

Growth in women's political representation: A longitudinal exploration of democracy, electoral system and gender quotas

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Abstract. The expansion of women's formal political representation ranks among the most significant trends in international politics of the last 100 years. Though women made steady political progress, substantial country-level variation exists in patterns of growth and change. In this article, longitudinal theories are developed to examine how political factors affect women's political representation over time. Latent growth curve models are used to assess the growth of women in politics in 110 countries from 1975 to 2000. The article investigates how electoral systems, national-level gender quotas and growth of democracy – both political rights and civil liberties – impact country-level trajectories of women's legislative representation. It is found: first, national quotas do affect women's political presence, but at a lower level than legislated by law; second, the impact of a proportional representation system on women's political representation is steady over time; and third, democracy, especially civil liberties, does not affect the level of women's political representation in the earliest period, but does influence the growth of women's political representation over time. These findings both reinforce and challenge prior cross-sectional models of women's political representation.

The expansion of women's formal political representation ranks among the most significant trends in international politics of the last 100 years. Over the course of little more than a century women first gained the right to vote nationally (New Zealand, 1893), appeared in parliament for the first time (Finland, 1907), reached 10 per cent of a national legislature (Soviet Union, 1946), reached 30 per cent of a national legislature (German Democratic Republic, 1967) and recently exceeded 50 per cent of a parliament (Rwanda, 2008).

Substantial country variation in patterns of growth and change accompanies the worldwide growth in women's political representation. Some countries, such as Sri Lanka and Turkey, have always had less than 5 per cent female parliamentary representation. Others, like Denmark and Mozambique, show steady increases in female representation over time, ultimately resulting in greater than 30 per cent female representation. Still others, after a long period of low female representation, made rapid gains over a short period of time

(e.g., Rwanda, South Africa and Pakistan). The timing of gains differs across countries as well. Some countries made their gains in female representation in the 1980s (Iceland, Canada, Spain), while others made major gains in the 1990s (Australia, Austria, Germany). There are even countries that have yet to elect their first female representative, such as Micronesia.

Surprisingly, however, researchers have not directly investigated growth or decline in women's numbers over time. Instead, previous research focuses on comparisons across countries in the *level* of women's representation at recent time points. Cross-sectional research demonstrates that certain political factors, such as a proportional representation (PR) electoral system or the introduction of a national gender quota, are associated with higher levels of women's political representation (e.g., Norris 1985; Rule 1987; Paxton 1997; Matland 1998; Kenworthy & Malami 1999; Tripp & Kang 2008). Yet scholars have not examined how these factors change women's representation over time. Instead, prior studies infer intra-country (within-country) change from inter-country (between-country) differences in levels of various political attributes, like the presence of a gender quota, at one point in time. Assessing growth and change, however, requires longitudinal theory, data and models.

Attention to change requires a developmental theory – one that addresses how relevant variables influence a country's overall growth process. Indeed, understanding institutions may require analysing 'processes over a substantial stretch of years, maybe even many decades or centuries' (Pierson & Skocpol 2002: 698). Longitudinal theories allow us to hypothesise slow-moving processes that can make a large difference over time, as well as episodic influences that act over a shorter and constrained period of time (Hughes & Paxton 2008).

We investigate the longitudinal impact of democracy, electoral system and national-level gender quotas. We first focus on whether democracy shapes women's access to political positions. An argument that democracy is good for women's political representation has found little support in cross-sectional research. Our theory, outlined below, suggests that initial levels and growth in democracy produce gains in women's representation *given time* through an increasing returns process. Furthermore, we investigate what features of democracy help women in gaining political power. This is the first comprehensive examination of democracy to account fully for the likely longitudinal nature of democracy's effect.

Second, the importance of electoral system to women's political representation is arguably the most consistently demonstrated finding in the cross-sectional literature (Rule 1987; Norris 1985; Paxton 1997; Kenworthy & Malami 1999; Reynolds 1999; McAllister & Studlar 2002) and is an obvious choice for testing over time. Longitudinal testing allows us to establish whether

the effect of PR is stable over time or varies in response to a changing international normative climate pushing ever higher numbers of women in politics (Paxton et al. 2006).

Finally, hundreds of new reports and papers explore the relatively new phenomenon of national gender quotas (e.g., Dahlerup 2006; Dahlerup & Nordlund 2004; Jones 2004, 2005; Schmidt & Saunders 2004). Yet research contains very few large-N analyses of quotas across countries, and none of these takes a longitudinal or change perspective. Furthermore, prior research on quotas focuses on their presence or absence alone without regard to the legislated level, or threshold, of the quota. For the first time, we cross-nationally investigate the role of quota thresholds on women's political representation.

This article addresses these theoretical questions through analysis of longitudinal data on women's political representation across countries. We model intra-state change in women's representation with latent growth curve models (Bollen & Curran 2006). Fundamental to our approach is the idea that countries exhibit trajectories of growth in women's representation over time. We argue that rather than considering individual years of data separately, or considering the effect of only the previous year of data on the current year, we instead must consider women's legislative representation as a trajectory of growth, covering decades of change. Latent growth curve models also offer flexibility in capturing individual countries' trajectories of growth. Trajectories may be modeled as linear, defined by an intercept and slope, or as more complicated functions of time, such as quadratic.

In this article, our primary goal is to examine the growth of women's political representation in more than 100 countries across a period of 25 years, 1975 to 2000. To gain a general understanding of how women's presence in national politics changes over time, we first estimate the fixed (world-level) and random (country-level) components associated with country-level differences in growth trajectories over time. Then, turning to our predictive model, we investigate how the electoral system, national-level gender quotas and level of democracy influence country-level trajectories of women's legislative gains.

Political explanations for women's political representation

Women remain highly under-represented in national politics, with the average percentage of women in parliaments only 18.4 as of June 2009 (IPU 2009). However, women's current 18 per cent level represents a substantial improvement from previous figures. Women made up only 2 per cent of world parliamentarians in 1945, 5 per cent in 1970 and 9 per cent in 1990. As of 2000,

women still had barely surpassed 10 per cent of parliamentary seats (11.7 per cent). To date we have little theory and/or analysis of this growth over time. We also know little about country variation in patterns of growth and change in women's representation over time (Hughes & Paxton 2008).

Previous work on women in parliaments firmly established that political factors, such as a PR electoral system, are related to the percentage of women in national legislatures (Norris 1985; Rule 1987; Paxton 1997; Matland 1998; Kenworthy & Malami 1999; Tripp & Kang 2008). Political factors enhance or limit the ability of men, women and other groups in government to promote their own interests. Indeed, features of political systems shape the very rules of the game and therefore whether women can attain political power (Kunovich & Paxton 2005; Matland 1998, 2002; Matland & Studlar 1996; Caul 1999, 2001; McCammon et al. 2001). In broad terms, a country's level of democracy sets the general context in which women contest seats or are placed into political positions. Specific features of the political system also influence women's representation, including the electoral system and the presence and structure of gender quotas.

