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University of Pittsburgh

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The Increasing Effectiveness of National Gender Quotas, 1990–2010

National gender quotas—policies that require a certain percentage of women candidates or legislators—are becoming more effective over time. Using data on 145 countries from 1990 to 2010, we document this trend with latent growth-curve models. Part of the explanation for increasing effectiveness is that countries have ratcheted up targets for women’s inclusion and that quotas are increasingly written in ways that make them more effective at achieving stated goals. Activists, political elites, and policy makers have learned over time which quota policies are most effective, resulting in quotas with provisions that more often lead to success. But, changes in rules alone do not account for the increasing effectiveness of quotas over time. It appears that changing norms about women’s incorporation in politics are also increasing quota effectiveness regardless of policy design.

Gender quotas are arguably one of the most important political developments of the last 30 years. By 1990 only a handful of countries used any type of national political quota for women. During the 1990s, however, Argentina passed a law designed to aggressively advance women’s representation, and national quotas in various forms began to proliferate widely. By 2010, more than 60 states had written gender quotas into their electoral laws or constitutions, mandating that a certain percentage of women must be included as candidates or legislators ([IDEA 2013](#); [Krook 2009](#)). The spread of quotas has not ended. Today, countries continue to debate both the adoption of new gender quotas and reforms to existing quota provisions.

Quotas are designed to “jumpstart” women’s political representation—to move from incremental gains to substantial growth in women’s political presence ([Dahlerup and Friedenvall 2005](#); [Krook 2009](#)). Research increasingly demonstrates that quotas are accomplishing this goal, at least in recent years ([Bauer 2008](#); [Beaman et al. 2009](#); [Dahlerup](#)

2006; Hughes 2011; Krook 2009; Tripp and Kang 2008). However, existing cross-national research on the effect of quotas on women's representation is overwhelmingly cross-sectional, analyzes only quotas adopted before 2000, and/or ignores key policy differences across types of quotas. Consequently, at least two important questions have been left unanswered: (1) Have national gender quotas become more effective in producing gains for women over time? (2) Do differences in quota design alone explain changes in policy effectiveness? We judge the effectiveness of a quota based on the success of its implementation or its ability to meet legislated goals (Jones 2009; Schmidt and Saunders 2004; Schwindt-Bayer 2009). That is, if a country adopts a gender quota with a 30% threshold or target, the quota is judged as more or less effective depending on how close the country subsequently comes to electing 30% women to its national legislature.

Existing studies show that policy design can influence the size of a gender quota's effect on women's legislative representation (e.g., Krook 2009; Matland 2006; Schwindt-Bayer 2009). Quotas with a higher threshold—those that require a greater share of female candidates or seats—produce higher levels of women's legislative presence (Paxton, Hughes, and Painter 2010; Schwindt-Bayer 2009). Reserved seats, which set aside a specific share of seats for women, may be more effective at increasing women's numbers than candidate quotas, which affect only the candidate pool. Within candidate quotas, rules requiring that women occupy certain positions on candidate lists, called placement mandates, and measures that penalize parties for failing to comply with quota provisions, called sanctions for noncompliance, have both been shown to enhance quota effectiveness (e.g., Schwindt-Bayer 2009).

But, we are not interested here in the average effects of quotas. Instead, we hope to understand the extent to which quotas and their effects on women's representation are changing over time. The quota-adoption literature emphasizes the importance of information sharing and learning, whereby activists and policy makers look to the experiences and outcomes of other countries when advocating for and making policy choices (e.g., Krook 2004, 2009). Sharing implies that if quotas with stronger provisions (e.g., placement mandates) come to be seen as more effective at reaching stated goals, those pressing for increased political representation for women—be they activists, policy makers, or other elites—should increasingly favor quotas with such provisions, potentially increasing quota effectiveness over time.

But quota effectiveness could also increase because domestic and international norms about women's participation in politics have changed (Berkovitch 1999; Bush 2011; Hughes 2009; Towns 2010).

Women's inclusion in politics was historically perceived as problematic but is now seen as not only acceptable, but desirable (Paxton, Hughes, and Green 2006). Increasing norms of equality could result in declines in political party efforts to circumvent quota targets and a simultaneous increase in the public's taste for the inclusion of women, which together would decrease the need for strong quota provisions to achieve gains for women.

In this article, we consider the effectiveness of gender quotas in producing women's legislative representation over time. Fundamental to our approach is the idea that countries exhibit trajectories of growth in women's representation over time and that quotas should push countries off their existing trajectory. We examine the effect of quotas in 145 countries from 1990 to 2010, using Latent Growth Curve models (Bollen and Curran 2006) and controlling for the electoral system, democratization, and economic development. If quotas are becoming more effective over time, not only should we see increasingly large jumps above the existing trajectory of the country, but the percent women "returned" for a percent increase in the quota threshold should also increase. We assess whether stronger quota rules—specifically, placement mandates and sanctions for noncompliance—can fully account for increasing returns for quotas over time or whether better returns are seen even in countries with weaker quota provisions.

The Influence of Gender Quotas

Gender quotas are laws or party rules requiring that women make up a certain percentage of a candidate list, parliamentary assembly, committee, or government. We focus here on national gender quotas—those that affect national legislatures and are system-wide. Broadly, quotas are either reserved seats, which set aside a certain share of seats in the national legislature for women, or legislated candidate quotas, which require that all political parties in a system field a certain percentage of female candidates or nominees.

Numerous case studies have evaluated the influence of gender quotas on women's numerical presence in national legislatures, finding that quotas sometimes increase women's numbers (e.g., Dahlerup 2006; Jones 2004; Krook 2009).¹ These studies do not consider how growth in women's representation in countries with quotas compares to change in countries without quotas (except see Archenti and Johnson 2006). Most countries are on upward trajectories of women's political representation. If women's representation is growing at similar rates in countries *without*

gender quotas, than the importance of gender quotas for producing growth in women's representation is unclear.

A handful of cross-national analyses do consider countries with and without quotas (Hughes 2009, 2011; Paxton, Hughes, and Painter 2010; Tripp and Kang 2008). These studies show mixed effects. When predicting women's legislative representation in 2000, [Hughes \(2009\)](#) finds no effects of national gender quotas. Similarly, looking at 1995 and 2000, Paxton, Hughes, and Painter (2010) find nonsignificant or very small effects of quotas. Predicting women's outcomes in 2006, however, [Tripp and Kang \(2008\)](#) show quotas do increase women's representation across countries. And looking at women's representation circa 2006, [Hughes \(2011\)](#) also finds a positive effect of quotas. Altogether, studies predicting more recent time points are more likely to find sizeable effects of gender quotas on women's legislative outcomes.

