

Defending the Realm: The Appointment of Female Defense Ministers Worldwide

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Abstract

Though the defense ministry has been a bastion of male power, a growing number of states have appointed women to this portfolio. What explains men's dominance over these positions? Which factors predict women's appointments? With comprehensive cross-national data from the post-Cold War era, we develop and test three sets of hypotheses concerning women's access to the defense ministry. We show that women remain excluded when the portfolio's remit reinforces traditional beliefs about the masculinity of the position, particularly in states that are engaged in fatal disputes, governed by military dictators, and large military spenders. By contrast, female defense ministers emerge when expectations about women's role in politics have changed—i.e., in states with female chief executives and parliamentarians. Women are also first appointed to the post when its meaning diverges from traditional conceptions of the portfolio, particularly in countries concerned with peacekeeping and in former military states with left-wing governments.

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In 2014, an informal encounter between four defense ministers made global headlines. This meeting garnered attention not because of the content of the discussion, but due to the composition of the group: each of the four countries represented—Germany, the Netherlands, Norway, and Sweden—had selected a woman to head its defense portfolio. The widespread interest in these female ministers reflects the degree to which women’s nomination to these positions upends traditional gendered expectations about women’s role in politics. The remit of the defense minister arguably makes this the most “masculine” position within the executive branch, and as the news coverage suggested, women’s presence in this post continues to be viewed as exceptional.

Though female politicians have historically been absent from the defense portfolio, these patterns of exclusion have begun to change in the post-Cold War era. By 2012, women had been appointed to the ministry of defense in 41 countries. Despite the rapid increase in women’s access to power—and growing interest in women’s appointments to cabinets and other high-prestige posts (Arriola and Johnson 2014; Bauer and Tremblay 2011; Escobar-Lemmon and Taylor-Robinson 2005; 2016; Jalalzai 2013; Murray 2010; Reynolds 1999)—existing work is largely silent on female defense ministers. No study to date identifies the conditions that perpetuate women’s exclusion from the defense portfolio, nor the factors that facilitate women’s initial inclusion in the post. This is a surprising oversight, given that these portfolios have long been viewed as one of the last bastions of male political dominance.

We provide the first study of female defense ministers. As previous work struggles to account for women’s ascension to high-prestige portfolios, this research program demands a new theory of women’s access to power. We posit three related sets of hypotheses concerning women’s appointments. Focusing first on women’s exclusion from office, we argue that women are likely to remain absent from the post when its remit reinforces established beliefs about the masculinity and prominence of the position. To explain women’s inclusion in the portfolio, our second and third

sets of hypotheses argue that the initial appointment of a female defense minister can be explained by the changing nature both of women's role in politics and also of the ministry itself. In particular, male dominance erodes when politics becomes more feminized and when the meaning and significance of the position diverges from traditional conceptions of the portfolio.

Using our original and comprehensive dataset of women's appointments to defense ministries, we test these claims with a discrete-time duration model that predicts women's initial nomination to these posts across 161 states. Consistent with the variable meanings assigned to this portfolio in the post-Cold War era, we find that women are less likely to be appointed in countries engaged in fatal disputes, governed by military dictators, and in those that invest heavily in military operations while forgoing peacekeeping. By contrast, women are more likely to come to power in states with large numbers of female parliamentarians and female chief executives, as well as in those where the post takes on new meanings—particularly in countries concerned with peacekeeping and in former military states governed by left-leaning parties. Thus, although women's appointment represents an important break from historical patterns of exclusion, women also tend to access these positions only when their meanings have fundamentally changed.

Together, these findings have important implications for descriptive, symbolic, and policy representation. As we elaborate below, the selection of a female defense minister facilitates women's ascension to powerful posts and erodes gendered beliefs about women's roles in politics and society more generally. Equally important, these appointments have consequences for the policy-making process, as the unique conditions under which women are appointed and serve—coupled with their distinct policy preferences—influence the gendered patterns of behavior observed in previous studies (Bashevkin 2014; Koch and Fulton 2011).

Beyond the insights offered concerning the defense ministry, our theoretical framework provides a more widely applicable approach for understanding women's access to the most powerful

political posts. We link women's exclusion to the gendered nature of institutions and explain how altering the meanings assigned to these positions facilitates women's inclusion. Our work suggests that broader gains in women's political representation enhance women's access to other male-dominated posts. Yet, female politicians continue to face barriers to gaining the most masculine and desirable appointments. Indeed, women rarely hold the most powerful party, legislative, and national-level positions (Barnes 2016, Jalalzai 2013, O'Brien 2015). Changes in the status and meaning of these posts, in turn, likely facilitate women's inclusion. To explain women's access, it is thus necessary to identify the specific factors that (re)gender different positions across space and time.¹ Our framework suggests a rich vein of future research on the mechanisms that promote women's inclusion and exclusion across a myriad of leadership posts, including in local elected office, legislative committees, and international governing organizations.

THE IMPORTANCE OF WOMEN'S ACCESS TO DEFENSE MINISTRIES

Traditionally, the executive was the most masculine branch of government, with men occupying the vast majority of positions as national leaders and cabinet ministers (Duerst-Lahti 1997; Jalalzai 2013). As scholars increasingly recognize the power vested in the executive branch, a growing body of research seeks to explain women's access to ministerial posts (Arriola and Johnson 2014; Bauer and Tremblay 2011; Claveria 2014; Siaroff 2000). This work is often concerned not only with women's presence in cabinets, but also with the types of portfolios women hold (Bego 2014; Escobar-Lemmon and Taylor-Robinson 2016; Reynolds 1999).