Cross-sectional research constitutes the vast majority of cross-national scholarship on women in politics, explaining variation in levels of representation at a single point in time, rather than patterns of growth or decline. Those few studies that do consider women's political representation over time do not explicitly model change (Studlar & McAllister 2002; McAllister & Studlar 2002; Paxton et al. 2006). In contrast, a developmental approach generates different hypotheses about the effect of traditional variables on women's political representation. In this section, we outline how three common explanations for women's parliamentary representation can be adapted to predict growth and change in women's parliamentary representation.

Democracy

The extent to which democratic institutions should affect the representation of women as legislators is unclear. On the one hand, fair elections and open competition may be more conducive to women entering politics since fewer artificial and arbitrary constraints would act as barriers. In democracies, the rules of the political game should be transparent, well-detailed and consistent, helping women to see how they can work within the system to attain power. Conversely, in the absence of true elections, women can be placed into power even when citizens do not support them (Abukhalil 1997; Howell 2002). Generally, large cross-national statistical studies show either no effect of democracy on women in parliament (Kenworthy & Malami 1999; Paxton & Kunovich 2003; Reynolds 1999) or a negative effect (Paxton 1997; Yoon 2001).¹ No large,

cross-national quantitative study has ever shown a positive effect of democratic institutions on women's political representation.

However, democratic countries may be disadvantaged in the static assessments typical of previous research because the theorised impact of democracy on women's participation takes more time to accumulate than the impact of authoritarianism or totalitarianism. In a democratic system, women can research, understand and possibly manipulate the clearly stated and consistently followed rules of the game (Matland 2002). In the presence of civil liberties, women can articulate gender asymmetries in power and, given time to organise, women's advocacy groups might agitate for greater representation. Since mainstream political activities traditionally excluded women, however, organising activities may take time to bear fruit (Jaquette 1991). Indeed, research on women in transitions to democracy suggests that women find it difficult to translate activism during the transition into political representation after the transition (Friedman 1998; Waylen 1994; Viterna & Fallon 2008).

In short, a country's openness to democratic processes may strengthen women's position in the political sphere given time. Yet in a static, cross-sectional design, democracy would typically be evaluated as democracy in the election under consideration. Studies do not usually account for a country's prior levels of democracy, or a country's growth in democracy over time, which could be quite different from the level of democracy in the current period.

Taking a longitudinal perspective, in contrast, suggests that both high early levels of democracy and growth in democracy over time may increase women's political representation. High early levels of democracy represent the climate under which women begin to act to gain representation. Practice with free elections or free speech not only provides women with immediate experience in the political arena, but may offer enduring effects that continue over many years by setting women onto a path of higher growth in representation. The process is one of increasing returns over time, where women's early presence creates momentum for further gains in the political sphere (Pierson 2000). In short, democracy at the start of the time period is causally relevant to a country's trajectory of growth in women in politics. Translating this theory into a hypothesis yields:

H1: An early democratic climate, represented by the intercept of a country's growth curve of democracy (1975), will influence that country's trajectory of growth in women's political representation 1975 to 2000.

However, democracy, like women's political representation, is not static. Countries become more or less democratic over time. As countries hold fair elections and extend freedoms, these openings provide political opportunities

for women to contest representation. Open political institutions and expanded civil liberties should lead to increases in women's political learning, articulation of inequality and activism. Furthermore, these forces should expand the ability of women's movements and other groups to pressure for women's inclusion in politics.

Of course, an argument for democratisation increasing growth in women's representation does not rest on women's activism alone. Instead, as in the case of Mozambique, the increased competition experienced by parties under democratic rules may pressure parties to court female voters by appealing to them with female candidates (Hughes 2009). For these reasons, the growth of democracy over time should influence women's growth in political power.

H2: Growth in democracy over time, represented by the slope of a country's growth curve of democracy (1975–2000), will influence a country's trajectory of growth in women's political representation 1975 to 2000.

Yet what aspect of democracy should matter for women's representation? Democracy is typically defined by at least two dimensions (e.g., Dahl 1971; Bollen 1993). The first dimension, political rights, exists to the extent that the national government is elected by a meaningful process and parties compete for political power. Civil liberties, the second dimension, exist when the people of a country have the freedom to express political opinions in any media and the freedom to organise and participate in any political group.

The two dimensions of democracy may have different effects on women's political representation over time. Changes in political rights correspond to changes in institutional rules – for example, fair elections are held, shifts in power occur through elections and the government becomes increasingly free of military control. When political rights increase, women may be better able to understand the clear and transparent rules of the political game and more easily compete alongside their male counterparts. Increased competition among political parties may also lead to more female candidates and leaders as courting voters, including female constituents, becomes important. In short, expanded political rights may matter to women through an institutional learning mechanism.

In contrast, changes in civil liberties correspond to changes in personal freedoms – for example, reductions in censorship, more open public discussion, greater freedom of assembly and free private organisations. When civil liberties increase, women are better able to agitate for change in a process of internal activism. Women have the free speech and ability to organise that allow them to lobby directly the government or political parties about women's concerns. External activism, such as pressure from the international

women's movement, may also be more effective in an environment of less restricted civil liberties. In the presence of free organisation, speech and so on, international organisations can found chapters, train women and provide resources for campaigns. In short, increases in civil liberties may matter to women's representation through expanded opportunity for activism.

Recognition that political rights and civil liberties may yield differential effects on women's political representation suggests that the above hypotheses can be modified to distinguish overall growth in democracy from growth in political rights and growth in civil liberties.

Quotas

A 'gender quota' is a party or legislative rule requiring that women make up a certain percentage of a candidate list, a parliamentary assembly, a committee or a government.² Most governments and political parties adopting quotas attempt to reach at least 20 or 30 per cent women in parliament (IDEA 2006). However, quotas differ in their required representation levels. Nepal, for example, has a quota of 5 per cent, while Costa Rica set a threshold of 40 per cent.

State-mandated quotas may result in dramatic increases in the proportion of women elected (e.g., Jones 1998; Dahlerup & Freidenvall 2005). Aili Mari Tripp and Alice Kang (2008) found that quotas were a powerful predictor of women's political representation across 149 countries. Even when only a subset of parties adopts quotas, diffusion may lead other parties to increase their percentage of female candidates and representatives (Matland & Studlar 1996). Not all quotas are effective in achieving stated goals, however (Krook 2003). Quotas may lack placement mandates (designed to prevent parties from burying women at the bottom of party lists), for example (Jones 2004). Or, in the absence of sanctions, party leaders may fail to comply with quota regulations (Dahlerup 2006). Indeed, the same quota legislation may produce a much different outcome depending on the context in which the quota is adopted (Schmidt & Saunders 2004; Jones 2005).

