The Legacy of Egalitarian Political Institutions on Support for Women Politicians

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30 August 2017

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Abstract

Growing support for women politicians is usually attributed to younger cohorts being more gender-egalitarian than older cohorts as part of a process of modernisation. However, the impact of political institutions on attitudes is not well understood. In this paper, we study the effect of gender equality in political institutions on support for women politicians from a generational perspective, hypothesising that generations which experienced greater institutional gender equality during their formative years will be more supportive of women politicians. This allows us to identify the causal relationship between institutional characteristics and attitudes by modelling current attitudes based on past institutional arrangements. We find that institutional factors play an important role in shaping attitudes towards women politicians, beyond the effect of modernisation. Furthermore, we find that both modernisation and institutional factors only lead to cohort change in support for women politicians in democratic regimes, not autocracies, indicating the importance of women politicians holding real power and being perceived as legitimate. Since public support for women politicians also in turn leads to greater women's representation in political institutions (Paxton & Kunovich, 2003a), the findings suggest that in democracies there is a positive feedback loop between gender-egalitarian institutional arrangements and public support for women politicians.

1. Introduction

Women are under-represented in national parliaments and executives across the world. The average percentage of women in legislative bodies (upper and lower houses) is 23.3%, and ranges from 41.7% in Nordic countries to 15% in Pacific countries.[1] Many factors have been found to be linked to women's parliamentary and executive representation, including levels of economic development and political context. In addition, the presence of a gender-egalitarian culture or ideology is important for improving the level of women's political representation and empowerment, and as a result regional differences in women's political power reflect the differences that exist between regions in attitudes towards women in politics (Alexander & Welzel, 2011; Inglehart & Norris, 2003; Inglehart, Norris, & Welzel, 2002; Paxton & Kunovich, 2003b; Ruedin, 2012).

Attitudes towards women in politics are thus an important component of the democratic political culture in a society, and can have implications for progress towards gender equality in political institutions. There is growing support for women in politics, especially amongst younger cohorts, and this is usually attributed to processes of modernisation and increasing socioeconomic development. However, very little attention is given to the impact of gender equality in political institutions on the development of attitudes towards women in politics. The influence of the presence of women politicians on attitudes towards women in politics amongst citizens is relatively under-studied, and existing studies have contradictory results with respect to the impact of gender equality in political institutions on attitudes. There are, however, good reasons to expect that the level of political gender equality will influence citizen support for

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[1] Source: Inter-Parliamentary Union, as of 1st March 2017. http://www.ipu.org/wmn-e/world.htm

women politicians, since the presence of women politicians may counter negative stereotypes about women in politics, and weaken the perception of politics as a 'man's game.'

Drawing on theories of political generations and socialisation, we argue that low levels of institutional gender equality will leave a legacy of low support for women politicians, since generations who experienced political gender inequality during their formative years will be less supportive of women in politics than generations who experienced greater women's representation in political institutions. Focusing on generational differences in these attitudes allows us to identify the causal relationship between institutional characteristics and attitudes by modelling current attitudes based on the level of gender equality in political institutions in the past, i.e. during a generation's formative years. This overcomes a challenge presented by this research agenda, since we know that citizen attitudes also influence gender equality in political representation.

We conduct a global analysis, utilising hierarchical age-period-cohort models and a new dataset which brings together cross-national and longitudinal data on both individual attitudes and gender equality in political institutions, to answer our research question: does the institutional political empowerment of women lead to more gender-egalitarian attitudes in the population? We find that higher levels of gender equality in the distribution of political power during a generation's formative years leads to higher support for women in politics amongst citizens, even when controlling for the level of modernisation. Whilst we also find that modernisation is a key determinant of generational change in these attitudes, institutional female empowerment is an important factor over and above modernisation.

Moreover, whilst most of the literature focuses on gender equality in democratic institutions, we acknowledge that the distribution of political power in institutions also varies

between men and women in *non*-democratic regimes. We find that both modernisation and institutional factors during formative years only influence a generation's support for women politicians in democratic regimes, not autocracies. We suggest that for political gender equality to have a positive impact on citizen attitudes, the women in these institutions must be seen as legitimate actors within a legitimate regime and be able to fulfil proper representative functions. It is interesting that modernisation is also unimportant for generational change in gender-egalitarian attitudes in non-democracies. This is a new finding, which suggests that regime type matters more than previously thought for the development of these attitudes. The impact of non-democratic institutions on support for women in politics, as well as other democratic attitudes, needs further research.

This paper makes a clear contribution to our current understanding of the development of gender-egalitarian cultures. Firstly, this analysis is global in scope and includes non-democracies, enabling us to identify the importance of regime type in shaping citizen attitudes. Secondly, we contrast modernisation and institutional effects, and we are able to highlight the importance of institutions for the development of citizen's attitudes towards women in politics. Thirdly, by using longitudinal data and an age-period-cohort research design, we are able to identify the causal relationship between institutions and citizen attitudes by modelling current attitudes based on past institutional arrangements.

These findings suggest that, in democracies, there is a positive feedback loop between gender-egalitarian institutional arrangements and citizen support for women politicians. A gender-egalitarian culture in the population leads to higher women's representation in politics (Alexander & Welzel, 2011; Inglehart & Norris, 2003; Inglehart et al., 2002; Paxton & Kunovich, 2003b; Ruedin, 2012) and we show that greater gender equality in political

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institutions leads to a more gender-egalitarian culture amongst citizens. This suggests that in democracies with legacies of gender equality, citizen attitudes will be supportive of further gains for women's representation. However, in countries without this legacy and in non-democracies, there may be cultural barriers amongst citizens to the greater participation of women in political institutions.

2. Previous Literature & Theoretical Expectations

2.1 Support for women politicians

Women's empowerment in political institutions is likely to have an important role in shaping citizens' attitudes to women in politics. Scholars of gender and politics have long emphasised the importance of symbolic, 'descriptive', representation, and have argued that the under-representation of women in political institutions has negative consequences beyond the resulting lack of substantive representation of women's interests. It is argued that politics will continue to be seen as a 'male domain', and women as unsuited for politics, if citizens see predominantly men as politicians. Theoretical arguments have been put forward that the presence of women in political institutions should overcome negative opinions of women in politics through showing that women can occupy non-traditional roles and perform as well as men (Mansbridge, 1999; Sapiro, 1981). Citizens observe women performing political roles and this may change discriminatory or stereotypical attitudes about women's ability to participate in politics (Matland, 1994).

Other arguments have been put forward for the impact of women's greater representation in political institutions on citizen attitudes. Citizens may be risk averse, and so more supportive

of male politicians if they have predominantly experienced male-dominated politics. As women's representation and political power increases, voters may start to see women as less risky leaders (Beaman, Chattopadhyay, Duflo, Pande, & Topalova, 2009). Others have argued that women are seen as less suited for leadership roles because traditional conceptions of women's role are incongruous with the content of leadership roles. Stereotypical conceptions of how women should behave clash with stereotypical conceptions of how leaders should behave (Burrell, 1996; Eagly & Karau, 2002). Eagly and Karau argue that where the sex-ratio is more unequal (i.e. there are fewer women), the incongruity, and therefore prejudice, will be higher because women in these environments attract more attention on the basis of their gender. This perspective is supported by evidence suggesting that women who have more exposure to women in leadership positions are less likely to have stereotypical views on the role of women (Dasgupta & Asgari, 2004).