By design, some quotas are more ambitious than others, mandating higher thresholds. As of 2010, Jordan and Niger required parties to include only 10% female candidates. In contrast, France, Senegal, and Tunisia required political parties to field equal shares of male and female candidates (50%). Given two quotas equal in other respects, the quota legislating the higher threshold should have greater influence on women's political representation (Schwindt-Bayer 2009; but see Jones and Navia 1999). Two recent studies suggest that these legislated thresholds do matter (Paxton, Hughes, and Painter 2010; Schwindt-Bayer 2009).

Quota thresholds have increased over time. Argentina adopted the world's first 30% national gender quota in 1991, Costa Rica passed the first 40% quota in 1996, and France legislated the first 50% quota in 2000. Countries have also modified existing quotas to ratchet up the threshold over time. Nepal, for example, started with a 5% quota in 1990 and increased the quota to 33% in 2007. Belgium began with a 33% quota in 1995 and increased the quota to 50% in 2002. Some countries have even built increasing thresholds into their initial quota provisions. Overall, then, increasing effects of quotas on women's political representation may be a consequence of rising quota thresholds.

But how successful is the implementation of these thresholds? A second component of quota effectiveness is its ability to meet legislated goals (Jones 2009; Schmidt and Saunders 2004; Schwindt-Bayer 2009). One way to think about success of implementation is the return in percent women for a percent increase in the quota threshold. A quota with a 20% target threshold that produces 19% women in the legislature has a higher return than a quota with a 20% target threshold that produces only 12% women.

The quotas most effective at reaching numerical goals should be reserved seats, where seats in the legislature are specifically set aside for women. Because only women may compete for reserved seats, they often do not displace male elites ([Tadros 2010](#)). For example, in 2004, when Bangladesh reinstated reserved seats and added 15 new seats for women, the legislature was resized accordingly so that existing male legislators were left in office. Thus, these quotas do not face compliance problems: parties benefit by fielding female candidates in women-only constituencies or putting forward women-only lists.

When candidate quotas are adopted, in contrast, parties are expected to incorporate women at some expense to established male power. Consequently, candidate gender quotas often face uphill battles during implementation, and some parties actively seek to undermine quotas. When the legislated language of a quota leaves room for interpretation, parties may be able to legally meet quota provisions but violate the spirit of quotas. For example, in Argentina quota provisions were initially vague about where women should be placed on party lists. It behooved the existing party elite to add women only at the bottom of their party lists, in unelectable positions.² Party leaders were in fact quite open about their intention to avoid any placement provision, even making rude comments to female legislators ([Durrieu 1999](#); [Krook 2009](#)). To address problems with women's placement low on lists, candidate quotas can be written with placement mandates such as "women must be placed on at least every fifth place on candidate lists" (Paraguay) or a zipper system, where lists are required to alternate between men and women (e.g., Tunisia). Analyses of placement mandates in Argentina and Costa Rica show that such quota provisions can be quite effective in increasing women's representation ([Jones 2004](#)).

Another way that quota rules can prevent parties from ignoring quotas is to implement sanctions for parties that violate quotas. Some sanctions are quite successful at producing party compliance. In Guyana, for example, a party list is not approved by the electoral commission until the list includes one-third female candidates. But, not all sanctions for noncompliance are equal; quotas with weak sanctions can be ignored. For example, in France, the 50% quota included only a mild financial penalty for noncompliance. Some parties decided not to comply with the quota "both because they were unwilling to sacrifice male incumbents and because they had the financial resources to absorb losses in state funding" ([Krook 2009](#), 198; see also [Murray 2004](#)).

Sharing Information to Improve Effectiveness

What could explain increases in quota effectiveness over time? First, quota proponents may share information over time on how to design and implement quotas with rules that render them more effective. The literature on quota adoption documents information sharing across countries, often facilitated by international or regional organizations ([Krook 2009](#)) as well as civil society and activist groups ([Araújo and García Quesada 2006](#); [Krook and O'Brien 2010](#); [Tripp, Konate, and Lowe-Morna 2006](#)). For example, Argentine women learned about quotas through contact with the Spanish Socialist Party, where quotas had earlier been adopted. Once adopted, Argentina's quota became the subject of meetings among other Latin American female politicians and a model for the region ([Araújo and García Quesada 2006](#); [Archentí and Johnson 2006](#); [Htun and Jones 2002](#); [Krook and O'Brien 2010:262](#)).

Whether or not quotas generate real changes in levels of women's legislative representation may provide useful information to quota proponents about effective quota design. Take Costa Rica, another visible quota model in Latin America. The original 1996 quota legislation passed without placement mandates—a conscious decision on the part of lawmakers ([Jones 2004](#)). But, unsatisfactory electoral results in 1998 (a 40% quota returned only 19% women) and intense lobbying by quota advocates helped fuel a 1999 court ruling that instituted placement mandates similar to those in Argentina ([Jones 2004](#)). In the next election, women's legislative representation jumped to 35%, showing that placement mandates can enhance quota effectiveness. Alongside Argentina, Costa Rica has since been touted as an example of quota success across Latin America. Quotas may thus become more effective over time due to a political learning process ([Dobbin, Simmons, and Garrett 2007](#)).

Academic research also seeks to provide information to policy makers about which quotas are effective and why. As an example of this process, consider a recent opinion piece by Rainbow Murray (2012) in *The Political Quarterly*, a British political journal with the mission to act “as a conduit between policy-makers, commentators, and academics” (Blackwell Publishing 2014). Entitled “French Lesson: What the United Kingdom can Learn from the French Experiment with Gender Parity,” Murray provides a detailed analysis of the French quota law and how its provisions, including its sanctions for noncompliance, could be applied to the British case. It concludes “learning from the mistakes made in France will enable proponents of British quotas to avoid the pitfalls and loopholes that have prevented French parity from delivering all that it promised” (2012, 741).

How learning influences the effectiveness of quotas is likely to vary by the type of quota countries initially select. For countries that choose the route of reserved seats, minor variation in the details of the policy, such as how women candidates are selected to fill seats, is unlikely to explain changes in quota effectiveness over time. Alternatively, for countries implementing candidate quotas, we suggest that quota proponents have learned to advocate for certain rules—placement mandates and sanctions for noncompliance—to increase quota effectiveness. Over time, countries adopting new candidate quotas may be more likely to include quota rules from the start, or countries with ineffective candidate quotas may reform existing policies to help close the gap between stated goals and election outcomes.