Because quotas are an electoral reform that takes place in a given year, a gender quota is a time-specific influence that affects women's political representation *in that year*. A gender quota, therefore, is not expected to affect a country's entire growth process, but instead influences women's political representation in a given year controlling for a country's general trajectory. Put another way, gender quotas are designed to push a country *off* its current trajectory of growth – to 'jump start' women's representation (Dahlerup & Freidenvall 2005).³ Consider Figure 1, which depicts Costa Rica's trajectory of women's political participation. In 1996, Costa Rica adopted a national quota

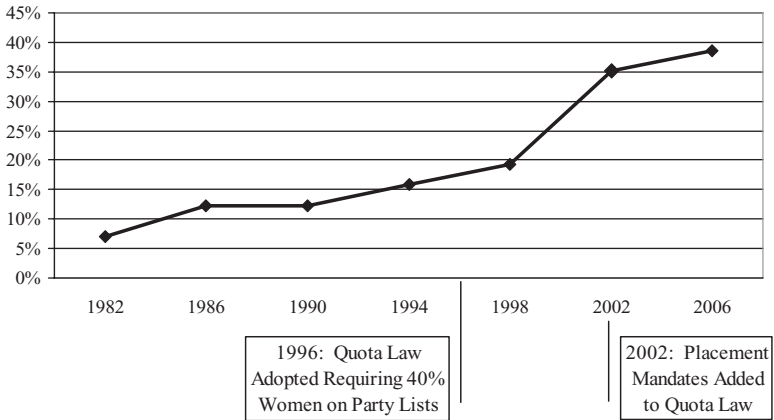


Figure 1. Women's representation in Costa Rica, 1982–2006.

and in 2002 substantially strengthened its quota law. These two events influenced Costa Rica's level of women's participation, but only in the years after the quota was implemented. Thus, the introduction of a national quota fundamentally changed the percentage of women in Costa Rica's parliament in recent years, but not Costa Rica's entire trajectory.

It is reasonable to ask whether gender quotas push a country off a general trajectory in particular years, or whether gender quotas set countries onto entirely new trajectories. In answering this question it is important to remember that countries can remove quotas as well as introduce them. Looking at a few countries that have implemented and then withdrawn quotas illustrates the importance of viewing quotas as influencing years rather than trajectories. Consider Egypt and Pakistan, which had national quota policies from 1979–1986 and 1985–1990, respectively. Figure 2 illustrates that both countries experienced a decline in women's political participation that corresponds to the years in which the quotas were rescinded. Figure 2 suggests that we must consider quotas as electoral rules affecting women's political participation in a given year, not the entire trajectory.

Gender quotas are an important, but relatively new, political factor for understanding women's representation in politics. Although party quotas and small numbers of reserved seats existed in certain countries since the 1970s, Argentina was the first country to adopt a national electoral gender quota in 1993. National-level quotas then spread throughout Latin America, and after 1995, many African countries followed suit with reserved seats and party-level quotas (Ballington 2004; Tripp 2003). During the 1990s, 22 countries adopted national electoral law quotas that required between 20 and 50 per cent of

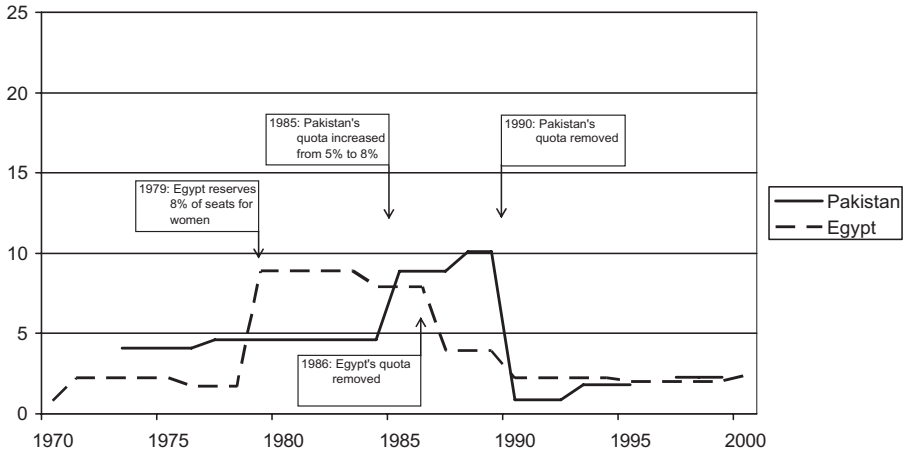


Figure 2. Women's representation in Egypt and Pakistan, 1970–2000.

candidates for legislative office to be women (Baldez 2004). The presence of a national-level gender quota is therefore only expected to influence a country's trajectory after 1995.

H3: The enactment of a gender quota by 1995 or 2000 will affect a country's level of women's political representation in that year above and beyond the changes we expect from the overall growth process.

As discussed above, not all quotas are effective in achieving stated goals (Krook 2003). Party leaders may choose to face the consequences of ignoring a quota, sometimes because there are no significant penalties for non-compliance (Dahlerup 2006). In other cases, parties do follow the quota to the letter of the law, but implement the policy in a way that renders it unsuccessful. Thus, even if quotas do push countries upward off of their growth trajectories, quotas may have less an impact than might be expected given the level of women's representation legislated by the quota. Furthermore, the question remains whether higher quota thresholds (e.g., 25–30 per cent) are actually more effective at generating higher levels of growth in women's political representation. Indeed, France adopted a parity law in 2000 requiring all parties to run 50 per cent female candidates, but in 2007, women won only 19 per cent of elected seats in the National Assembly. For these reasons, although previous quantitative research finds that quota presence or absence matters for women, it is worth investigating whether quotas with higher thresholds produce higher gains for women.

Electoral system

Finally, we turn to a discussion of electoral system. In the literature on women in politics it is generally accepted that the presence of a PR system, rather than a plurality-majority system (e.g., in the United States), aids women in gaining access to the political system (Norris 1985; Rule 1987; Paxton 1997; Matland 1998, 2002; Kenworthy & Malami 1999; Reynolds 1999; McAllister & Studlar 2002; Paxton et al. 2006). In PR closed-list systems, citizens vote for party lists of candidates rather than individual candidates. If a party wins 30 per cent of the votes, it receives roughly 30 per cent of the parliamentary seats. Legislators are selected by moving down the party list, in order, until all seats are filled. PR systems also make use of multi-member districts, which means more than one candidate can be elected from a particular district. In contrast, plurality-majority systems ask citizens to vote for single candidates, typically in single-member districts.

An electoral system that uses a PR list system and multi-member districts offers several advantages to female candidates (Matland 2002). In a single-member district, getting on the ballot is a zero-sum process where parties must choose between male and female candidates. In contrast, since parties operating under PR list systems publish lists of candidates, they may feel pressure to balance their party's ticket across genders, leading to greater numbers of women (Matland 2002). In multi-member districts, balancing is used to attract voters but also to achieve equity across different factions of the party and to resolve internal party disputes through compromise (Matland 2002; Gallagher 1988).

Countries can and do switch between electoral systems. A PR system is therefore a time-specific characteristic of a country that affects women's political representation in individual years. Like quotas, electoral system influences women's political representation in a given year controlling for a country's general trajectory. Unlike quotas, the impact of PR is expected to operate in all years, rather than in just a few (post-1990) years. If quotas are a one-time attempt to 'jump-start' women's representation in a subset of countries, PR acts as a series of time-specific 'nudges'.