Existing studies have found mixed results with respect to the influence of women's representation in political institutions on citizen attitudes. In some cross-national research, the presence of women in (democratic) institutions has led to higher support for women politicians (Alexander, 2012) and 'emancipative values' in general (Alexander & Welzel, 2015). However, others, using the same dataset (the World Values Survey) have found that the representation of women is unrelated to subsequent support for women in politics amongst citizens (Ruedin, 2013). The few country-specific studies that have been conducted do suggest that women's institutional empowerment has a positive impact on attitudes. Experimental evidence from India indicates that where there are female leaders, citizens are less biased towards women as politicians (Beaman et al., 2009). Qualitative evidence from Uganda finds that women's

presence in government leads to greater support for having women leaders (Johnson, Kabuchu, & Kayonga, 2003).

One of the issues with studying this question is that of causality. Attitudes towards women in politics has also been found to influence the level of women's representation (Alexander & Welzel, 2011; Paxton & Kunovich, 2003a; Ruedin, 2012), suggesting that the relationship could be predominantly in this direction. The cross-national studies cited above attempt to disentangle the causal direction by using lagged variables or examining change over time, but come to contradictory results. Here, we argue that examining the question from a generational perspective might help shed light on the impact of women's representation in institutions on citizen attitudes, whilst also further contributing to our knowledge about the development of gender-egalitarian attitudes.

2.2 Socialization and the Formative Years

Younger citizens are thought to be particularly 'impressionable' when it comes to the formation of their attitudes and behaviours. Political opinions and behaviour are formed during the 'formative' years of one's life, and then stabilise afterwards (Alwin & Krosnick, 1991; Jennings & Niemi, 1981; Krosnick & Alwin, 1989; Mannheim, 1968). Thus, political events and the political context during citizens' youth are particularly important when it comes to the formation of attitudes. This indicates that institutional characteristics will leave an attitudinal legacy via those who experienced them during their formative years. There is some debate as to when the formative years occur, with most research focusing on adolescence as the key period for attitudinal development (Bartels & Jackman, 2014).

Research to date has found that experiences during the formative years can influence support for democracy (Neundorf, 2010), political participation (Grasso, 2016), attitudes towards

policy positions (Grasso, Farrall, Gray, Hay, & Jennings, 2017) and gender-role attitudes (Shorrocks, 2016). This indicates that the level of gender equality in political institutions during their formative years could be especially important for citizens' attitudes towards women in politics. The level of institutional gender (in)equality during this critical period will shape each generations' attitudes towards women politicians for the duration of their life-span. We thus expect that generations that experienced high levels of gender equality in political institutions during their formative years will be more supportive of women in politics than those who did not. Crucially, testing this expectation allows us to identify the causal relationship between institutional characteristics and attitudes by modelling current citizen attitudes based on what they experienced in the past, during their formative years. Based on this we can state the following hypothesis:

Institutional hypothesis (H1): Citizens who experienced more gender-equality in political institutions during their formative years will be more supportive of women politicians in later life than those who experienced less gender-equality.

An alternative generational perspective on attitudes towards women in politics is that gender-egalitarianism, including support for women politicians, is steadily increasing with modernisation over time. Economic development and rising living standards are thought to be leading to new sets of 'postmaterialist', 'self-expression', or 'emancipative' values, which include gender-egalitarianism (Alexander & Welzel, 2011; Inglehart, 1990, 1997, 2008; Inglehart et al., 2002). Modernisation is argued to be especially important for younger cohorts, because they have always experienced higher levels of socioeconomic development and, crucially, experienced it during their formative years (Inglehart, 1990). Inglehart and Norris

(2003) argue that modernisation has brought about changes to gender roles, including the extension of the franchise to women, the movement of women into the labour force and education, and shifts in the division of labour in the home. These changes are thought to make the formative experiences of younger generations very different to that of older generations. We do not contest this view: modernisation and socioeconomic development have consistently been found to be strong predictors of gender-egalitarianism in general and support for women politicians in particular, and the difference between older and younger cohorts in these attitudes is well-documented globally (Dorius & Alwin, 2011; Pampel, 2011). However, the impact of institutions has been neglected and we expect this to be an additional influence on generational differences in support for women politicians over and above the impact of modernisation. This discussion leads to the following additional hypothesis:

Modernisation hypothesis (H2): citizens who experienced higher levels of modernisation during their formative years will be more supportive of women politicians in later life than those who experienced lower levels of modernisation.

2.3 The Importance of Regime Type

Research on the role of institutional gender equality in shaping citizen attitudes has primarily focused on democracies. However, there is also variation in gender equality in non-democratic regimes (Tripp, 2013). Some non-democratic regimes have gender quotas in undemocratic parliamentary or party political bodies, and although democracy and women's empowerment in political institutions are correlated, it is not necessarily the case that non-democratic regimes are always less gender-equal than democratic regimes. State socialist regimes in Eastern Europe, for instance, adopted rhetoric of gender equality and installed quotas for women in leadership

positions. Other autocratic regimes in Africa have brought women into political institutions in an attempt to demonstrate the legitimacy of the state (Burnet, 2008; Tripp, 2013).

This suggests it is important to understand whether greater gender equality in political institutions is important for shaping citizen attitudes in non-democracies, as well as democracies. For example, Rwanda has the highest levels of female representation in parliament in the world, but has also become increasingly autocratic over the last two decades. Scholars have argued that, despite the undemocratic nature of its institutions, the representation of women in these institutions has changed Rwandan citizens' attitudes positively towards women's activity in politics (Bauer & Burnet, 2013; Burnet, 2011). This suggests that women's presence in non-democratic political institutions can still influence citizens' attitudes towards women in politics.

However, the way in which women are given political power in non-democracies may limit the effect that institutional gender-equality has on citizen support for women in politics. Women in political institutions in non-democracies may lack real political power, either because the regime is non-democratic or because it remains patriarchal in its political power structure. In state socialist regimes, whilst women occupied quotas which gave them political power, men dominated the true leadership positions and wielded most of the political power (Pop-Eleches & Tucker, 2017). In states, which are either partial or full autocracies, the extent to which women truly have political power can be questioned. They may be able to act in certain issue areas but not in others due to the non-democratic nature of the institutions (Bjarnegård & Melander, 2013; Burnet, 2008). Women in these institutions are constrained in how they can act, and it has been pointed out that this may weaken the link between women's descriptive and substantive representation (Johnson, 2016). Non-democratic regimes often use quotas for women's political representation to gain more legitimacy for the regime or to increase parliamentary representation

for the dominant/single party (Bjarnegård & Zetterberg, 2016; Muriaas & Wang, 2012; Tripp, 2013), potentially weakening the perceived legitimacy of these women.