Descriptive patterns provide evidence that countries are increasing their use of candidate quota rules over time. Between 1995 and 1999, only 4 of 15 (27%) countries newly adopting or reforming candidate-gender quotas mandated placement requirements, but between 2005 and 2009, 13 of 22 (59%) countries did so. Still, do changes in quotas design *alone* explain any increasing effectiveness of quotas over time?

Rising Norms Lift All Quotas

Quotas do not operate in a vacuum. Instead, the parties and publics that must respond to a quota law are likely to be influenced by changing domestic and international norms about women's political representation. Numerous studies have pointed to the emergence of a new global norm stressing women's greater inclusion in political life (Berkovitch 1999; Paxton, Hughes, and Green 2006; Towns 2010), while empirical studies demonstrate that this norm influences a range of outcomes for women including suffrage, rape laws, mainstreaming policies, and quotas (Bush 2011; Frank, Hardinge, and Wosick-Correa 2009; Hughes, Krook, and Paxton 2015; Paxton, Hughes, and Green 2006; Ramirez, Soysal, and Shanahan 1997; True and Mintrom 2001).

The messages and goals coming from the international arena regarding political incorporation have changed and evolved over time (D'Itri 1999; Paxton, Hughes, and Green 2006). By the 1980 UN Second World Conference on Women, concerns were raised about “. . . too few women in decision-making positions” (United Nations 2000). But, it was not until the 1990s, as gender quotas entered the political scene, that international discourse began to emphasize specific thresholds or targets for women in political decision-making positions. Thirty percent women in parliament was argued to be the critical mass, or necessary threshold, that countries needed for women to have a visible impact on

the style and content of politics and policy. In 2000, the Women's Environment and Development Organization (WEDO) introduced their 50/50 campaign with the goal of "gender balance" and called on governments to create gender equality between men and women. That year, France became the first country to introduce a 50% quota.

Norms about the incorporation of women in politics have therefore been "ratcheted up" over time as lower-level gains in women's political representation were solidified. Part of this change is reflected in the higher thresholds written into quota legislation over time. But the presence of, and increases in, international norms to incorporate women should also increase the effectiveness of quotas at any threshold. Because earlier norms about women's nonparticipation in political life have been reversed in favor of new discourses of gender equality, those norms may be internalized by parties that are then less likely to attempt to circumvent the spirit of a quota law. Changing norms may also be internalized by publics that then demand greater gender representation on party lists, and parties, regardless of their gender ideology, may need to include women candidates to stay competitive. In either case, the increasing effectiveness of gender quotas would not be due to increasingly well-written laws that prevent parties or publics from "wiggling" out of quota provisions. Instead, gender quotas would become more effective over time as everyone—quota writers, party leaders, judges, electoral monitoring bodies, voters, etc.—came to accept that having a high percentage of women in politics was normatively appropriate or strategically useful. If this process is at work, we should see decreasing gaps between stated targets and outcomes even in countries with weaker quota provisions.

Data and Methods

We analyze the growth of women's political representation at the national level in 145 countries. We predict the percent women in the lower or single house of each country's national legislature from 1990 to 2010, measured every five years. Following cross-national research conventions, we exclude small countries, analyzing only those with greater than 1 million population in 2000. We limit analysis to countries that reached formal independence before 2000 (i.e., East Timor, and territories such as Hong Kong and Taiwan are excluded). Additionally, we do not analyze countries with fewer than three observation-years of legislative election data: Brunei Darussalam, Libya, Myanmar, Oman, Qatar, Saudi Arabia, and Somalia. Data are from Paxton, Green, and Hughes (2008) and the Inter-Parliamentary Union (2013).

The first national-level quotas with substantial thresholds were used in 1989 (Uganda) and 1995 (Argentina). We therefore begin by coding the adoption of any national-level quota beginning in 1995 and in all following years (2000, 2005, and 2010) using a dummy variable [ANY QUOTA]. In a second model, we distinguish between national quotas that reserve a certain percentage of seats in the legislature for women [RESERVED QUOTA] and those that require all parties to field a certain percentage of female candidates or nominees [CANDIDATE QUOTA]. In addition, we record the actual threshold of a country's gender quota, both for reserved quotas and candidate quotas [RESERVED QUOTA THRESHOLD and CANDIDATE QUOTA THRESHOLD]. The dummy measure allows assessment of the raw effect of the introduction of a quota on women's representation in politics. The threshold measure assesses the "return" in terms of women's representation for a 1% increase in the legislated threshold.

As discussed above, candidate quotas with placement requirements and sanctions for noncompliance should be more effective than candidate quotas without such rules. In a series of additional models, we distinguish first between candidate quotas with any type of rule (placement requirements or sanctions or both) [CANDIDATE – ANY RULE] and candidate quotas without such rules [CANDIDATE – NO RULES]. In a final model, we compare the effects of placement rules and sanctions by separating candidate quotes with no rules, those with only placement requirements [ONLY PLACEMENT], those with only sanctions [ONLY SANCTIONS], and those with both [BOTH RULES]. Again, we ran each of these models both with a simple (dummy) measure of presence/absence of the quota as well as with a measure of the actual threshold of the county's gender quota. In each model we also continue to separately include a measure for reserved seat quotas.

We measure quotas from the year they are implemented rather than the year they are adopted and thus do not lag the effects of quotas.³ Data on quotas comes from IDEA (2013) and are supplemented with information from Krook (2009) along with country constitutions and electoral laws. We do not include voluntary party-level quotas in any of the measures. Information on the year of adoption for party quotas is often missing or unclear. Even if data on party quotas were available, their influence on women's representation would be highly dependent on party success.

Control Variables

To assess the influence of gender quotas on women's representation, we must place them in a reasonable baseline model; we specify

such a model including measures of electoral systems, democratization, and economic development. It is generally accepted that the presence of a proportional representation (PR) system, rather than a plurality-majority system, aids women in gaining access to the political system (McAllister and Studlar 2002; Norris 1985; Reynolds 1999; Rule 1987).⁴ In a single-member district, such as those typically used in plurality-majority systems, 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 between men and women (Matland 2005). Balancing can be used to attract voters but also to achieve equity across different factions of the party and resolve internal party disputes through compromise (Gallagher 1988; Matland 2005). Because countries can and do change electoral systems, electoral system effects can be understood as time sensitive, affecting a country's trajectory in a given year. Kyrgyzstan, for example, experienced dramatic growth from 0% to 26% women in politics in 2007, after using a party-list proportional representation electoral system for the first time.