H4: A country's electoral system in a particular year influences its level of women's political representation in that year above and beyond the changes we expect from the overall growth process.

Because prior research on PR has been in a series of cross-sectional studies, we know the estimated effect of PR on women's political representation but do not know whether this effect changes over time. There are at least two

reasons to believe that PR systems may be becoming more important for women's political representation over time. First, an increasing effect of PR over time may be driven by normative change. As discussed above, theory suggests that part of the observed influence of PR on women's representation is because parties feel pressure to generate lists of candidates with an appropriate balance across genders. Yet what counts as 'appropriate balance' may change over time. As domestic or international pressure increases to include more and more women, PR systems may be more responsive to changing demands for women's political representation than plurality-majority systems (Paxton et al. 2006). Second, increasing effects of PR may result from an increasing returns process that accelerates the effect of PR over time (Pierson 2000). For example, if PR systems began to pull more women into political office in the 1970s, these women might have become better placed to recruit additional women into office in subsequent years (Kunovich & Paxton 2005; Kittilson 2006). For these reasons, it is of interest to examine the size of the effect of electoral system on women's legislative presence over multiple election years.

Data and methods

We analyse the growth of women's political representation at the national level in 110 countries that reached formal independence before 2000 (thus East Timor and territories such as Hong Kong and Taiwan are excluded). Because the processes facilitating women's inclusion in politics are different in Marxist-Leninist countries, producing substantially different trajectories, we chose not to incorporate countries that are currently or were Marxist-Leninist during any time throughout their history. Countries with populations of less than 1 million in the year 2000 also are excluded (UN 2004). Finally, we do not analyse countries that never elected a national legislative body over the period (i.e., Brunei Darussalam, Oman, Qatar, Saudi Arabia).

As a measure of women's political incorporation across countries, we predict the percentage of women in the lower or single house of each country's national legislature from 1975 to 2000, measured every five years. Data were obtained from the Inter-Parliamentary Union (1995) and the Inter-Parliamentary Union's PARLINE database, supplemented by additional information from the Central Intelligence Agency World Factbook, United States State Department's Background Notes, and governmental and national legislature websites.

As predictors, we include three political variables: democracy, electoral system and national gender quotas. To begin, we obtain yearly data on democ-

racy from Freedom House (2007). Freedom House reports annual ratings from 1972 to the present, and these are used widely in empirical research and by the policy community. Of all subjective measures, the Freedom House ratings are the most conceptually similar to the definition of democracy. Furthermore, Freedom House breaks its scales into political rights and civil liberties (Freedom House 2007), allowing tests of specific hypotheses about the impact of democracy on women's representation. Auxiliary analyses estimated the models using both the updated POLITY IV dataset (Marshall & Jaggers 2005), and Bollen's (1993) democracy measure in place of Freedom House.

Our longitudinal theory suggests that both high early levels of democracy and growth in democracy over time may increase women's political representation. Therefore, we model democracy as a growth process and predict women's representation with the intercept and the slope of the democracy growth curve. To maximise flexibility in modeling democracy, we free the factor loadings of the growth curve (Bollen & Curran 2006: 98–102). Details about the creation of the democracy growth curves are available upon request from the authors.

Electoral systems are coded as a set of lagged time-varying dummy variables. Using plurality systems as the reference category, we estimate the effects of PR systems (including mixed-PR systems) and an 'Other' category that incorporates periods of one-party rule, coup years and other legislative breaks. Because the percentage of women in a legislature in a given year may reflect the results of elections that occurred in prior years, we lag the electoral system variables by five years. Data on electoral systems were coded by combining a range of information sources including datasets (Beck et al. 2001; Golder 2005), articles and books (Otero & Pérez-Linán 2005; Croissant 2003), and websites (e.g., IDEA 2006; African Elections Database 2006).

For 1995 and 2000, we also code three variables related to country adoption of a national-level gender quota: first, a dummy variable marking adoption of any quota; second, a dummy variable marking adoption of a quota requiring at least 10 per cent women in parliament; and third, the actual threshold of a country's gender quota (IDEA 2006). We code both national-level legal quotas as well as reserved seats, but do not include voluntary party-level quotas in any of the measures. These three variables capture variation in quota thresholds that is relevant to determining whether quotas produce gains in women's representation equal to their legislated levels. For example, quotas requiring less than 10 per cent women are unlikely to substantially alter the trajectory of women's political incorporation in a given year; it may take quotas legislated at 10 per cent or greater to produce measurable gains in women's representation. Because quotas are measured from the year they are implemented rather than the year they are adopted, we do not lag the effects of quotas.

Finally, the quota variables are included only for the last two time points (1995 and 2000) because, as noted above, the first national-level quota with a substantial threshold was not implemented until 1993.

Method

We analyse the growth of women's political representation over time using latent growth curve (LGC) models (Bollen & Curran 2006). LGC models analyse change over time by focusing on intra-country change – estimating both starting positions (intercepts) and trends (slopes) for each country. As an example, consider Figure 3, which presents women's political representation for four countries, 1970–2000. Sweden began the period with 14 per cent women in parliament and grew to almost 45 per cent over the time period. In contrast, the United States began the period with 3 per cent women in its national legislature and rose to 14 per cent by 2000. Three countries – Iceland, Japan and the United States – have similar starting points, but Sweden's starting point is substantially higher. All four countries exhibit a growing proportion of women in politics, but at different rates.

Thus, the first goal of a latent growth curve analysis is to estimate the parameters that determine an individual country's parliamentary growth trajectory over time. Represented in equation form:

$$y_{it} = \alpha_i + \beta_i \lambda_t + \varepsilon_{it} \quad (1)$$

where y_{it} is the value of the trajectory variable (here, women's political representation) for the i th case at time t , α is the intercept for case i , β is the slope

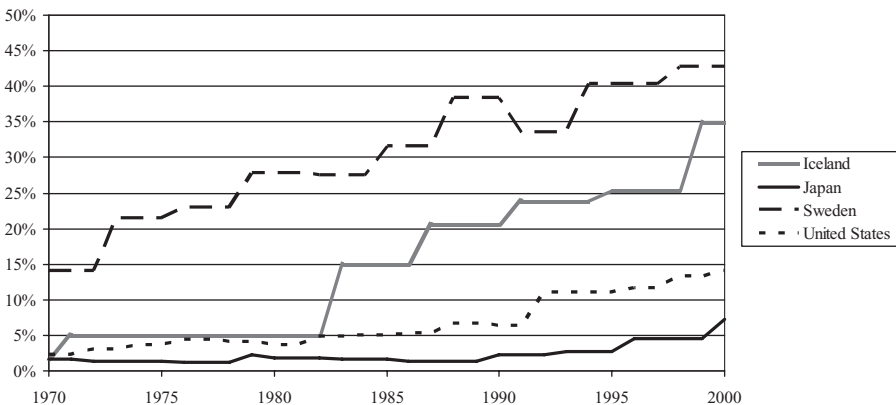


Figure 3. Women's representation in Iceland, Japan, Sweden and the United States, 1970–2000.

for case i , and λ is assigned linear values across time. In this model, each case, i , has a distinct intercept and slope.

