentheses. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

**Table 9**  
Total government spending as a share of GDP – Latin America and the Caribbean (1900–1960).

VARIABLES	OLS				IV							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
WS	0.003 (0.003)				-0.003 (0.008)					-0.009 (0.007)		
WS, 10 years lag		-0.002*** 0.000				0.000 (0.001)				0.002 (0.002)		
WS, 15 years lag			-0.001*** 0.000				0.001 (0.002)				0.003 (0.002)	
WS, 20 years lag				-0.001*** 0.000				0.003 (0.003)				0.002* (0.001)
Political competition		-0.002 (0.003)	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.003)	-0.002 (0.002)	-0.009* (0.004)	-0.006* (0.003)
Age structure		0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
ln(gdp per capita)		0.007 (0.006)	0.008 (0.007)	0.007 (0.006)	0.008 (0.009)	0.007 (0.009)	0.008 (0.011)	0.009 (0.014)	0.009 (0.013)	0.004 (0.011)	-0.003 (0.015)	0.000 (0.013)
Literates		0.104 (0.105)	0.135 (0.104)	0.116 (0.102)	0.119 (0.075)	0.116 (0.086)	0.107 (0.075)	0.092 (0.066)	0.078 (0.072)	0.091 (0.097)	0.115 (0.118)	0.108 (0.098)
ln(population)		-0.003 (0.034)	-0.016 (0.034)	-0.013 (0.033)	-0.008 (0.023)	-0.008 (0.025)	0.001 (0.025)	0.024 (0.038)	-0.033 (0.026)	-0.046 (0.039)	-0.047 (0.046)	-0.041 (0.030)
War		0.002 (0.003)	0.001 (0.003)	0.002 (0.002)	0.001 (0.002)	0.001 (0.003)	0.001 (0.005)	0.002 (0.005)	-0.003 (0.004)	-0.004 (0.006)	-0.007 (0.010)	-0.004 (0.005)
Lagged endogenous		0.441*** (0.039)	0.428*** (0.037)	0.438*** (0.038)	0.449*** (0.062)	0.441*** (0.062)	0.450*** (0.059)	0.459*** (0.062)	0.668*** (0.072)	0.693*** (0.084)	0.715*** (0.085)	0.693*** (0.075)
Observations	405	405	405	405	405	405	405	405	405	405	405	405
R-squared	0.898	0.901	0.899	0.899	0.626	0.631	0.621	0.598	0.544	0.502	0.451	0.519
Countries	17	17	17	17	17	17	17	17	17	17	17	17
Joint significance of country specific trends (Prob > F)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
F-test, weak Ident					8.67	15.91	5.32	1.78	11.15	1.04	0.96	2.01
Hansen J test					0.512	0.521	0.522	0.378	0.152	0.099	0.218	0.149
Country fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Country specific time trend	yes	yes	yes	yes	yes	yes	yes	yes	no	no	no	no

Notes: Standard errors, clustered at the country level, are presented in parentheses. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

**Table 10**  
Total government spending as a share of GDP– East Asia and the Pacific (1900–1960).

VARIABLES	OLS				IV				IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
WS	−0.072 (0.089)				0.109** (0.031)				0.000 (0.014)			
WS, 10 years lag		−0.001 (0.018)				0.020** (0.007)				−0.007 (0.005)		
WS, 15 years lag			0.014 (0.017)				0.023** (0.007)				−0.006 (0.005)	
WS, 20 years lag				0.010 (0.014)				0.020* (0.008)				−0.003* (0.001)
Political competition												
Age structure	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	−0.000*** 0.000	−0.000** 0.000	−0.000** 0.000	−0.000** 0.000	−0.000*** 0.000	0.000 0.000	0.000 0.000	0.000 0.000
ln(gdp per capita)	0.023 (0.085)	0.046 (0.090)	0.008 (0.098)	0.019 (0.093)	0.074*** (0.008)	0.004 (0.023)	−0.016 (0.025)	−0.004 (0.029)	0.067** (0.016)	0.076** (0.021)	0.083** (0.023)	0.079** (0.018)
Literates	1.526 (1.526)	1.908 (1.767)	2.759 (1.727)	2.591 (1.757)	2.674* (0.971)	3.073* (1.208)	3.274* (1.211)	3.183* (1.234)	0.156** (0.038)	0.104 (0.064)	0.086 (0.073)	0.149** (0.044)
ln(population)	−0.397 (0.908)	−0.705 (0.957)	−0.991 (0.935)	−0.920 (0.934)	−1.260* (0.533)	−1.256 (0.654)	−1.158 (0.589)	−1.096 (0.563)	−0.018 (0.049)	0.020 (0.035)	0.024 (0.043)	0.032 (0.072)
War	0.004 (0.020)	0.007 (0.021)	0.007 (0.023)	0.007 (0.022)	0.012 (0.006)	0.011 (0.006)	0.007 (0.006)	0.007 (0.005)	0.009 (0.008)	0.007 (0.007)	0.008 (0.008)	0.008 (0.008)
Lagged endogenous	0.488** (0.202)	0.520** (0.209)	0.520** (0.222)	0.503** (0.224)	0.573*** (0.093)	0.551*** (0.076)	0.519*** (0.089)	0.486** (0.115)	0.684*** (0.074)	0.644*** (0.088)	0.652*** (0.078)	0.660*** (0.057)
Observations	160	160	160	160	159	159	159	159	159	159	159	159
R-squared	0.96	0.959	0.96	0.96	0.654	0.69	0.719	0.715	0.686	0.694	0.684	0.687
Countries	6	6	6	6	5	5	5	5	5	5	5	5
Joint significance of country specific trends (Prob > F)	0.306	0.730	0.412	0.054	0.001	0.000	0.000	0.000				
F-test, weak Ident					138.70	22.62	212.40	180.30	33.93	29.94	26.31	33.06
Hansen J test					0.128	0.230	0.169	0.319	0.197	0.234	0.248	0.241
Country fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Country specific time trend	yes	yes	yes	yes	yes	yes	yes	yes	no	no	no	no