We code electoral systems as a set of lagged time-varying dummy variables. Using plurality systems as the reference category, we estimate the effects of PR systems (excluding mixed-PR systems) [PR] and an "Other" category that incorporates periods of one-party rule, coup years, and other legislative breaks.⁵ Because the percent 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 (Croissant 2003; Otero and Pérez-Liñán 2005), and websites (e.g., African Elections Database 2006).

Researchers have also examined the effects of democracy and democratization on women's political representation. In a democratic system, women can understand and possibly manipulate the clearly stated and consistently followed rules of the game (Matland 2005). In the presence of civil liberties, women can articulate gender asymmetries in power, and, given time to organize, women's advocacy groups can agitate for greater representation. But because mainstream political activities traditionally exclude women, organizing activities may take time to bear fruit (Jaquette 1991). Prior cross-sectional research typically shows no beneficial effects of democracy (e.g., Gal and Kligman 2000; Htun 2003; Reynolds 1999; Waylen 1994).

However, two recent studies consider democracy from a longitudinal perspective and show that it is not levels of democracy but

democratization that advances women's political representation over time (Fallon, Swiss, and Viterna 2012; Paxton, Hughes, and Painter 2010). Analyzing women's representation from 1975 to 2000, Paxton, Hughes, and Painter (2010) find that growth in civil liberties, in particular, results in growth of female legislative representation, suggesting that the increased political space allows for women's mobilization for representation. Looking between 1975 and 2009, Fallon, Swiss, and Viterna (2012) find evidence that democratization may have curvilinear effects over time, a finding consistent with qualitative research on democratization in Eastern Europe (e.g., Saxonberg 2000). This research generally suggests that after a transition to democracy, women's representation may decline, followed by positive growth. After 1995, women in countries transitioning to democracy from communism may experience especially slow gains (Fallon, Swiss, and Viterna 2012).

We obtain yearly data on democracy from Freedom House (2010). 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 (Bollen 1993; Bollen and Paxton 2000). Further, Freedom House breaks its scales into political rights and civil liberties, and previous research demonstrates that increases in civil liberties influence women's representation to a greater extent than political rights (Paxton, Hughes, and Painter 2010). Our base measure of democracy is the Freedom House civil liberties score. In auxiliary analyses, we estimated the models using the full Freedom House democracy score (civil liberties and political rights). Because we expect changes in democracy (rather than levels of democracy) to influence women's political representation, we model democracy as a growth process and predict women's representation with the intercept [α_{DEMOC}] and the slope [β_{DEMOC}] of the democracy growth curve. Details about the creation of the democracy growth curves are available from the authors.

We also estimate effects of transitions to democracy on growth in women's legislative representation. Using data from Fallon, Swiss, and Viterna (2012), we code a dummy variable denoting transition from communism to democracy. Below, we footnote results from alternative specifications of democratization, including curvilinear effects by adding a squared latent variable.

Cross-national models of women's political representation also often include economic development, typically measured as GDP per capita. Although economic development has been shown to affect gender attitudes (e.g., [Morgan and Buice 2013](#)), measures are often not

statistically significant in models predicting women's legislative representation across countries (Paxton, Kunovich, and Hughes 2007). However, existing research has overwhelmingly tested effects of economic development on levels of, rather than growth in, women's representation. To examine effects of economic development, we code initial GDP at the start of our study, measured circa 1985 (a three-year average of GDP per capita from 1983 to 1985; Heston, Summers, and Aten 2012).

Method

Fundamental to our exploration of quota impact is the concept of a country's trajectory of growth in women's representation. Rather than evaluating levels of women's representation at a given point in time—as does almost all of the existing research on quotas—we conceive of quotas pushing a country off its existing growth trajectory. We analyze the growth of women's political representation over time using Latent Growth Curve (LGC) models (Bollen and Curran 2006).⁶ LGC models analyze change over time by focusing on intracountry change—estimating both starting positions (intercepts) and trends (slopes) for each country. Thus, we must estimate the parameters that determine an individual country's parliamentary growth trajectory over time. Without any time-varying covariates, the level-one equation would be

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

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

Our goal 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. Thus, the level-one model is:

$$y_{it} = \alpha_i + \lambda_t \beta_i + \gamma_{y_i w_{i-1}} w_{i,t-1} + \gamma_{y_i v_{i-1}} v_{i,t-1} + \gamma_{y_i z_i} z_{i,t} + \varepsilon_{it}. \quad (2)$$

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, women's representation in each year is also affected by a country's electoral system, where w represents a proportional representation 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 are hypothesized to affect the intercept and the slope of the overall trajectory of women's political incorporation along with transitions to democracy from communism and economic development.

$$\alpha_i = \mu_\alpha + \gamma_{\alpha 1} DI_i + \gamma_{\alpha 2} TC_i + \gamma_{\alpha 3} GDP_i + \zeta_{\alpha i}; \quad (3)$$

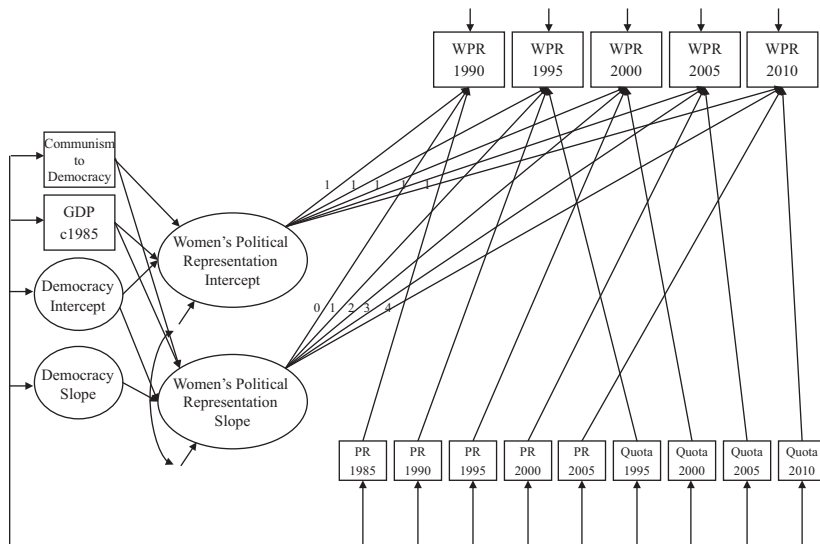
$$\beta_i = \mu_\beta + \gamma_{\beta 1} DI_i + \gamma_{\beta 2} DS_i + \gamma_{\beta 3} TC_i + \gamma_{\beta 4} GDP_i + \zeta_{\beta i}; \quad (4)$$

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), the intercept of democracy (DI_i), transitioning from communism (TC_i), economic development (GDP_i), 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), democracy (DI_i and DS_i), transitioning from communism (TC_i), economic development (GDP_i), and a disturbance ($\zeta_{\beta i}$).