These characteristics of non-democratic regimes indicate that the effect of gender equality in political institutions on citizens' attitudes may be weaker here than in democratic regimes. If women in political power are unable to fully act as representatives or are perceived as illegitimate, then their presence may have a less positive impact on the attitudes of citizens. There is some evidence that where women are viewed as illegitimate holders of political office, attitudes are less positive towards women in politics. In Lesotho, the presence of quota-mandated women politicians has been found to lead to lower levels of interest in politics and political efficacy, and this is thought to be because of the perception of preferential treatment when quotas are used (Clayton, 2014). Similarly, whilst affirmative action in Uganda has been found to create positive role models for other women, women politicians are also expected to be even more effective than other politicians as a justification for affirmative action, and when they weren't, this led to less positive evaluations of women (Johnson et al., 2003). Affirmative action and quotas can of course also be used in democracies, but in non-democratic regimes women in political institutions face constraints on action as well as association with a regime that may in itself be perceived as illegitimate. We argue that this means the institutional context of non-democratic regimes means that women in political institutions will not have the strong positive influence on citizen attitudes that they do in democratic regimes.

Regime type hypothesis (H3): The effect of experiencing gender-equal political institutions during the formative years will be greater in democracies than in non-democracies.

3. Research design

We test our hypotheses using existing survey data as well as macro data that measure the degree of political power held by women during respondents' formative years. Here we first outline the methodology used, before describing the data and turning to the statistical estimation procedure.

3.1 Methodology

In order to test our hypotheses, we conduct a comprehensive analysis of 42 countries during the entire 20th century (i.e. Latin America, Africa, Europe, and Central & East Asia) for which data on gender-egalitarianism is available. We identify the effect of institutionalised gender empowerment by comparing generations within the same country and across countries that were exposed to varying gender equality contexts during their formative years. This empirical phenomenon of varying socialisation experiences within the same country gives us the opportunity to study the lasting effect of political institutions on individuals' support for women in politics in democracies and autocracies, even after the institutions and perhaps even regime have changed.

For this we need to distinguish three co-linear time trends: age, period, and cohort (APC) effects. A person could have positive or negative views of female politicians because she is young – the so-called life-cycle or ageing effect – or because she lives in a country that presently is led by a female leader – the so-called period effect that affects everyone no matter their age or birth year – or because she was socialized at a certain point in history – the cohort effect. Here we are mainly interested in the cohort effect, which we argue contains the socialisation effect of political institutions. This methodological approach allows us to indirectly test the impact political institutions and regimes have on the mass public.

3.2 Individual-level data

We merge existing, publicly available survey data from numerous countries from around the globe, from both well-established democracies and former dictatorships. In total we have data on 42 countries from around the globe included in this study.[2] We chose the datasets that have been designed to be comparative, which ensures that questions are less country-specific but rather travel across borders. Furthermore, all studies have been conducted as academic studies and hence adhere to a certain standard. Here, we only include studies that measured attitudes towards women in politics. We harmonized the data of the following public opinion surveys (including the years that they were fielded):[3]

- World/ European Value Survey (WVS), 1994-2014
- Latinobarometer (LB), 2004, 2009
- Afrobarometer (AFB), 2005-2015
- Americas Barometer (AB), 2008-2014

Pooling all these datasets together gives us about 220,000 respondents for which we have valid data on the dependent variable and all control variables. The different survey questions included in the diverse datasets were harmonized so that a joint analysis is possible. More details on the question of harmonization decisions can be found in Appendices 3 and 4.

3.2.1 Dependent variables: Women as political leaders

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[2] The list of countries and the number of respondents per country can be found in the Appendix A1.

[3] In order to account for possible effects of the survey data harmonization process, we include a dummy variable for each of the datasets (using the World Value Survey as a reference). The estimates of these are not reported in the results tables, but are available upon request from the authors. The full list of all waves that was fielded per study can be found in Appendix A2.

In the datasets that were harmonized for this study, respondents were asked whether they agree or disagree that "men are better political leaders".[4] Response categories however varied from 4 or 5. The variable was standardized to 0 to 100, where lower values mean respondents believe that men are better leaders, and high values indicates that men and women are equally good as political leaders.

The question on whether men are better political leaders than women is seen as a measure of attitudes towards 'public' gender equality (Dorius & Alwin, 2011; Pampel, 2011). This includes gender equality in politics, but also in institutions such as education or the labour force. This is in contrast to attitudes towards gender equality in 'private' life, which includes attitudes towards gender roles in family life, and in particular in caring for children. This question is used because we do not expect the presence of women as politicians to necessarily impact entrenched beliefs about gender roles within the family, and because this question is asked consistently across many datasets.

3.2.2 Individual-level control variables

We control for the gender of respondents, the education level (primary or less, secondary, post-secondary)[5] and a dummy variable whether a respondent is working opposed to being unemployed, retired or any other reason why people do not work. Unfortunately, it is not possible to control for a person's income or economic well-being beyond their working status, as the measures were too diverse to be harmonized.

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[4] The question wording and response categories in each study are listed in Appendix A3.

[5] For this we use a categorical variable that measures a person's highest educational degree. In some datasets education was measured as years of education or age of leaving school. The coding scheme to classify respondents into the three education groups based on this is explained in Appendix A4. Combining the education variables (categorical and measured from years) leaves only 2% still missing.

3.3 Macro variables

In order to capture the institutional empowerment of women we rely on data on political institutions and regime characteristics from the Varieties of Democracy (V-Dem) project (Coppedge et al., 2016). The V-Dem project collects data on political institutions that existed "within large and fairly well-defined political units and which enjoy a modicum of sovereignty or serve as operational units of governance (e.g., colonies of overseas empires)" (Coppedge et al., 2016). The data is collected with the help of more than 2,600 country-experts that code the data with a specially designed online survey. The V-Dem project uses a Bayesian item response estimation (IRT) to increase the reliability of the coding and eliminate as much of the bias as possible. The unit of observation in our sample is country-year, for in total 177 countries that cover the period 1900-2015.

We measure institutional female empowerment using the political power distributed by gender variable from V-Dem. The country experts were asked how political power is distributed according to gender. They were offered the following responses:

0: Men have a near-monopoly on political power.
1: Men have a dominant hold on political power. Women have only marginal influence.
2: Men have much more political power but women have some areas of influence.
3: Men have somewhat more political power than women.
4: Men and women have roughly equal political power.

This ordinal scale was converted to interval by the IRT measurement model used by V-Dem to account for potential measurement error across different experts that coded the same country-year case. The V-Dem data relies on at least four coders per country-year item. This information is used to incorporate measurement uncertainty. The final variable ranges from 0 to 1, where 1 measures equal political power between the sexes. We prefer this more general item

to for example proportion of female legislators, as that considerably restricts the scope of countries and years.

To measure modernisation we created a composite index to measure general societal changes at the time of socialisation. Modernisation is calculated using the following items:[6] proportion of the population that is literate (based on Vanhanen, 2003), urbanisation rate, proportion of the population that is non-agricultural (both based on Clio-Infra and Coppedge et al., 2016), infant mortality rate, life expectancy rate (both based on Clio-Infra and Gapminder) as well as primary, secondary, and tertiary school enrolment (based on World Bank Education Statistics Database and Barro & Lee, 2013).