Notes: Standard errors, clustered at the country level, are presented in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

effect when using OLS. As with the countries included in Aidt's sample, this effect disappears when using instrumental variables. The LIML estimates survive the Hansen's overidentification and the weak instrument tests, except in the last specification. Regarding other controls, the only significant variable is the lagged dependent variable in both OLS and LIML estimations. No other variables are significant in any estimation. There is, however, a minor change in the impact of the introduction of female voting after 20 years that turns out to be significant and positive once time trends are omitted.<sup>8</sup>

Finally, Table 10 shows the estimations for the East Asia and the Pacific sample. In this case, although we find no effect of women's suffrage on total government expenditure when using OLS, a positive and significant effect appears when using instrumental variables. The LIML estimates survive the Hansen's overidentification test and the weak instrument tests by a wide margin.

Regarding other controls, the lagged dependent variable coefficient is positive and significant in both OLS and LIML estimations, while the coefficient for age structure is negative and significant in the LIML estimations. The coefficient for literacy is positive and significant in the same set of estimations. No other variable is significant in any estimation.

Table 10 ws estimations that do not include time trend variables, indicating that there is no effect or a small negative effect of the introduction of female voting after 20 years. As we discussed, our preferred estimations do not consider time trends, as there is strong evidence of multicollinearity, and the point estimates of the trend variables are not significant.

## 8. Concluding remarks

In this paper, we investigate the effect of the introduction of female suffrage on the size of government. For this purpose, we

<sup>8</sup> See the discussion in the previous paragraph regarding the inclusion of time trend variables.



carefully address the endogeneity that confounds the relationship between these two variables using a sample of 46 countries with data covering the first half of the 20th century.

In our estimations, we use as instruments variables related to the voting reform diffusion across countries that speak the same language or that are neighbors. In most of our estimations, these instruments passed the weak instrument and overidentification tests, thus giving credence to our results. Moreover, our instrumental variables estimations challenge the results from OLS estimations for two regional subsamples and Aidt's restricted sample estimations. These results highlight the relevance of properly addressing endogeneity when studying the impact of the introduction of female voting on fiscal expenditure.

Contrary to the existing consensus, our main findings show that the introduction of female suffrage has no impact on the size of government, with the exception of the East Asian Pacific countries, where in one set of estimations we find a positive effect and no effect in another set. Thus, there is no evidence that a “modern gender gap” regarding public expenditure preferences has influenced the size and scope of government, at least in Europe and Latin America, which include 31 countries in total.

Despite our “no results,” we can extract some lessons regarding the external and internal validity of papers such as ours. Studies with many countries have limited external validity; indeed, the behavior of women has evolved significantly across countries and, most importantly, over time within countries.

Very importantly, we consider that, before drawing lessons from an empirical study, it is important to look at the historical foundations of the phenomena under scrutiny, which can bring either a reasonable quota of skepticism or wider support to the results.

From a public policy point of view or when analyzing electoral platforms, there must be a recognition that women's preferences might show important differences across countries and even within a country over time. Moreover, understanding differences in preferences between women and men is a complex matter that goes well beyond economics reasoning; disciplines such as sociology, anthropology and even neuroscience can contribute to this understanding.