One of our models is presented in Figure 1. Path diagrams like Figure 1 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.

In Figure 1, and corresponding to Equations (2–4) 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 1990, increasing by 1 each five-year interval to indicate linear growth. In addition, the latent intercept and slope are freely correlated. The intercept and slope of democracy affect the intercept and slope of women's representation, while electoral systems and gender quotas influence women's representation in a given year. We estimated all models in AMOS 19.0. Missing data were accounted for using a maximum-likelihood estimation procedure (FIML) (Allison 2002; Arbuckle 1996).⁷

FIGURE 1
Conditional Linear Latent Growth Curve Model



Note: 'WPR' = Women's Political Representation. 'PR' = Proportional Representation 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.

Results

Before turning to the predictive models, we present basic descriptive information about quotas over time in Table 1. Focusing on overall quota implementation in the first row, we observe dramatic growth, especially between 1995 and 2005 when the number of quotas doubled and then doubled again. Yet, reserved seats and candidate quotas did not follow the same pattern of implementation over time. The number of countries using reserved seats grew mainly between 2000 and 2005, whereas the rise of candidate quotas was more continuous after 1995.

Table 1 also shows quota targets became more ambitious over time. The average quota threshold (second row) increased from 15% in 1995 to 28% in 2010. We continue to find differences between candidate quotas and reserved seats. Reserved-seat thresholds increase fairly steadily over time, with 3% increases between 1995 and 2000 and between 2000 and 2005, and a 2% increase between 2005 and 2010. For candidate quotas, alternatively, the most significant gains happened

TABLE 1
 Characteristics of National Gender Quotas Across 145 Countries,
 1995–2010

	<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>
All Quotas				
N	9	18	36	43
Threshold Mean	15.2	21.6	23.5	28.1
Threshold SD	12.5	11.1	12.8	12.1
Reserved Seats	<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>
N	4	5	12	14
Threshold Mean	12.9	16.1	18.9	20.9
Threshold SD	12.6	10.4	10.1	9.8
Candidate Quotas	<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>
N	5	13	24	29
Threshold Mean	17.0	23.7	25.9	31.5
Threshold SD	13.5	11.1	13.5	11.6
% No Rules	20%	46%	38%	21%
% Only Sanctions	40%	15%	21%	21%
% Only Rank Requirements	0%	8%	29%	14%
% Both Rules	40%	31%	29%	45%

between 1995 and 2000 (7%) and between 2005 and 2010 (5.5%), with a smaller increase between 2000 and 2005.

Table 1 also demonstrates that countries with candidate quotas set more ambitious targets than countries with reserved seats. In 1995, the average candidate quota had a threshold of 17%, 1.3 times the average threshold of a reserved-seat quota (13%). The margin of candidate quotas over reserved seats was even larger in later years: 1.5 in 2000, 1.4 in 2005, and 1.5 in 2010. Thus, when we consider one piece of the effectiveness puzzle—the ambition of quota thresholds—we find that an average candidate quota sets targets one-and-a-half times as ambitious as an average reserved-seat quota. The results presented in Table 1 suggest both that longitudinal analysis is warranted and that separate modeling of reserved seats and candidate quotas is necessary.

The bottom of Table 1 shows changes over time in the ways that candidate quotas are written. Over time, countries are less likely to implement quotas with only sanctions for noncompliance, which likely reflects the growing understanding that sanctions can be less effective than other types of rules. In contrast, the percentage of countries using placement requirements or a combination of placement rules and sanctions (both rules) has generally grown over time. In 1995, 40% of countries used placement requirements (all in combination with sanctions). By 2010, 59% of countries were using placement rules either alone (14%) or in combination with sanctions (45%).

Table 2 presents the first set of multivariate results in tabular form. Briefly, independent variables—the intercept and slope of the democracy latent-growth curve (α Democ, β Democ), the dummy variable for countries that transitioned from communist rule to democracy, GDP, PR electoral system, and quota variables—appear in the first column. The dependent variables—the slope and intercept of the women’s political representation growth curve (α WPR, β WPR) and individual years of women’s political representation (e.g., WPR90) appear in the first row. The body of the table presents the estimated effects with the quota variables measured as dummy variables signifying the presence of a quota. The boxed portion of the table presents the estimated effects for models with quotas measured at their threshold level. Before turning to the substantive results, we note that model fit is good (IFI = 0.96, RMSEA = 0.08 in Model 1). Although the chi-square statistic ($\chi^2 = 285, 149$ df) is significant at $p < 0.001$, the IFI of 0.96 suggests very good model fit, and the RMSEA at .08 suggests good model fit. Indeed, though the RMSEA is technically above the “excellent” cut-off of 0.05, considering the performance of the RMSEA in small samples, a .05 cutoff value is likely too strict ([Chen et al. 2008](#)).

Our main interest is the effect of national gender quotas on women’s representation. Thus, we begin our discussion of the results in Model 1 by considering how the presence of any national quota contributes to gains in women’s political representation, controlling for each country’s overall growth trajectory, electoral system, democratization, and level of development. Modeling any quota (candidate and reserved-seat quotas together), we see a positive, significant effect in every year. For example, in 2010, the presence of any quota increases the percent women in parliament by 8.4%. Effect sizes generally increase over time, more than doubling from 3.02 in 1995 to 8.4 in 2010. This effect is above and beyond the country’s overall trajectory of growth in women’s representation.

The increasing effects of quotas over time may be due in large part to changing quota thresholds. Thus, we also present (in the boxed portion of the table) results from a model where a measure of threshold is substituted for the quota dummy variables. These results suggest increasing returns to quotas over time. In 2000, a 10% increase in the threshold of a national-level quota would produce a 1.4% increase in women’s political representation. By 2010, a 10% increase in the threshold of a national-level quota would produce a 2.8% increase in women’s representation. Thus, although national quotas are not producing gains in women’s legislative presence at the levels legislated by the quota, on average, they are becoming more effective at increasing women’s political representation over time.