In order to test our third hypothesis, we need to distinguish between democracies and autocracies. We measure whether the regime was a democracy or not based on V-Dem's electoral democracy index that captures the ideal of electoral democracy in its fullest sense, whereby the absence of democracy measures autocracy.[7] The final index is continuous and ranges between 0 and 1, whereas higher values indicate democracy. We dichotomize this measure where a regime with a value of the index equal or above 0.67 is considered a democracy and an autocracy otherwise (Dahlberg 2016).

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[6] We estimated the modernisation index using principle component factor analysis using eight items that tap at the modernisation level of a country. Some of the variables have missing values. We hence re-ran the factor analysis numerous times to combine the eight variables in different ways, dropping variables, to maximize the number of country-year observations. A minimum of two items was required. The final score was calculated as average standardized factor score from the different iterations of the factor analyses. See appendix 5.1 for more details.

[7] The index is calculated using Baysian Item Response Theory (IRT) based on the following indicators (Marquardt & Pemstein, 2017; Teorell, Coppedge, Skaaning, & Lindberg, 2016): freedom of association, clean elections, freedom of expression, elected executive and suffrage. More precisely, this is the principle that "seeks to embody the core values of making rulers responsive to citizens, achieved through electoral competition for the electorate's approval under circumstances when suffrage is extensive; political and civil society organizations can operate freely; elections are clean and not marred by fraud or systematic irregularities; and elections affect the composition of the chief executive of the country. In between elections, there is freedom of expression and an independent media capable of presenting alternative views on matters of political relevance" (Coppedge et al., 2016).

All variables are continuous, except the dummy variable that measures whether the regime was an autocracy or democracy. These macro variables are averaged across five-year intervals from 1900 to 2015 and matched to the corresponding national generation that came of age during a particular five-year period. We define socialisation context as the time when respondents were between 15 and 20 years old. More on this in section 3.4.

3.3.1 Macro control variables

We include control variables at the macro level. First, we include the economic development level by including GDP per capita at the 2011 PPP value of the dollar (source: World Bank). Secondly, we include the current level of democracy using the electoral democracy index as introduced above. This gives us a measure for the current quality of the democratic institutions. Thirdly, we include levels of political corruption (Coppedge et al., 2016).[8]

3.4 The model

We estimate an age-period-cohort model. The most important covariates are therefore, firstly, the age of the respondents, which we include as age in years. Secondly, we measure cohorts in five-year groupings when respondents turned 15, assuming that this is the time of socialisation when political institutions have the strongest and lasting impact on its citizens. Lastly, we include the year of the survey to capture the period effect. The problem of estimating these three time effects simultaneously is the identification problem, as:

Cohort = Survey Year - Age

Yang and her colleagues (2006, 2008) proposed to solve this identification problem by including cohort clusters (in our case five-year groups) and survey years as random effects into a

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[8] See more on the measure of political corruption in Appendix 5.1.

Hierarchical Age-Period-Cohort (HAPC) model. In this multilevel model we consider periods and cohorts as cross-classified contexts in which individuals are nested. Including macro-level variables that capture the cohort context (political empowerment of women at age 15) as well as the period context (e.g. current level of democracy measured in the same year as survey is conducted) allows to test the effect of these context variables. The model is specified as

$$Female\ leaders_{ijtc} = \alpha_{ojtc} + \beta_1\ Age_{it} + \sum_{m=2}^{M} \beta_m\ X_{mi} + \varepsilon_{ijtc}$$

where we model whether respondent i who belongs to cohort j, was interviewed in year t and lives in country c agrees that women make equal political leaders than men as a function of her age and our individual-level control variables X (see above). The most important part of this model is the random intercept which α_{ojtc}, can be written as:

$$\alpha_{ojtc} = \Upsilon_{0c} + \sum_{l=1}^{L} \Upsilon_l\ Z_{ljc} + \sum_{p=1}^{P} \Upsilon_p\ V_{ptc} + \sum_{c=2}^{C} \Upsilon_c\ C + + u_{0j0c} + v_{00tc}$$

where Υ_{0c} measures the grand mean, Z measure the context of the cohorts and V measure the current period effects. We also include country fixed-effects C. Here we treat our dependent variables as continues, estimating linear HAPC models.

4. Results

This section is presenting the results, testing our three hypotheses that explore whether institutional empowerment of women during a person's formative years leads to higher support of women politicians (H1), accounting for levels of modernisation (H2). We further expect that

the type of political regime - democracy versus autocracy - is an important moderator (H3), as this affects whether political power held by women is real.

We start by illustrating the relationship between regime type and institutional gender empowerment. Table 1 shows descriptive statistics for these variables for democracies and autocracies. Figure 1 shows the distribution of the key independent variable, power distributed by gender, for the two regime types for all countries and years in the V-Dem dataset. As would be expected, democracies have a more gender-equal distribution of political power than autocracies, although there is considerable variation for both regime types. To illustrate, the autocracies with a score of 0.6 or more on the power distributed by gender variable are as follows (with number of years they are present in the data in brackets): Bulgaria (44); Cuba (3); Czechoslovakia (46); India (5); Jamaica (11); Philippines (1); Rwanda (1); and Ukraine (4).

Table 1: Descriptive Power distribution by regime type

Pol. Regime	N (Country-Year)	Mean	Std. Dev.	Min	Max
Democracies	4708	0.467	0.169	0.012	1.000
Autocracies	11912	0.241	0.147	0.000	0.762

**Figure 1:** Power distribution by regime type (democracy vs. autocracy)
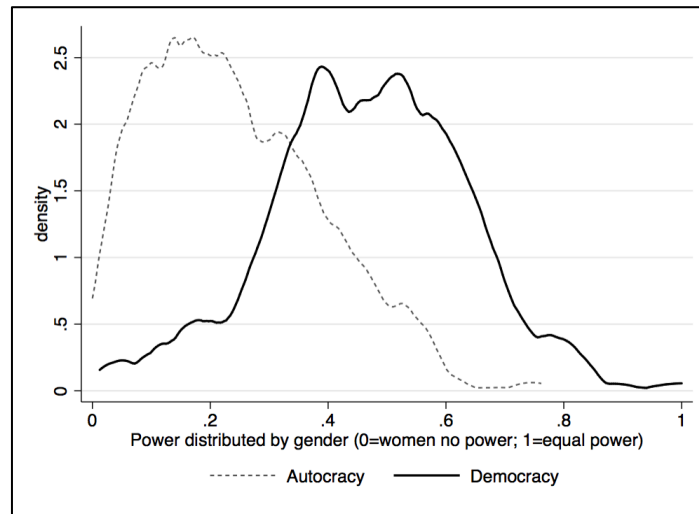
Note: The density function is based on all full V-Dem dataset of 177 countries.

Figure 2 shows the two main independent variables – power distributed by gender (solid line) and level of democracy (dashed line) – over time for each of the countries included in this analysis. As can be seen, there is considerable variation in both these variables for most countries. Importantly, although in some cases gender equality clearly corresponds to democratic development, e.g. in Sweden or Mexico, there are also countries where this is not the case, e.g. Eastern European countries or China, where gender empowerment is higher than the level of democracy. We also see some countries that have lower political power of women, given their level of democracy, e.g. Australia, the USA, and Venezuela.