The world average starting point (intercept) of women's political representation in 1975, and the world average rate of change (slope) in women's political representation over time are also of interest. In the unconditional model, this leads to two additional equations:

$$\alpha_i = \mu_\alpha + \zeta_{\alpha i} \quad (2)$$

$$\beta_i = \mu_\beta + \zeta_{\beta i} \quad (3)$$

where μ_α and μ_β are the mean intercept and mean slope across all cases (here, the world average intercept and slope). The first equation represents a country's individual intercept (α_i) as a function of world average intercept (μ_α) and a disturbance ($\zeta_{\alpha i}$). The second represents a country's slope (β_i) as a function of the world average slope (μ_β) and a disturbance ($\zeta_{\beta i}$).

The second goal of a latent growth curve analysis is to model the factors that explain country-level variation in the growth trajectory. By predicting the trajectory, we can explain why some countries begin the period either higher or lower on women's political representation and why countries exhibit differential rates of change over time. We can also look for the impact of other variables, such as the enactment of a quota, that add or detract from the growth process at a given time.

As discussed above, electoral system and quotas are modeled as time-varying covariates, pushing countries off their average growth trajectory at each observed time point.

$$y_{it} = \alpha_i + \lambda_t \beta_i + \gamma_{y,w_{t-1}} w_{i,t-1} + \gamma_{y,v_{t-1}} v_{i,t-1} + \gamma_{y,z_t} z_{it} + \varepsilon_{it} \quad (4)$$

Again, y_{it} is the value of the trajectory variable for the i th case at time t . The growth process is modeled with α for the intercept for case i , and β for the slope for case i . In addition to the growth process, however, now women's representation in each year is also affected by a country's electoral system (where w represents a PR system and v an alternative system [plurality-majority systems are omitted]) and the presence or absence of a quota (z).

The intercept and slope of Democracy (DI_i and DS_i), in contrast, are hypothesised to affect the intercept and the slope of the overall trajectory of women's political incorporation.

$$\alpha_i = \mu_\alpha + \gamma_{\alpha 1} DI_i + \gamma_{\alpha 2} DS_i + \zeta_{\alpha i} \quad (5)$$

$$\beta_i = \mu_\beta + \gamma_{\beta 1} DI_i + \gamma_{\beta 2} DS_i + \zeta_{\beta i} \quad (6)$$

We estimated all models in AMOS 6.0. Missing data were accounted for using a maximum likelihood estimation procedure (FIML) (Allison 2002; Arbuckle 1996).⁴ Model fit is assessed using the Chi² test statistic, the Incremental Fit Index (IFI) (Bollen 1989) and the root mean squared error of approximation (RMSEA) (Steiger & Lind 1981). Significant Chi² statistics reject perfect fit between data and model, and are therefore taken as an indicator of poor model fit. Non-significant Chi² statistics are an indication of good fit. The closer the IFI to 1.0, the better the fit of a model. Typically, values above 0.90 are considered acceptable and 0.95 considered optimal. In contrast, the closer the RMSEA to 0, the better the fit of the model. Values below 0.05 are typically considered to indicate optimal fit (Browne & Cudeck 1993). Importantly, in our models, the 0.05 cut-off point for the RMSEA should be considered as a guide instead of a firm criterion. Recent research suggests that the 0.05 cut-off rejects too many valid models in small samples (Chen et al. 2008; see also Nevitt & Hancock 2000). Including a range of measures of fit to assess our models helps mitigate the limitation of any one measure (Chen et al. 2008; Tanaka 1993).

Results

World growth in women's political representation

To begin our examination of the overall growth trajectories of women's political representation, we first fit an unconditional linear latent growth curve model, represented in Figure 4. Path diagrams like Figure 4 represent relations between observed (measured) and unobserved (latent) variables. Latent variables are enclosed in ovals, while observed variables are represented with boxes. Straight arrows indicate direction of influence, while curved two-headed arrows indicate a covariance between two variables that is unexplained in the model. Measurement error is indicated by δ , and errors in equations are indicated by ζ . As represented in Figure 4 and corresponding to Equations 1–3 above, the factor loadings for the measures of women's political representation on the latent intercept are fixed to 1.0 to represent the initial starting point of the growth trajectory, and the loadings on the latent slope begin at 0 in 1975, increasing by 1 each five-year interval to indicate linear growth.⁵ In addition, the latent intercept and slope are freely correlated.

Examining the means and variances of the latent intercept and slope terms provides some basic information about the average growth of women's politi-

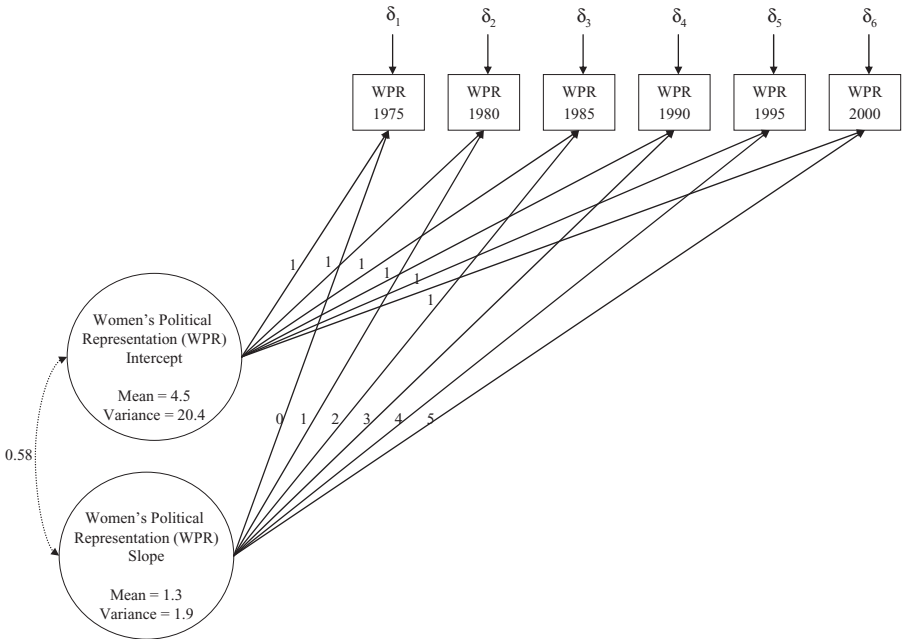


Figure 4. Unconditional linear growth curve model predicting women's political representation across 110 countries, 1970–2000.