TABLE 2
 Results from Conditional Linear Growth Curve Model Predicting Women's Political Representation
 with National Gender Quotas, Electoral Systems, and Latent Growth Curve of Democracy
 in 145 Countries, 1990-2010

	WPR 90	WPR 95	WPR 00	WPR 05	WPR 10	α WPR	β WPR
<i>Model 1-Any Quota, Presence</i>							
α Democ			0.47 (0.62)				0.11 (0.20)
β Democ							0.78 (1.07)
Transition from Communism			-0.99 (1.79)				-1.12 <i>t</i> (0.68)
GDP			1.53 <i>t</i> (0.84)				0.02 (0.28)
PR Elec	3.27* (1.39)	3.30** (1.04)	2.50** (0.86)	3.85*** (1.01)	2.79* (1.35)		
Any Quota	-	3.02* (1.38)	2.59** (0.99)	5.20*** (0.87)	8.39*** (1.10)		
Goodness-of-fit statistics: $X^2 = 285$, d.f. = 149, $p = .000$; IFI = .96; RMSEA = .08.							

Model 1-Any Quota, Thresholds

	WPR 95	WPR 00	WPR 05	WPR 10
	0.14* (0.07)	0.13** (0.04)	0.22*** (0.03)	0.28*** (0.03)

(continued on next page)

TABLE 2
(continued)

	WPR 90	WPR 95	WPR 00	WPR 05	WPR 10	α WPR	β WPR
<i>Model 2-Candidate and Reserved Quota, Presence</i>							
α Democ			0.26 (0.54)				0.12 (0.19)
β Democ							0.23 (0.19)
Transition from Communism							-1.37 <i>t</i> (0.80)
GDP			1.82* (0.81)				0.03 (0.26)
PR Elec	3.07* (1.39)	3.21** (1.03)	2.38** (0.84)	3.68*** (0.97)	2.43 <i>t</i> (1.28)		
Candidate Quota	-	1.19 (1.79)	1.99 <i>t</i> (1.13)	4.54*** (0.99)	8.50*** (1.25)		
Reserved Quota	-	6.50*** (2.16)	5.03*** (1.96)	7.29*** (1.52)	9.28*** (1.86)		

Model 2-Candidate and Reserved, Thresholds

WPR 95	WPR 00	WPR 05	WPR 10
0.07	0.10*	0.20***	0.27***
(0.08)	(0.04)	(0.03)	(0.04)
0.44***	0.36***	0.40***	0.44***
(0.13)	(0.11)	(0.07)	(0.08)

Goodness-of-fit statistics: $X^2 = 274$, d.f. = 174, $p = .000$; IFI = .98; RMSEA = .06.

[†] $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$, two-tailed tests; standard errors in parentheses.

When quotas are divided into candidate quotas and reserved quotas, as in Model 2, notable differences by quota type emerge. Candidate quotas have no discernible effect on women's representation in 1995 and a marginally significant effect in 2000. It is only in 2005 and 2010 that we see strongly positive and significant effect sizes. In these latter years, effect sizes increase, from a 4.5% boost in 2005 to 8.5% in 2010. Contrast that pattern of effects to those seen for reserved quotas: reserved quotas are positively and significantly related to women's representation in each year that they are modeled. Effect sizes also grow from a 6.5% increase in 1995 to a 9.3% increase in 2010. Overall, reserved seats for women consistently produced gains for women in all time points considered. Candidate quotas, by contrast, are not effective until later time periods.

In the boxed portion of the results, which account for changing thresholds over time, we again see that reserved seats have a consistent statistically significant effect in each year, whereas the effect of candidate thresholds changes across time. Reserved seats, which face fewer obstacles during implementation, demonstrate consistent returns to quota-threshold targets. A 10% increase in a reserved-seat quota threshold produces approximately a 4% increase in women's representation in each year. The stable returns in the threshold models imply that the increasing effect of the *presence* of a reserved-seat quota (from 6% to 9%) must be a direct result of more ambitious quota thresholds. Candidate quotas, alternatively, produce increasing returns over time. In 1995, there is no discernible return for increasing a candidate quota threshold, and in 2000, a 10% increase in the threshold returns only 1% more women. By 2005 and 2010, however, a 10% increase in a candidate quota threshold returns 2.0 and 2.7% women, respectively. The greater effect of the presence of candidate quotas over time thus appears to be both a combination of more ambitious targets and an increased capacity to meet stated goals. To compare, in 2010, the presence of a candidate quota or a reserved-seat quota produced similar effects on women's legislative representation (approximately a 9% boost overall), but they took different routes to get there. Specifically, countries designed candidate quotas to be more ambitious, setting thresholds at nearly twice the level as reserved seats, but given a particular threshold, candidate quotas produced returns at a rate half that of reserved-seat quotas.

Table 3 presents results for models that incorporate more specific information about candidate quotas. Model 3 of Table 3 divides candidate quotas into those with some rule to increase effectiveness, either placement mandates or sanctions for noncompliance, and candidate

TABLE 3
 Adding Effects of Candidate Quota Placement Rules and Sanctions for Noncompliance in 145 Countries,
 1990–2010

	WPR 95	WPR 00	WPR 05	WPR 10	WPR 95	WPR 00	WPR 05	WPR 10
<i>Model 3-Candidate Quota Rules I, Presence</i>								
Reserved	6.51** (2.15)	5.04* (1.96)	7.28*** (1.51)	9.26*** (1.87)	0.44*** (0.13)	0.36*** (0.11)	0.40*** (0.07)	0.44*** (0.08)
Candidate								
Any Quota	1.28 (1.80)	—	—	—	0.06 (0.09)	—	—	—
No Rule	2.11 (1.54)	2.11 (1.54)	3.41* (1.38)	6.41** (2.27)	—	0.12† (0.07)	0.18** (0.06)	0.25** (0.09)
Any Rule	2.28 (1.55)	2.28 (1.55)	5.51*** (1.23)	9.31*** (1.41)	—	0.09 (0.06)	0.20*** (0.04)	0.27*** (0.04)
Goodness-of-fit statistics: $\chi^2 = 303$, d.f. = 195, p = .000; IFI = .98; RMSEA = .06.								

(continued on next page)

TABLE 3
(continued)

	WPR 95	WPR 00	WPR 05	WPR 10	WPR 95	WPR 00	WPR 05	WPR 10
<i>Model 4-Candidate Quota Rules II, Presence</i>								
Reserved	6.51** (2.17)	5.09** (1.94)	7.29*** (1.48)	9.17*** (1.85)	0.44*** (0.13)	0.37*** (0.10)	0.40*** (0.07)	0.44*** (0.08)
Candidate								
Any Quota	1.25 (1.84)	-	-	-	0.10 (0.09)	-	-	-
No Rule	-	1.63 (1.53)	3.40* (1.34)	6.27** (2.22)	-	0.09 (0.06)	0.18** (0.06)	0.26** (0.09)
Only Placement	-	-1.06 (3.73)	9.98*** (2.55)	9.53** (3.12)	-	0.03 (0.10)	0.35*** (0.09)	0.33** (0.10)
Only Sanctions	-	1.56 (2.71)	0.70 (1.86)	7.26** (2.37)	-	0.17 (0.12)	0.09 <i>t</i> (0.05)	0.22*** (0.06)
Both Rules	-	3.80 <i>t</i> (1.95)	6.99*** (1.65)	9.94*** (1.70)	-	0.16* (0.08)	0.28*** (0.05)	0.29*** (0.05)
Goodness-of-fit statistics: $\chi^2 = 359$, d.f. = 237, $p = .000$; IFI = .98; RMSEA = .06.								