The overtime variation is mixed. In many countries we see a clear upward-trend in female political institutional empowerment. However, the trends are less smooth than one would expect based on modernisation. For example, the data picks up the suffragette of women in many countries. For example, women were allowed to vote for the first time in the USA in 1920, which is shown by a clear jump in the female institutional power.

Figure 2. Power distributed by gender and democratic development, by country
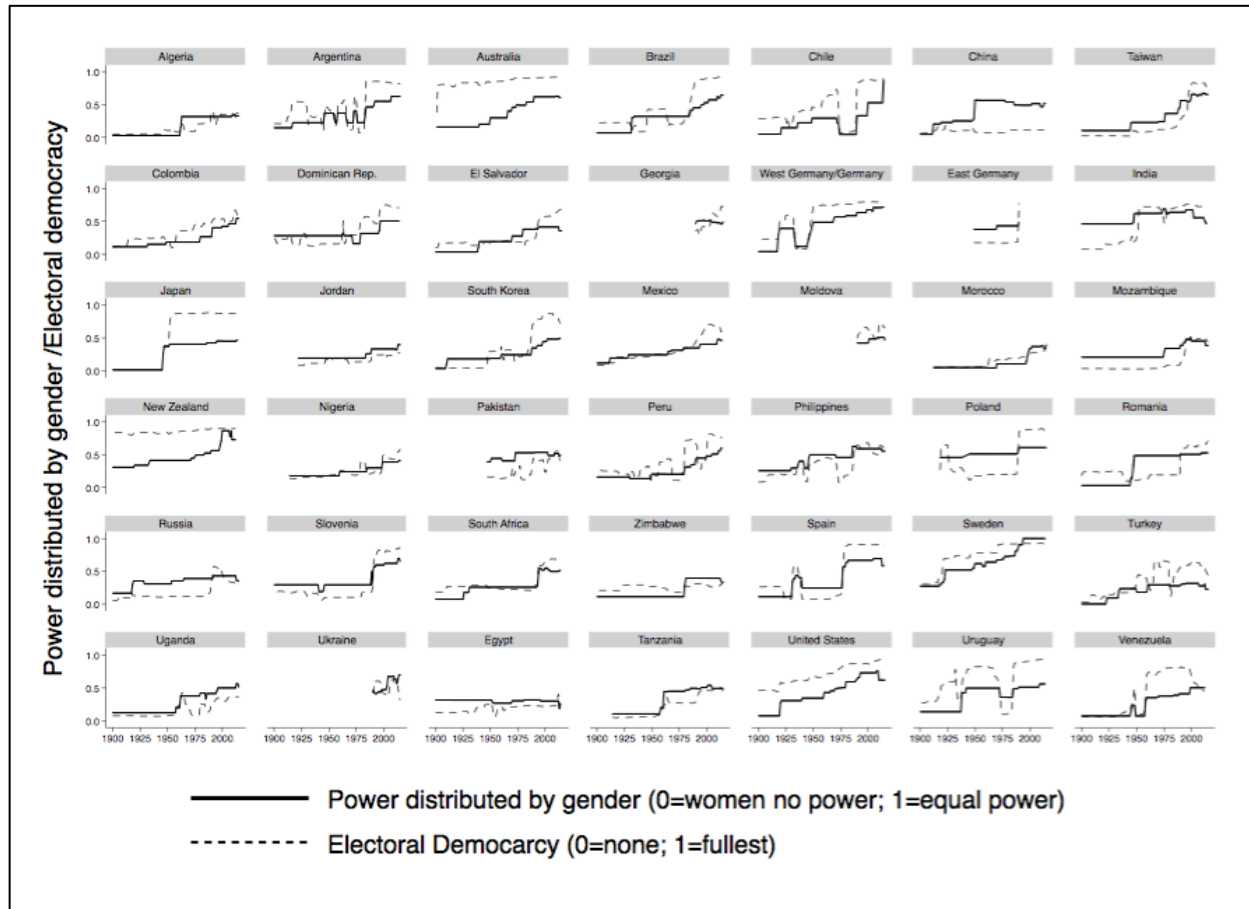
Note: The values for Ukraine, Georgia, Moldova before 1990 are the same as Russia. East Germany has the same values as Germany before 1949 and after 1990. *Data*: V-Dem, 1900-2015.

In this data we utilise two different types of variation. Firstly, we compare generations that grew-up at different points in time within the same country. As Figure 2 clearly shows this leads to very different socialization experiences. Second, we hypothesise that the actual female political empowerment depends on whether the country is democratic or not (H3). We test how these varying experiences affect support for women in politics using hierarchical age-period-cohort models, as introduced in section 3.4 above. Table 2 shows the full results of these models.

Table 2: HAPC linear regression, predicting agreement that women are equal political leaders

|	M0 Pure APC	M1 Indiv. controls	M2 Soc. context	M3 Soc+Per context	M4.A Interaction: Pol. Regime x Gender	M4.B Interaction: Pol. Regime x Modern
Age (20+)	-0.147***	-0.071***	-0.009	-0.032**	-0.030**	-0.027*
	(0.006)	(0.006)	(0.014)	(0.014)	(0.014)	(0.014)
Indiv.-level controls (X)						
Female		9.939***	9.943***	10.012***	10.020***	10.024***
		(0.130)	(0.130)	(0.132)	(0.132)	(0.132)
Education (ref: primary)						
Secondary		4.717***	4.693***	4.746***	4.777***	4.779***
		(0.163)	(0.164)	(0.166)	(0.166)	(0.166)
Post-secondary		9.081***	9.042***	9.134***	9.153***	9.144***
		(0.196)	(0.197)	(0.200)	(0.200)	(0.200)
Working		0.832***	0.818***	0.887***	0.884***	0.889***
		(0.139)	(0.139)	(0.141)	(0.141)	(0.141)
Socialisation context (Z)						
Pol. Power distribution			1.930	1.425	6.777***	-0.942
			(1.452)	(1.480)	(2.013)	(1.607)
Modernisation			8.394***	5.200***	5.459***	15.077***
			(1.694)	(1.736)	(1.747)	(2.379)
Autocracy					3.715***	6.764***
					(0.926)	(1.179)
Autocracy * Pol. Power distribution					-9.559***	
					(2.164)	
Autocracy * Modernisation						-11.242***
						(1.855)
Current context (V)						
Elec. Democracy				23.269***	22.984***	24.297***
				(5.209)	(5.208)	(5.205)
Age of democracy				0.056	0.055	0.051
				(0.043)	(0.043)	(0.043)
GDP (per Capita)				-0.128	-0.176	-0.416
				(0.949)	(0.948)	(0.948)
Pol. Corruption				-9.842**	-9.770**	-9.753**
						(4.503)
Intercept	56.243***	43.025***	35.148***	27.852***	25.747***	24.012***
	(1.134)	(1.129)	(1.941)	(8.933)	(8.976)	(8.976)
Variance components						
Cohort (1910-2015)	2.033***	1.802***	1.791***	1.790***	1.739***	1.699***
	(0.127)	(0.124)	(0.125)	(0.126)	(0.125)	(0.124)
Period (1994-2015)	13.308***	13.022***	12.385***	9.582***	9.580***	9.572***
	(0.731)	(0.715)	(0.691)	(0.539)	(0.539)	(0.538)
N resp.	225,548	225,418	224,636	217,684	217,684	217,684
N countries	42	42	42	42	42	42

*Significance: * p<0.1; ** p<0.05; *** P<0.01. Data:* Harmonized survey data (list of datasets in Appendix 2) and V-Dem, 1900-2015.