Notes: WPR = Women's political representation. Non-significant effects are indicated by a gray dotted line.

cal representation over time. The mean of the intercept term suggests that, on average, countries have 4.5 per cent women in parliament at the first time point, 1975. However, there is also meaningful country-level variability around the world average (the variance of the intercept, 20.4, is significant $p < 0.001$). Turning to the latent slope, the mean indicates that, on average, women's political representation increased rather slowly over time: 1.28 per cent every five years. Again, we find significant country-level variation around the sample mean (1.9). These results are reasonable. Interestingly, the correlation between the intercept and the slope (0.58) is not significant, suggesting that countries with higher initial levels of women in parliament do not have faster growth.

Without any predictors, the unconditional latent growth curve model does not fit the data well ($\chi^2 = 66.91$, 16 df, $N = 110$, $p < 0.001$; IFI = 0.91; RMSEA = 0.17). Although the significant χ^2 is not necessarily a definitive indicator of poor fit, the IFI at 0.91 and RMSEA above 0.10 both suggest there is room for improvement. However, we expect a poor fit for this initial model. Indeed, without including measures that explain why individual countries

deviate from the average growth trajectory of women's political representation across time, the model is unlikely to fit the data well. Thus, we next extend our basic model to include important political predictors of women's legislative outcomes.

Prediction of women's political representation over time

Figure 5 presents the expanded latent growth curve model that includes measures of electoral systems, gender quotas and democracy. We estimate three models, one for each measure of democracy (overall, political rights and civil liberties). Table 1 presents the results in tabular form. Before turning to the substantive results, we note that, as expected, once predictor variables are included model fit improves substantially (IFI = 0.95, RMSEA = 0.09 in model 3). Although the χ^2 statistic ($\chi^2 = 333.6$, 183 df) remains significant at $p < 0.001$, the IFI of 0.95 suggests excellent model fit, and the RMSEA at 0.09 suggests good model fit. Indeed, though the RMSEA is technically above the

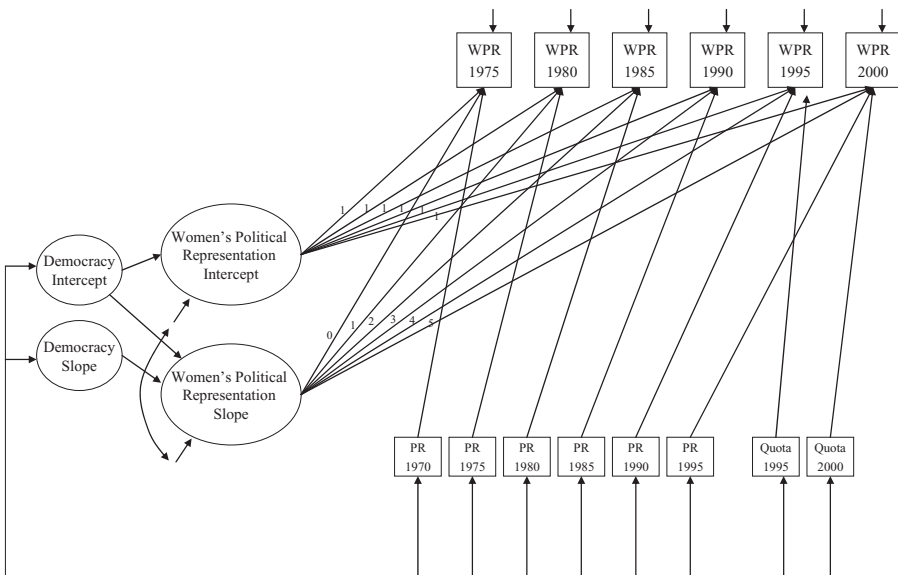


Figure 5. Conditional linear growth curve model predicting women's political representation with electoral systems, national-level gender quotas and average level of democracy across 110 countries, 1975–2000.

Notes: WPR = Women's political representation; PR = Proportional representation or mixed-PR electoral system; Quota = National-level gender quota. Although not depicted in the figure, this model also controls for countries with an 'Other' electoral system, and plurality-majority systems serve as the reference category.

Table 1. Results from conditional linear growth curve model predicting women's political representation with electoral systems, national-level gender quotas and latent growth curve of democracy in 110 countries, 1975–2000

	WPR 75	WPR 80	WPR 85	WPR 90	WPR 95	WPR 00	α WPR	β WPR
Model 1: Average democracy ¹								
α Democ							0.12 (0.28)	0.52*** (0.09) 0.21 (0.14)
β Democ								
PR Elec	2.52** (0.99)	2.24*** (0.83)	1.10 (0.84)	2.07** (0.92)	2.50** (1.07)	2.59** (1.24)		
Oth Elec	0.75 (0.83)	1.16* (0.63)	0.47 (0.65)	0.71	0.11 (0.86)	1.68 (1.41)		
Any quota	–	–	–	–	0.97 (1.70)	2.46* (1.45)		
Model 2: Political rights ²								
α PolRts							0.00 (0.26)	0.45*** (0.08) 0.08 (0.14)
β PolRts								
PR Elec	2.67*** (0.97)	2.42*** (0.82)	1.26 (0.84)	2.29** (0.93)	2.76*** (1.08)	2.88** (1.26)		
Oth Elec	0.58 (0.84)	1.01 (0.64)	0.38 (0.66)	0.74 (0.72)	0.10 (0.87)	1.42 (1.43)		
Any quota					1.20 (1.72)	2.73* (1.48)		
Model 3: Civil liberties ³								
α CivLib							0.20 (0.29)	0.58*** (0.09) 0.31** (0.13)
β CivLib								
PR Elec	2.39** (1.01)	2.11** (0.83)	1.00 (0.83)	1.97** (0.90)	2.36** (1.04)	2.42** (1.21)		
Oth Elec	0.81 (0.83)	1.25** (0.62)	0.49 (0.65)	0.80 (0.71)	-0.01 (0.84)	1.68 (1.38)		
Any quota	–	–	–	–	1.07 (1.68)	2.44* (1.41)		

Notes: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ (two-tailed tests). Numbers in parentheses are standard errors. ¹ Goodness of fit statistics: $\chi^2 = 382.03$, d.f. = 183, $p = 0.000$, IFI = 0.94, RMSEA = 0.10. ² Goodness of fit statistics: $\chi^2 = 392.03$, d.f. = 183, $p = 0.000$, IFI = 0.94, RMSEA = 0.10. ³ Goodness of fit statistics: $\chi^2 = 333.62$, d.f. = 183, $p = 0.000$, IFI = 0.95, RMSEA = 0.09, WPR = Women's political representation; α Democ = Intercept of latent curve of democracy; β Democ = Slope of latent curve of democracy; α PolRts = Intercept of latent curve of political rights; β PolRts = Slope of latent curve of political rights; α CivLib = Intercept of latent curve of civil liberties; β CivLib = Slope of latent curve of civil liberties; PR Elec = Proportional representation or mixed-PR electoral system; Oth Elec = periods of one-party rule, coup years and other legislative breaks. Majority-plurality systems are the reference category.

'excellent' cut-off of 0.05, considering the performance of the RMSEA in small samples, a 0.05 cutoff value is likely too strict (Chen et al. 2008).