In future research, we will address the impact of female political participation on parliaments, and whether this participation has changed the government budgeting process along the lines of the “modern gender gap” for the period 1960–2010.

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## Appendix A

**Table A1**

Year of introduction of women's suffrage.

Country	Region	Language	Women's Suffrage	Country	Region	Language	Women's Suffrage
Argentina	LAC	Spanish	1947	Mexico	LAC	Spanish	1947
Austria	ECA	German	1919	Morocco	MENA	Arabic	1963
Belgium	ECA	Dutch	1919	Netherlands	ECA	Dutch	1920
Brazil	LAC	Portuguese	1932	New Zealand	EAP	English	1893
Canada	Na	English	1917	Nicaragua	LAC	Spanish	1955
Chile	LAC	Spanish	1949	Norway	ECA	Norwegian	1913
Colombia	LAC	Spanish	1954	Pakistan	SA	Urdu	1947
Costa Rica	LAC	Spanish	1949	Panama	LAC	Spanish	1946
Denmark	ECA	Danish	1916	Paraguay	LAC	Spanish	1961
Dominican Republic	LAC	Spanish	1942	Peru	LAC	Spanish	1955
Ecuador	LAC	Spanish	1967	Philippines	EAP	English	1937
Egypt	MENA	Arabic	1956	Portugal	ECA	Portuguese	1975
El Salvador	LAC	Spanish	1939	South Korea	EAP	Korean	1948
Finland	ECA	Swedish	1906	Spain	ECA	Spanish	1931
France	ECA	French	1945	Sri Lanka	SA	Sinhala	1931
Ghana	SAA	English	1954	Sweden	ECA	Swedish	1921
Greece	ECA	Greek	1952	Switzerland	ECA	German	1971
Guatemala	LAC	Spanish	1946	Thailand	EAP	Thai	1932
Honduras	LAC	Spanish	1955	Turkey	ECA	Turkish	1930
Iran	MENA	Persian	1963	United Kingdom	ECA	English	1929
Iraq	MENA	Arabic	1980	United States	NA	English	1920
Italy	ECA	Italian	1945	Uruguay	LAC	Spanish	1932
Japan	EAP	Japanese	1947	Venezuela	LAC	Spanish	1946

*Notes:* Countries are classified within these regions according to the World Bank geographical classification. Women's suffrage refers to the year the legislation that enfranchised women was introduced.

**Table A2**  
Summary Statistics.

Variables		Mean	Std. Dev.	Min	Max
Public Expenditure.	overall	0.151	0.104	0.015	0.744
	between		0.068	0.066	0.320
	within		0.076	−0.087	0.580
ln(population)	overall	9.311	1.227	6.690	12.104
	between		1.190	6.874	11.699
	within		0.193	8.680	10.041
Age structure	overall	2066.11	3064.50	35	23570
	between		2161.08	46.93	11827.19
	within		1294.88	−4789.47	13808.91
ln(gdp per capita)	overall	10.439	1.413	7.046	14.532
	between		1.306	7.401	13.608
	within		0.419	9.343	11.891
Literacy	overall	0.725	0.260	0.114	0.990
	between		0.282	0.114	0.987
	within		0.072	0.383	0.956
Political competition	overall	0.712	0.453	0	1
	between		0.428	0	1
	within		0.282	−0.255	1.612
War Dummy	overall	0.105	0.307	0	1
	between		0.117	0	0.333
	within		0.285	−0.228	1.088
WS, 10 years lag	overall	4.398	4.659	0	10
	between		3.809	0	10
	within		3.396	−2.852	12.815
WS, 15 years lag	overall	5.944	6.636	0	15
	between		5.530	0	15
	within		4.680	−4.306	18.694
WS, 20 years lag	overall	7.138	8.366	0	20
	between		7.078	0	20
	within		5.754	−5.696	20.871
Instrument2a	overall	3.651	4.965	0	16
	between		5.229	0	15.000
	within		3.207	−3.607	15.244
Instrument2c	overall	0.002	0.003	0	0.019
	between		0.004	0	0.016
	within		0.002	−0.007	0.012
Instrument1a	overall	1.351	1.327	0	6
	between		1.222	0	5.900
	within		0.918	−1.117	6.018
Instrument1b	overall	0.486	0.417	0	1
	between		0.324	0	1.000
	within		0.308	−0.373	1.176
Instrument1c	overall	0.016	0.013	0	0.051
	between		0.010	0.003	0.047
	within		0.009	−0.010	0.037

Notes: The number of countries included in the sample is 46. The total number of observations is 1323

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