Note: Entries are regression coefficients and their standard errors of a HAPC model. The dependent variable is agreement that women and men are equally good as political leaders where 0="do not agree at all" and 100="completely agree".

Model 0 includes age, as well as the random effects for period and cohort and fixed effects for dataset and country. This shows there is a general linear trend where younger people are more supportive of women as political leaders, indicated by the negative coefficient for age. Model 1 adds individual-level control variables: women, the more educated, and those in the labour force are all more supportive of women politicians than other groups.

Figure 3 shows the predicted cohort trends for each country in the sample from the random effects of model 2 presented in table 2, which does not include any of the socialization context variables. The figure plots the random effects of the cohort grouping variables, taking into account any life-cycle and period effects. Predicted values below the dashed line indicate that a cohort is less supportive of female political leaders, while positive random effects (above the dashed line) indicate more gender equal attitudes. We find considerable variation across cohorts in support for women in politics. For example, in the USA we find the generation of women that were young during the suffragette movement in the early 20th century to have relatively liberal views even in their older age. The generations that grew-up in the 1930s to 1950s are considerably more negative. This negative dip is followed by a sharp increase in equality attitudes of the 1960s and 1970s generations, which grew-up during the civil rights movement. Interestingly, the younger generations in the USA (growing up in the 1980s and later) seem to agree less to equal political power between men and women.

Figure 3: Predicted random cohort effects for equal political leadership
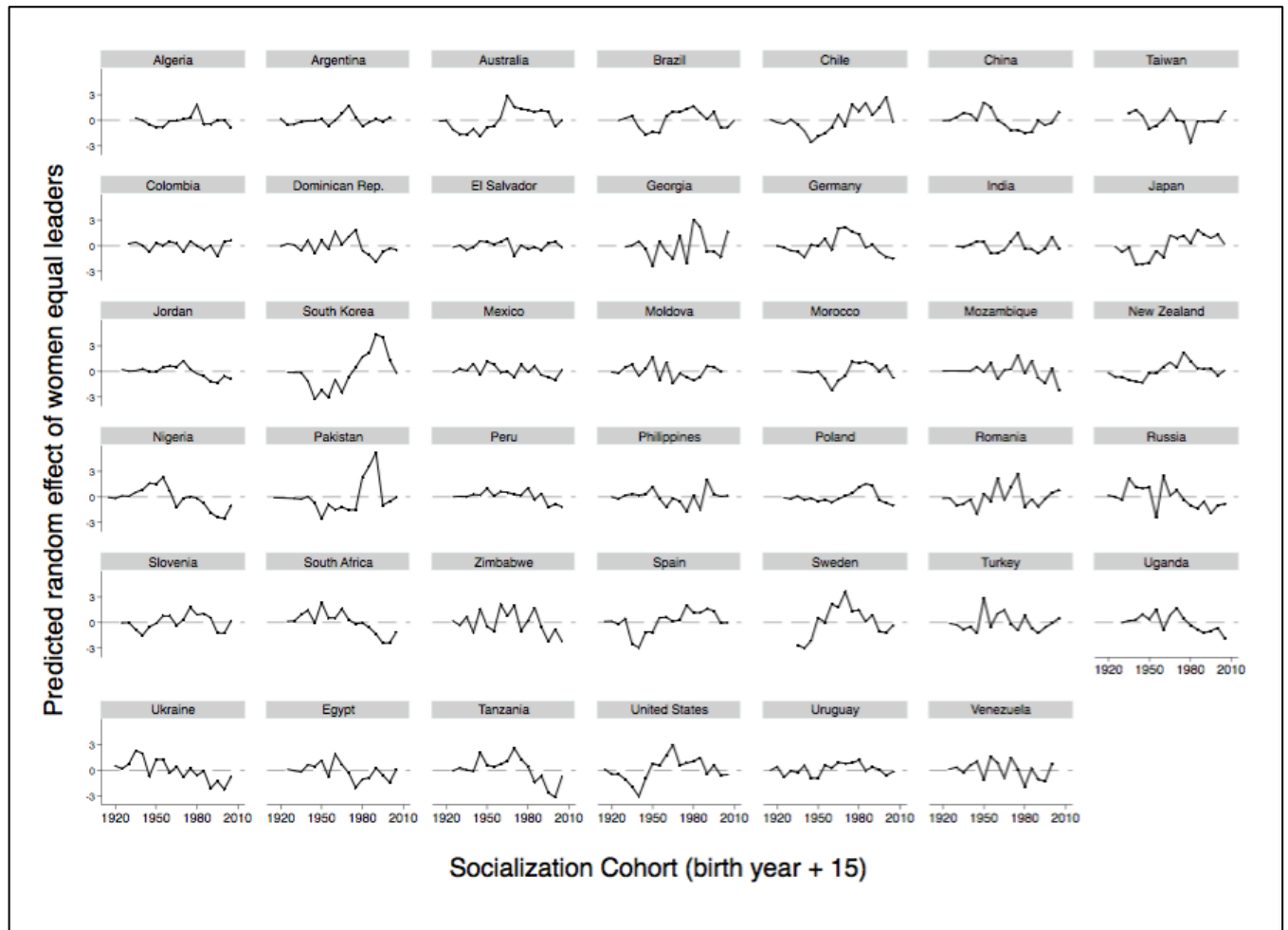
Notes: The predicted random effects are based on the estimates of Model 2 in Table 2. Here we do not further distinguish between East and West Germans. The generations socialised between 1949-1990 have however different contextual values, as the female empowerment and level of democracy varied.

Models 2-4 show our main results testing hypotheses 1-3. These are also illustrated using the predicted level of support for women in politics from the models, shown in Figure 4. The degree of gender equality in the power distribution during the formative years is statistically insignificant in models 2 and 3. However, model 4A adds an interaction between this variable and regime type during formative years. The coefficient for the distribution of power by gender

becomes positive and statistically significant, whilst the interaction term is negative and statistically significant. Figure 3 shows that, in democracies, the higher the level of gender equality in the distribution of political power during someone's formative years, the greater their predicted support is for women in politics from model 4A. However, there is no relationship between the level of gender equality during formative years and support for women in politics in autocracies.

The level of modernisation is always statistically significant and positive in models 2 and 3, indicating that generations with higher levels of modernisation in their formative years are more supportive of women in politics. The interaction between regime type and modernisation is included in model 4B, and the results are illustrated in Figure 4. Again, in democracies, the higher the level of modernisation during a generation's formative years, the greater citizens predicted support for women in politics from this model. In autocracies, however, there is no relationship between modernisation during formative years and support for women in politics. It should be noted that the predictions for autocracies beyond approximately 0.7 on the power distributed by gender scale are out-of-sample predictions, given that no autocracy has this level of gender equality. Predictions beyond this point should therefore be treated with caution.