The most relevant comparison in Table 1 is between the effects of democracy in models 1, 2 and 3. Model 1 predicts the intercept and slope of women's political representation with the intercept and slope of overall democracy, model 2 substitutes political rights for overall democracy and model 3 substitutes civil liberties. Across all three models, we see that initial levels of democracy do not affect initial levels of women's representation in 1975. However, initial level of democracy does influence the rate of growth in women's political representation over the next 25 years. Higher average early levels of democracy set women onto a path of higher growth in representation over time. In contrast to previous research that often does not find an effect of democracy on women's representation in a given year, we find that democracy benefits women in politics over the long term. By taking a longitudinal perspective, this is the first study to find a positive effect of democracy on women's political representation. These results suggest that high early levels of democracy create a climate where women can act to gain representation over time.

Theory suggests that growth in democracy may also benefit women. Yet here the results differ by dimension of democracy. The results for models 1 and 2 are similar and do not demonstrate an effect of growth in overall democracy or political rights on women's later growth in representation. However, examining civil liberties in model 3 reveals a positive and significant effect. Growth in civil liberties produces growth in women's representation. It therefore appears that, in the presence of openings in free organisation, speech and so on, women are able to agitate for change. Overall, comparing the political rights and civil liberties results suggests that rather than an institutional learning mechanism, it is women's expanded opportunity for activism that leads to growing returns in representation over time.

Compared to plurality-majority systems, countries with PR or mixed-PR systems consistently have significantly higher levels of women's political representation. With the anomalous exception of 1980, there is a relatively stable gain of 2.5 per cent for countries utilising a PR electoral system from 1975 to 2000.⁶ This effect size is generally consistent with cross-sectional research finding a boost to women's representation of 2–3.5 per cent (e.g., Kenworthy & Malami 1999; Paxton 1997). The effect size is stable across time, suggesting that PR provides a steady small boost to women's numbers that does not increase over time due to normative pressures. The 'Other' category, which incorporates periods of one-party rule, coup years and other legislative breaks, was also included for each year. The effect of this variable is largely insignificant. It serves as an important control, however, to clarify the distinction between PR systems and the omitted category of majority-plurality systems. Overall, our

longitudinal results support with an over-time extension the previous finding of the importance of PR electoral systems to women's political representation.

Turning to the effects of national-level gender quotas, we find that the presence of any national-level quota only has a positive and statistically significant effect in 2000. By that year, countries with any national-level quota have, on average, 2.4 per cent more women in parliament than countries that had not adopted such quotas by 2000. The lack of a 1995 effect is not surprising, perhaps, given that only four countries (Argentina, Bangladesh, Belgium and Italy) had implemented national-level gender quotas by 1995. However, by 2000 the presence of a gender quota does appear to push a country off its trajectory by 2 per cent on average.

In Table 2, we consider two alternate ways of measuring the effects of national-level quotas that incorporate differences in the quota threshold, the level of women's representation legislated by the quota. The models reported are equivalent to model 3 in Table 1 (which includes a latent growth curve of civil liberties), but employ different quota variables. The baseline for comparison is model 3, which again shows that any national-level quota will push women's legislative representation upwards in 2000 by an average of 2.4 per cent. In model 4, once we consider only the effects of quotas requiring at least 10 per cent women, the magnitude of the quota effect increases. Quotas of at least 10 per cent increase women's political representation, 3.7 per cent on average, roughly a 50 per cent increase over the effect of any quota. Thus it appears that a quota's required threshold influences the magnitude of gains observed in women's presence in national legislatures.

Of course, a 4 per cent result is not the 10 per cent (minimum) intended outcome of these changes in electoral or constitutional law. Yet if most quotas have low thresholds (say 10 per cent quotas) and many countries were already close to that threshold in 2000, then 4 per cent could be a reasonable boost in women's representation. In contrast, if most quotas have a higher threshold (e.g., 30 per cent) and countries were low in women's representation, then it would appear that quotas did not jump-start women's representation by very much, on average. In reality, the average quota threshold in 2000 was

Table 2. Estimates for the effects of quotas on growth in women's political representation

Model	Quota type	1995	2000
3	Any quota	1.07 (1.68)	2.44* (1.41)
4	10% quota	3.36 (2.36)	3.66** (1.65)
5	Quota threshold	0.14 (0.09)	0.10* (0.06)

Notes: * $p < 0.10$; ** $p < 0.05$ (two-tailed tests). Numbers in parentheses are standard errors.

27 per cent and the average percentage of women in parliament only 12 per cent. Thus, the 4 per cent boost in women's numbers suggests that quotas produce increases at a lower level than legislated by law, controlling for a country's growth in women over time.

In model 5, we test the effects of differences in quota threshold more directly by substituting an interval measure of threshold for the quota dummy variables. Thus, in each year, we consider how the level of women's representation legislated by a quota translates into gains in women's political representation, controlling for each country's overall growth trajectory. We find that higher thresholds do generate larger increases in women's numbers in 2000. However, interestingly, a 10 per cent increase in the quota threshold only pushes countries above their average trajectory by about 1 per cent.⁷

The finding here supports case-study research that finds that national gender quota laws do not always generate substantial increases in women's representation (Schmidt & Saunders 2004; Jones 2005). To explain variation in the success of quota laws, scholars often focus on particular features of quota legislation that may influence the law's effectiveness. For example, placement mandates, such as two women required among the top five candidates, may enhance the effectiveness of a quota (Jones 2004). And sanctions for non-compliance set consequences if party leaders fail to comply with quota regulations (Dahlerup 2006). It is also important to recognise that our measure of national-level gender quotas does not capture any party-level quotas.

Conclusion

Interest in women's formal political representation has grown exponentially over the last thirty years. Academics as well as activists have documented women's lack of descriptive – or numerical – representation in politics across all countries of the world. Indeed, the average percentage of women in parliaments was only 18 as of June 2009 (IPU 2009). However, a focus on women's generally low numbers does not acknowledge the remarkable gains in political power that women have made over time, especially in some countries.

In this article, we introduced a model of intra-country change in women's political representation over 25 years (1975–2000) and 110 countries. Our latent growth curve model hypothesised that initial levels and growth in democracy would influence a country's overall trajectory of growth in women's political representation. In contrast, the implementation of a national-level gender quota, and a country's electoral system in a particular year, were expected to affect a country's level of women's political representation in that year above and beyond the overall growth process.

We found that national quotas do affect women's political representation, but not always at levels legislated by law. For example, a 1 per cent increase in the legislated threshold of a national quota pushes a country off its overall trajectory of growth by only 0.1 per cent on average. This finding supports previous case study evidence that quotas do not always generate substantial increases in women's representation (Schmidt & Saunders 2004; Jones 2005; Dahlerup 2006). Although our analysis of quotas goes beyond simple presence/absence to incorporate quota threshold, there are other possible ways to model gender quotas. Alternatively, we could employ a broader or more limited definition of what constitutes an effective or meaningful gender quota. Future research will need to investigate carefully what aspects of quotas produce larger or smaller 'jumps' off a country's overall trajectory.