Note: Effects of electoral systems, democracy, GDP, and transitions are included in models, but results are not reported. $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$, two-tailed tests; standard errors in parentheses.

quotas without such rules. Differences in the effectiveness of these quotas are striking. Whereas neither type of candidate quota produces significant gains for women in 2000, by 2005 the presence of a candidate quota without rules increases women's representation above a country's average trajectory by 3.4% and by 6.4% in 2010. In contrast, the presence of candidate quotas with rules increases women's representation by 5.5% in 2005 and 9.3% in 2010. Candidate quotas with any type of rule are therefore more effective in producing bumps in women's representation than candidate quotas without rules. As in the earlier models, the presence of quotas with reserved seats produce gains for women from the earliest period, with increasing effects over time. The return on a 1% increase in the threshold for a reserved-seat quota continues to hover around .4%, with smaller effects for candidate quotas with or without rules.

Model 3 shows a relatively small difference between the return on threshold increases for candidate quotas with and without rules. In 2010, the difference is only .02%. However, this variable does not make any distinctions between the presence of one rule or both rules or among the types of rules that are in place (placement vs. sanctions). This finding highlights that not all rules are effective: when all candidate quota rules are lumped together, there is very little benefit above having no rule.

Model 4 allows us to consider the different possible rules more explicitly. The results suggest that placement mandates, or the combination of placement mandates and sanctions, are the most effective way to increase women's representation. The pattern shows most clearly in 2010, where the presence of candidate quotas without any rule produce 6.3% more women in parliament, candidate quotas with only sanctions produce an average gain of 7.3%, candidate quotas with only placement mandates produce gains of 9.5%, and quotas with both rules produce 10%. These results are largely mirrored in the threshold effects, where a 10% increase in a no-rule quota threshold produces 2.6% more women, which is, in this case, more than the return from an increase in the sanction-rule quota threshold (2.2%). The return for an increase in the placement-requirement-only quota threshold is 3.3%, and for both is 3%. Overall, these results confirm that placement requirements are generally more effective than sanctions for noncompliance in increasing women's representation in politics.

Importantly, across all models, we see increasing returns for thresholds for candidate quotas without any rules over time. This effect cannot be due to increasing thresholds or increasing effectiveness of rules, as both are controlled in the measure. One possible explanation for this finding is international pressures and changing norms about women

in politics over time (Paxton, Hughes, and Green 2006; Towns 2010). Even without rules to strengthen their effectiveness, candidate quotas are getting better returns over time. This suggests that parties and publics may be increasingly “buying into” the notion that women need to be represented or that there is strategic value in including female candidates in winnable positions on party lists, even in the absence of rules to force them to do so.

In addition to modeling quota effectiveness over time, we also consider effects of electoral system, democracy, and economic development on growth in women’s representation. Compared to plurality-majority and mixed systems, countries with proportional representation (PR) systems consistently have higher levels of women’s political representation. There is a relatively stable gain of approximately 3% for countries utilizing a PR electoral system from 1990 to 2010. This effect size is generally consistent with cross-sectional research that finds a boost to women’s representation of 2% to 3.5% (e.g., Kenworthy and Malami 1999). Not shown in the table is the “Other” category that incorporates periods of one-party rule, coup years, and other legislative breaks that was also included for each year. The effect of this variable is largely nonsignificant. It serves as an important control, however, to clarify the distinction between PR systems and the omitted category, majority-plurality systems. Overall, our longitudinal results support the previous cross-sectional findings of the importance of PR electoral systems to women’s political representation.⁸

Neither initial level of democracy nor growth in democracy beginning in the late 1980s significantly affects growth in women’s representation. But transitions to democracy from communist rule negatively affect the slope of women’s representation at marginal significance levels. Observers of the transitions to democracy in Eastern Europe during the early 1990s noted declines in women’s representation (e.g., Saxonberg 2000). These results also confirm Fallon, Swiss, and Viterna’s (2012, 393) finding of the negative effect of transitions from communist rule during the 1996 to 2009 period. Economic development, commonly included in models of women’s political representation, has a positive effect on initial levels of women’s political representation in all models. However, development does not affect growth in women’s representation.⁹

Conclusion

In this article, we seek to understand the effect of national gender quotas on women’s political representation. Using a longitudinal model from 1990 to 2010, we document that quotas produce gains in women’s

legislative representation with increasing effectiveness over time. Looking at all types of quotas combined, we see that quotas at the end of the period are twice as effective as quotas at the beginning of the period. Overall, quotas have become an increasingly powerful mechanism for transforming the gender composition of national legislatures.

What explains the increasing effects of gender quotas over time? Not only do quota targets increase—nearly doubling, on average, between 1995 and 2010—but gender activists, policy makers, and other quota proponents have learned, over time, to use placement mandates and/or sanctions for noncompliance to increase the effectiveness of candidate quotas. However, the increasing effectiveness of quotas cannot be explained by changes in quota rules alone; even candidate quotas without placement mandates or sanctions for noncompliance are increasingly able to reach stated goals over time. The degree to which political parties will intentionally thwart a quota, though still present, appears to be on the decline. A generalized increase in the effectiveness of candidate quotas suggests that normative changes in favor of gender equity may be playing a role. Party elites may be increasingly accepting gender activist arguments that having a high percentage of women in politics is normatively appropriate. Even without internalizing these norms, elites may calculate that as voters' tastes change, more women are necessary in competing for votes (Kittilson 2006).¹⁰

Our results also demonstrate that combining all national quotas together—as do most cross-national studies on quota effects—masks very important differences in their effectiveness. Candidate quotas were highly ineffective in the earliest years and produced few discernible gains in women's presence in legislatures. But in 2005 and 2010, candidate quotas were effective, ultimately producing 8.5% more women in politics than countries without quotas. In contrast, reserved seats for women are always effective at increasing women's numbers, in any time period. By 2010, a country with a reserved-seat quota is expected to have 9% more women in politics than a country without a quota. These results suggest that by setting aside seats for women, countries with reserved quotas avoided the problems that plagued candidate gender quotas in the early years.