Figure 4 shows that the effect of modernisation during the formative years in democracies is greater than the effect of power distributed by gender. This is to be expected given the strength of the modernisation variable, found consistently in previously research. Nevertheless, the effect of institutional gender empowerment in democracies is present even when controlling for the level of modernisation, and is still sizeable. Those who experience full gender equality in political institutions in their formative years are around 7 points higher on the 0-100 support for

women politicians variable than those that experience completely male-dominated political institutions.

Figure 4: Predicted support for female political leaders by (A) institutional female empowerment and (B) modernisation
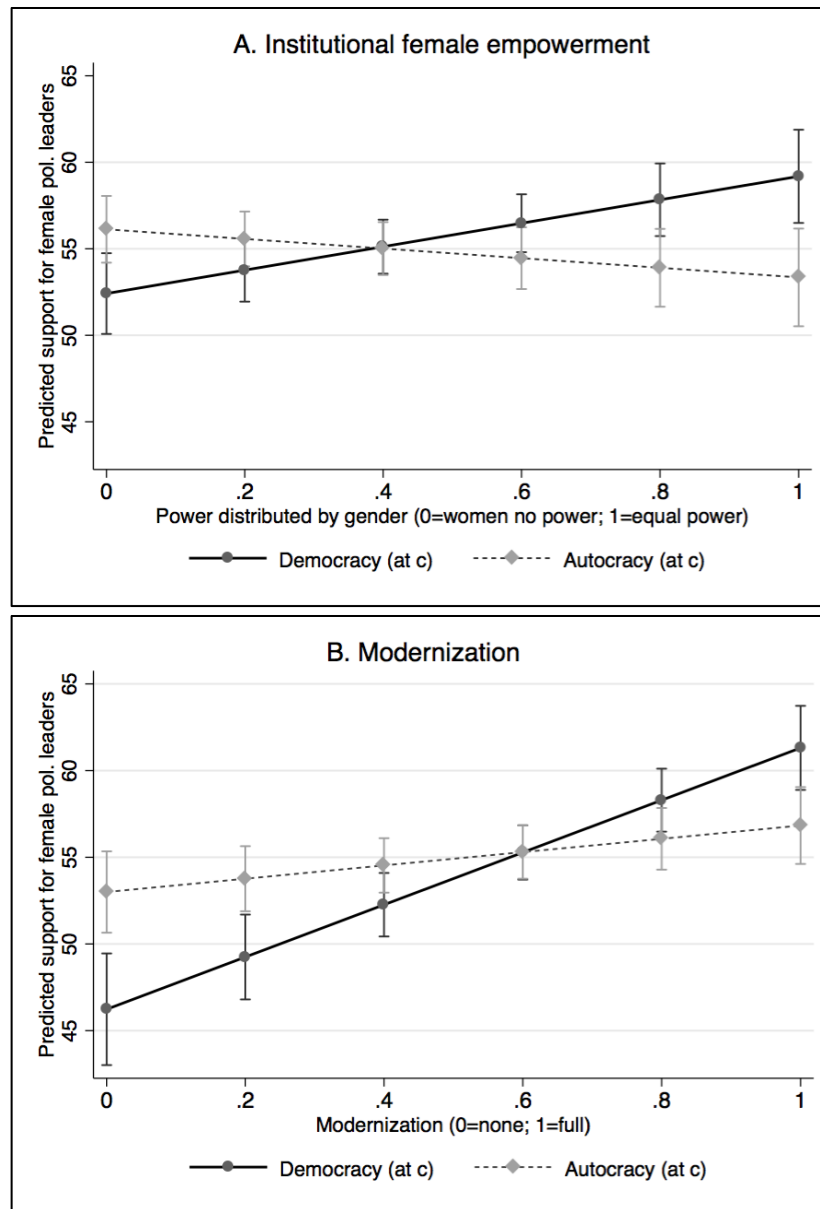
Note: Predicted values are based on Model 4A and 4B in Table 2

5. Conclusion

The level of gender equality in democratic political institutions during a generation's formative years matters for their level of support for women in politics. Citizens who experienced higher levels of women's empowerment in political institutions during their youth are more supportive of women in politics, and less likely to agree that men make better politicians than women. Generations who grew up with women holding political power are more likely to see this as normal, with the presence of women in political institutions overcoming negative stereotypes about women in politics. The level of modernisation during citizens' formative years has an even greater effect on support for women in politics, consistent with previous literature, but we show that the presence of women in political institutions has an impact on attitudes even when controlling for the level of modernisation experienced during the formative years. Institutional characteristics are an additional determinant of gender-egalitarian attitudes, over and above levels of modernisation.

This is only the case in democracies. In non-democratic regimes, neither modernisation nor institutional gender equality during a generation's formative years matters for attitudes towards women in politics. This suggests that regime type matters more for these attitudes than research currently suggests. In the absence of a democratic regime, rising levels of modernisation or greater female presence in political institutions do not lead citizens to be more supportive of women in politics. In non-democracies, the regime, and the women in its political institutions, may be seen as less legitimate in comparison to democracies, and women may hold some political positions but nevertheless be unable to fulfil the representative functions that are expected of them. In particular, they may find it difficult to substantively represent women's interests. These features of the representation of women in non-democracies may mean their

presence is less influential for attitudes than in democracies. It is interesting that higher modernisation during the formative years also does not lead to greater gender-egalitarianism in non-democracies. This could be to do with other characteristics of non-democratic regimes – for example, the promotion of patriarchal values – which depress the effects of modernisation. Further research is needed to fully understand this relationship.

The findings indicate there is a positive feedback loop in democracies, where greater institutional gender equality leads to greater gender-egalitarianism in citizen attitudes, and vice versa. Even democratic regimes without a strong legacy of gender equality in institutions may face cultural barriers to greater female representation. Countries with authoritarian pasts are also likely to have lower support for women in politics, and this may have consequences for their future democratic development with respect to gender equality in political institutions. However, as such countries become more democratic, and women are increasingly represented in political institutions, attitudes towards women in politics should become more egalitarian as older, inegalitarian generations are replaced by younger, more egalitarian ones.

Appen

Appendix 1: Geographic coverage

The inclusion into the study was restricted as follows: There are at least three data points per country that cover at least 10 years of time. The listed number of observations in Table A1 below lists the number of observations, which corresponds to the number of survey respondents that gave a valid response to the question whether men are better political leaders than women in their countries today.