Future research should also investigate the effects of voluntary party-level gender quotas on women's political representation. Voluntary party gender quotas are the most common method for addressing women's political representation in the industrialised West. Yet, comprehensive longitudinal data on voluntary party quotas simply are not available. To facilitate a better understanding of how different quota policies shape the trajectories of women's representation over time, we call on scholars in the field to collect data on the adoption of voluntary party gender quotas over time.

We also tested the impact of electoral system on women's political representation over time. Because countries can and do change between electoral systems, we modeled PR as a time-varying effect on women's representation. Our findings support prior cross-sectional research not only in finding an effect, but in demonstrating that the size of the effect has remained consistent over time. This finding stands in contrast to reasonable theory suggesting that the effect of PR should grow over time.

Finally, in contrast to previous cross-national research, we found that democracy, although it does not influence the level of women's political representation in the earliest period, does influence the *growth* of women's political representation over time. Specifically, initial levels of overall democracy, political rights and civil liberties matter for the slope of the trajectory of women's representation. This finding suggests that high early levels of democracy create a climate under which women can act to gain representation *over time*. Static assessments of the effect of democracy are therefore unlikely to capture the increasing returns effects of democracy on women's political activism. At the very least, therefore, future cross-sectional analyses need to include *lagged* values of democracy since it appears that democracy takes time to have an effect.

Furthermore, our investigation of the components of democracy shows that it is only growth in civil liberties over time that also produces growth in

women's representation. A significant effect of civil liberties, but not political rights, on growth suggests that women's political learning, which is fostered by more stable and transparent institutions, is not fueling gains in women's numbers over time. Instead, it is increased freedoms, which fuel women's activism, that steepen the trajectory of women's legislative representation. This finding is supported by recent qualitative research on women's electoral success after democratic transitions, which finds that women's movements play a critical role in helping institutionalise women's representation under the new regime (Viterna & Fallon 2008).

The political explanations explored in this article are only one type of explanation for women's political representation. Other theories emphasise supply factors that increase or decrease the pool of women with the will and experience to compete against men for political office (Paxton 1997; Kenworthy & Malami 1999; Fox & Lawless 2004; Gray et al. 2006). Another traditional explanation – culture – stresses that beliefs and attitudes influence both the supply of, and demand for, female candidates (Paxton & Kunovich 2003; Inglehart & Norris 2003: Chapter 6; Arceneaux 2001). Even newer explanations stress the role and power of international actors (Ramirez et al. 1997; Paxton et al. 2006).

Future research will certainly need to investigate these factors over time, just as we investigated political factors. For the first comprehensive investigation of intra-country change in women's political representation, however, it is important to begin with political explanations. Political systems shape the rules of the game and thereby influence how women can attain political power. Political explanations are further fundamental in the context of longitudinal research since incorporating system characteristics is necessary for correctly modeling country trajectories. As longitudinal research moves forward to investigate other explanations, the political model advanced here can be considered a baseline model.

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Appendix

The trajectory of women's political representation is quite linear in our sample, although we did investigate a number of alternative specifications.

Figure A1 presents results from the most general alternative specification, which entails setting the first and last factor loadings for the latent slope to 0 and 1, respectively (Bollen & Curran 2006: 98–103). This allows a freely non-linear specification to be estimated from the data (in contrast, the linear specification entails fixing all factor loadings in a linear sequence, 1, 2, 3 . . .). The estimated factor loadings are plotted above and represent the average increase in women’s political representation as a proportion of change over time. This figure demonstrates that the proportion of change between subsequent time points remains fairly constant over time, and reaffirms that the linear specification used in this article is appropriate.

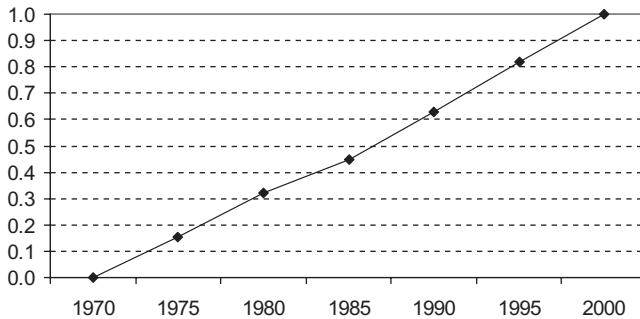


Figure A1. Unconditional growth curve freed factor loadings, 1970–2000.

Notes

1. Some cross-national research limits analysis to democratic countries (e.g., Schwindt-Bayer & Mishler 2008). Restricting the sample acknowledges that legislatures differ tremendously across countries, especially in terms of real power. Research is increasingly acknowledging, however, that some authoritarian regimes have political institutions similar to those in democracies (e.g., Geddes 1999; Gandhi & Przeworski 2006; Gandhi 2008). Furthermore, we argue that, regardless how much power a legislative position actually holds, national legislators are highly visible and have symbolic power. Increasing numbers of female parliamentarians, in any political system, encourages the re-conceptualisation of how a parliamentarian looks and acts. More importantly, taking a longitudinal perspective provides clear theoretical reasons to believe that democracy could matter for women’s political gains over time.
2. Here, we focus on two types of gender quotas: reserved seats, which set aside a certain share of seats in the national legislature for women; and legal quotas, which require that all political parties in a system field a certain percentage of female candidates.
3. Quota legislation is enacted for a wide array of reasons that are surprisingly unrelated to the percentage of women in politics. In some cases, domestic women’s movements external to the government pressure legislators to adopt quotas (Krook 2003). In other cases, male political leaders push for the enactment of quota legislation to engender good will

from the international community (Paxton et al. 2006). Overall, existing research suggests that quota adoption is not a function of the number of women serving in the national legislature. In short, quotas are not endogenous.

4. Reviews of methods to deal with missing data list maximum likelihood as one of two optimal procedures (e.g., Allison 2002).
5. Although the trajectory of women's political representation is quite linear in our sample, we did investigate a number of alternative specifications. The most general alternative specification entails setting the first and last factor loadings of women's political representation on the latent slope to 0 and 1, respectively, allowing a freely nonlinear specification to be estimated from the data. We plot the estimated slope factor loadings, which represent the overall shape of the trajectory of women's political representation over time as a proportion of change over time, in Appendix Figure A1. The appendix figure demonstrates that the proportion of change between subsequent time points remains fairly constant over time, suggesting that the linear specification used in this article is appropriate.
6. The anomaly in 1980 is due entirely to a single case – Zimbabwe – which enters the analysis in 1980 (its date of sovereignty) coded as a PR electoral system (80 of its 100 seats were elected with PR) and with a relatively low level of women's representation. If Zimbabwe is removed from the analysis, the coefficients for PR are steady over the time period.
7. This effect is not due to the countries with low-threshold quotas (e.g., Kenya has a 6 per cent quota). The effect size for quota threshold is identical (0.10) in a model with a quota threshold variable that only includes quotas that are 10 per cent or above (results not shown).

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