Our analysis of quota thresholds shows that despite improvements in the implementation of candidate gender quotas over time, reserved quotas still produce twice the return as candidate quotas. A 10% increase in the quota threshold produces 4.4% more women with a reserved quota and only 2.7% more women with a candidate quota. Candidate quotas attempt to bridge this gap by setting higher quota thresholds, for example, 38% higher in 2005 and 50% higher in 2010.

For countries deciding to adopt gender quotas for the first time, our analyses imply that reserved-seat quotas will produce better results for women at a given legislated threshold. Countries passing new candidate quotas must therefore continue to push for aggressive targets, as even the more effectively designed quotas implemented in recent years are clearly receiving push-back by parties and voters. Quotas may increase numbers of women elected, but many of the institutional and normative barriers to women's political success remain in place (Franceschet and Piscopo 2008).

The single most important feature of a quota is its target. Quite simply, higher thresholds have greater impacts on women's legislative outcomes. But for countries considering candidate quotas, new or reformed, our results affirm that adding rules does matter (e.g., Schwindt-Bayer 2009). Placement mandates, in particular, increase the effectiveness of a quota. Compared to countries with only sanctions for noncompliance, countries with only placement mandates achieve an additional 1% return for every 10% increase in the quota target. Sanctions for noncompliance, on their own, appear to add little value to candidate quotas.

Although our central focus is on the effectiveness of quotas, our results also provide information on the impacts of electoral systems on women's political representation over time. Because countries can and do change between electoral systems, we modeled proportional representation as a time-varying effect on women's representation. Our findings support and extend prior cross-sectional research not only in finding an effect, but in demonstrating that the size of the effect has remained consistent over time. Comparing effects of quotas to electoral systems also suggests quotas may be a more useful mechanism to jumpstart women's legislative representation than adopting a new PR electoral system. In addition, we confirm prior research finding that transitions from communism to democracy are detrimental to women's representation.

Few policy changes are as consequential as those, like quotas for women, that can transform the composition of national legislatures. Our results demonstrate that quotas do affect the number of women that appear in parliament and that the effectiveness of quotas to boost women's numbers has increased over time. Yet, we have only considered here one way of measuring "effectiveness"—the gap between stated goals and numerical outcomes. When looking beyond descriptive representation to the substantive representation of women, numerous other ways of conceptualizing effectiveness emerge. Quotas are clearly changing the faces of politics, but future research must continue to explore the extent to which quotas have impacts beyond numbers.

Pamela Paxton <ppaxton@prc.utexas.edu> is Professor of Sociology and Government and Christine and Stanley E. Adams, Jr. Centennial Professor in the Liberal Arts at the University of Texas at Austin, 305 E. 23rd. Street – A1700, Austin, TX 78712. Melanie M. Hughes <hughesm@pitt.edu> is Professor of Sociology at the University of Pittsburgh, 2405 WWPB, 230 S. Bouquet St., Pittsburgh, PA 15260.

NOTES

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1. Examples of quotas having strong numerical impact include countries such as Afghanistan, Argentina, and Rwanda (Dahlerup and Nordlund 2004; Franceschet and Piscopo 2008; Longman 2006). But other cases such as Brazil, France, Mexico, and Indonesia suggest that quotas can lead to small or even no immediate changes in representation for women (Miguel 2008; Murray 2004; Siregar 2006; Zetterberg 2008). For example, after a 50% quota was passed in France in 2000, women won only 19% of elected seats in the next National Assembly elections.

2. Placement mandates were added to the original 1991 quota law by a 1993 executive decree (Krook 2009). Although the first post-quota elections in 1993 took place after the decree and thus were subject to placement mandates, a few parties had already nominated candidates for the elections when the decree was passed and were exempted from the requirement (Schwindt-Bayer 2012).

3. We code implementation as the election following the adoption of quota or change in quota provisions. Note that *enforcement* of sanctions or placement mandates may actually begin at a later date.

4. Previous research on quotas suggests electoral systems may also affect quota implementation (Htun and Jones 2002; Jones 2009; Matland 2006; Tremblay 2008).

5. Including a separate measure of mixed electoral systems suggests that these systems are not significantly different than plurality-majority systems.

6. Models similar to these can also be estimated using a multilevel modeling approach. However, while HLM and SEM will yield identical estimates for some models, our models, as in Figure 1, would *not* produce identical results if we attempted to estimate them in HLM. In brief, the SEM approach is more flexible in what it can model. Here, it allows the intercept and the slope to correlate, and to correlate with explanatory variables (see Figure 1). These correlations are both appropriate and necessary.

7. Model fit is assessed using the chi-square test statistic, the Incremental Fit Index (IFI) (Bollen 1989), and the root mean squared error of approximation (RMSEA) (Steiger and Lind 1981). Significant chi-square statistics reject perfect fit between data and model and are therefore taken as an indicator of poor model fit. Nonsignificant chi-square 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 and Cudeck 1993).

Importantly, in our models the 0.05 cut-off point for the RMSEA should be considered as a guide instead of 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 and 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).

8. Electoral systems are likely to shape both quota adoption and implementation. Candidate quotas, in particular, can be difficult to implement in systems without PR components, potentially rendering them less effective. To test this expectation, we included an interaction between PR electoral system and candidate quotas. Although the interaction is statistically significant in 2010 and operates in the expected direction, only three countries with plurality-majority systems had adopted candidate quotas in that year. With so few cases, we are hesitant to generalize this finding.

9. The GDP development variable is only partially robust. An alternative specification, with GDP circa 2000 (approximately the midpoint of the trajectory), does not produce a significant result. We also included GDP as a series of time-varying variables influencing women's representation in a given year (like the quota or proportional representation variables). None of the time-varying effects were significant. Finally, a dummy variable for less developed countries has a small positive and significant effect on initial levels of women's legislative representation. None of these alternative specifications of GDP have any influence on any other coefficients (except to increase a few of the quota coefficients in the earlier years). Without GDP in the model, the initial level of democracy has a positive effect on initial levels of women's political representation. Including a squared term to model democracy nonlinearly (Fallon, Swiss, and Viterma 2012) does not produce significant effects and does not substantively alter our results (quota effects in the earliest years are slightly strengthened).

10. Also relevant are changes in the interpretation of rules or the enforcement of rules over time. Quota rules may be unenforced, selectively enforced, or fully enforced by electoral commissions. Changes to more strict enforcement could increase effectiveness without actual change in quota provisions. In Argentina, for example, the legal interpretation of "winnable positions" changed in a manner that made the quota more effective (Kohen 2009, 89).

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