Table A1: List of countries and number of observations

Country	N of obs.	Country	N of obs.
Algeria	3,541	Pakistan	3,854
Argentina	6,296	Peru	11,76
Australia	4,774	Philippines	3,567
Brazil	9,608	Poland	2,718
Chile	6,303	Romania	4,056
China	6,042	Russia	6,119
Taiwan	3,108	Slovenia	2,929
Colombia	12,526	South Africa	16,332
Dominican Rep.	6,654	Zimbabwe	5,874
El Salvador	5,958	Spain	4,518
Georgia	4,495	Sweden	4,075
Ghana	6,602	Turkey	7,951
India	6,719	Uganda	5,75
Japan	4,055	Ukraine	4,793
Jordan	3,557	Egypt	8,696
South Korea	4,717	Tanzania	4,789
Mali	3,769	United States	5,988
Mexico	12,43	Uruguay	7,811
Moldova	2,874	Venezuela	4,548
Morocco	4,306	Zambia	3,832
New Zealand	2,553	West Germany	2,899
Nigeria	10,349	East Germany	2,976
		Total	257,071

Appendix 2: List of individual-level datasets

- World Value Survey (WVS), 1981-2014
    - o 6 waves (1981-84; 1990-94; 1995-98; 1999-2004; 2005-09; 2010-14)
- Latinobarometer (LB), 1995-2015
    - o 17 waves (1995; 1996; 1997; 1998; 2000; 2001; 2002; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2013; 2015)
- Afrobarometer (AFB), 1999-2015
    - o 6 waves (1999-2001; 2004; 2005; 2008; 2015)
- Americas Barometer (AB), 2004-2014
    - o 8 waves (2004; 2006; 2007; 2008; 2009; 2010; 2012; 2014)
- European Values Study (EVS), 1981-2010
    - o 4 waves (1981-84; 1990-93; 1999-2001; 2008-10)

Appendix 3: Coding of dependent variables

The question of gender equality is generally about political leadership. Most questions only ask about "men being better political leaders", while the Afrobarometer offers an alternative about women should have equal chances of being elected to political office.

Dataset	Years	Men better political leaders
Latino-barometer	2004, 2009	Are you strongly agree(1), agree(2), disagree(3), or strongly disagree(4) with the phrases that I will read. Men are better political leaders than women. -2 no answer/refused.
WVS/EVS	1994-2014	For the following statements I read out, can you tell me how strongly you agree or disagree with each. On the whole, men make better political leaders than women do. Strongly agree (1); agree (2); disagree (3); strongly disagree (4).
Americas Barometer	2008-2014	Some say that in general, men make better political leaders than women. Do you strongly agree (1); agree (2); disagree (3); or strongly disagree (4)?
Afro-barometer	2005-2015	Which of the following statements is closest to your view? A Women should have the same chance of being elected to political office as men; B men make better political leaders than women, and should be elected rather than women. 1 Agree very strongly with A; 2 agree with A; 3 Agree with V; 4 Agree very strongly with B; 5 agree with neither
	2005-2015	Wave 5: Which of the following statements is closest to your view? Statement 1: Men make better political leaders than women, and should be elected rather than women. Statement 2: Women should have the same chance of being elected to political office as men. 1=Agree very strongly with Statement 1, 2=Agree with Statement 1, 3=Agree with Statement 2, 4=Agree very strongly with Statement 2, 5=Agree with neither, 9=Don't know, 998=Refused to answer, -1=Missing

Appendix 4: Harmonizing years of education and education levels

Assumption: Children start school with 6

- Primary: 6 years old + 8 of school = 14 years old
- Secondary: 6 years old + 14 years of school (max) = 20 years old
- Post-Secondary: Secondary: 6 years old + 15 years of school (min) = 21+ years old

WVS

- Var = What age did complete your education [1-99]
- Recoding
  - Primary = 1-12
  - Secondary = 13/20
  - Tertiary = 21+
- This is used to replace 10,482 missing on categorical variable. Hardly any missing left.

EVS

- Var = What age did complete your education [1-99]
- Recoding
  - Primary = 1-12
  - Secondary = 13/20
  - Tertiary = 21+
- This is used to replace 10,482 missing on categorical variable. Hardly any missing left.

Appendix 5: Macro variables

A5.1: Modernisation index

We estimated the modernisation index using principle component factor analysis using eight items that tap at the modernisation level of a country. Some of the variables have missing values. We hence re-ran the factor analysis numerous times to combine the eight variables in different ways, dropping variables, to maximize the number of country-year observations. A minimum of two items was required. The final score was calculated as average standardized factor score from the different iterations of the factor analyses. The items used are as follows:

- Literate population (%) based on Vanhanen (2003)
- Urbanization based on V-Dem codebook and Clio Infra (clio-infra.eu)
- Infant mortality rate: measured as the number of deaths prior to age 1 per 1000 live births in a year. The base variable is drawn from (a) Gapminder, with additional data imputed from (b) Clio-Infra. Interpolations and imputations employ linear models.
- Life expectancy refers to expected longevity at birth based on current age- specific mortality rates. The base variable is drawn from (a) Gapminder, with additional data drawn from (b) Clio-Infra. Missing data within a time-series is interpolated and imputed using linear models, as follows.
- Non-agricultural population %: What percentage of the population work in non-agricultural occupations?
- Primary/secondary/tertiary school enrollment: What percentage of the primary school-aged population is enrolled in primary school? Clarification: The base variables are UNESCO's adjusted net primary enrollment rate (available in the World Bank Education Statistics Database) and Barro and Lee's (2015) long-run data on primary enrollment (available in 5-year intervals). These two variables correlate at .94. This compiled time series is interpolated increasing the number of observations from 5,181 to 11,927. Missing data for the base variable is then imputed from UNESCO's total primary enrollment percentage, which includes those enrolled who are not of primary-school age. The linear imputation increases the number of observations from 11,927 to 12,840.

Table A5: Correlation between measures of modernization

	Literacy	Urban.	Inf. Mort.	Life exp.	Non-agri.	Prim.	Seco.	Terti.
Literacy	1							
Urbanization	0.66	1						
Infant mortality	-0.69	-0.62	1					
Life expectancy	0.74	0.68	-0.89	1				
Non-agricultural pop.	0.79	0.84	-0.68	0.73	1			
Primary school enroll.	0.81	0.56	-0.64	0.74	0.65	1		
Secondary enrollment	0.56	0.60	-0.75	0.78	0.67	0.56	1	
Tertiary enrollment	0.47	0.60	-0.61	0.65	0.60	0.42	0.82	1

Table A5 reports the correlation matrix of the eight items used to estimate the modernization index. As is clear, these items are very much tapping at the same underlying construct.

A5.2. Political corruption index

- Executive corruption index – it captures how routinely members of the executive, or their agents, grant favors in exchange for bribes, kickback, or other material incentives, and how often they steal, embezzle or misappropriate state resources for personal or family use.

- Legislative corruption – it is an ordinal measure that captures how common it is that members of the legislature abuse their position to obtain financial gains (e.g. bribes, facilitating government contracts for the legislator's connections, doing favors for companies in exchange of employment after leaving the legislature, and stealing money from the state or campaign donations).

- Public sector corruption index – it captures the extent to which public sector employees favors in exchange for bribes, kickback, or other material incentives, and how often they steal, embezzle or misappropriate state resources for personal or family use.

- Judicial corruption – it's an ordinal indicator that captures how often individuals or businesses make undocumented extra payments or pay bribes to delay, speed up or obtain a favorable judicial decision.

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