¹ Women's access to home affairs portfolios, for example, is likely influenced not only by the broader feminization of politics, but also by terror threats and civil unrest, the need to improve citizen-police relations, and the desire to restore trust and confidence in domestic security.

Ministries vary with respect to their influence within the cabinet, the amount of media attention they garner, and the degree to which they provide a pathway to higher office (Krook and O'Brien 2012). Beyond their status and cachet, cabinet assignments also take on different gendered meanings. Some portfolios address policy areas that have historically been linked to the home front and/or to women as a group—such as those addressing youth and education—while others cover issues traditionally associated with the public sphere and/or men as a group, including infrastructure, economics, and defense (Escobar-Lemmon and Taylor-Robinson 2009).

Historically, women have been relegated to less prestigious portfolios addressing feminine issue domains (Bego 2014; Borrelli 2002; Escobar-Lemmon and Taylor-Robinson 2005, 2009; Krook and O'Brien 2012). Although this gender-based division of labor does not imply that women's assignments are inferior (Trimble and Tremblay 2005), it is especially important to examine women's ascension to the high-prestige and masculine posts from which they have long been excluded. Women's appointment to these prominent portfolios gives them access to the "inner cabinet" (Davis 1997), where they enjoy more resources and visibility, greater access to the head of government, jurisdiction over the executive's primary policy priorities, and lesser legislative oversight (Escobar-Lemmon and Taylor-Robinson 2016). The nomination of women to traditionally masculine ministries also helps to erode traditional expectations about men's and women's gender roles (Krook and O'Brien 2012).

Among traditionally male-dominated portfolios, women's appointment to the ministry of defense demands particular attention. This post is central to "matters dealing with the roles and missions of the armed forces, the allocation of resources to national defense, the national disposition of military units and entities, decisions related to the use of force by the military, and decisions concerning international commitments and obligations" (Bland 2001, 533). It is thus vital to ensuring state sovereignty and security. As it is responsible for the operations and regulation of the

armed forces, moreover, this position is linked to notions of strength and aggression. It is thus the most stereotypically masculine ministry. Finally, whereas women have made inroads into other high-prestige posts—e.g., interior/home affairs and foreign affairs—defense (along with finance) remains the last bastion of male control (Escobar-Lemmon and Taylor-Robinson 2009, 2016).

Given women's exclusion from this prestigious and masculine position, their nomination to the defense ministry, more than any other portfolio, represents a highly visible break from traditional gendered patterns of governance. Although extremely rare before the 1990s, in recent years a growing number of states have made these path-breaking appointments. In the post-Cold War era, women have held the defense portfolio in every region of the world except for the Middle East, for a total of 56 appointments in 41 countries. Yet, little is known about why women remain excluded from this post and what facilitates their initial inclusion in the portfolio.

EXPLAINING WOMEN'S EXCLUSION FROM THE DEFENSE MINISTRY

Women's presence in the ministry of defense has increased dramatically over time. In the 1990s female defense ministers served in only five countries. In the subsequent decade these appointments grew almost fourfold, with twenty-nine countries first naming women to this portfolio. Between 2010 and 2012, seven additional first time appointments were made. Nonetheless, the vast majority of states—over 75 percent—have not yet selected a woman for this portfolio. What explains men's dominance of this ministry?

Women's continued exclusion from power can be attributed in part to conventional expectations about the masculinity and prominence of the defense portfolio. The minister of defense is the head of military operations and is primarily responsible for overseeing national defense policy. While the responsibilities and perceptions of this ministry have changed in some states since the end of the Cold War (Gyarmati and Winkler 2002; Kathman 2013), in others its duties and status remain largely unaltered. Our first set of hypotheses posits that the appointment of

the first female defense minister remains unlikely in those countries where the position continues to be one of the most important and highly-masculinized cabinet appointments. This is especially the case in countries actively engaged in international armed conflict, states governed by military dictatorships, and those with large military expenditures.

To begin with, military involvement in international conflict perpetuates the traditional, masculine view of the ministry. Masculinity is “intimately connected to militarism” and maleness is considered essential to “effective and trustworthy soldiering” (Enloe 1993, 52). Conflict participation thus reinforces the masculine features of the ministry, which run counter to widespread perceptions of women in politics. Women are stereotyped as being compassionate and compromising leaders; men by contrast are seen as assertive, aggressive, forceful, and capable of handling crises (Huddy and Terkildsen 1993). Female politicians are thus perceived as being particularly qualified in soft policy areas like healthcare, welfare, and other social policies, and less competent in military, national defense, and foreign policy (Holman et al., 2011).

These gender stereotypes hold even more weight when military conflict dominates the political agenda (Lawless 2004). During military crises individuals look for “strong” leaders with masculine characteristics (Holman et al. 2011). For this reason, women are generally less preferred to male leaders when there is a national security threat (Falk and Kenski 2006). By this same logic, we anticipate that in the context of an international military dispute, women will be viewed as less appealing—and perhaps less qualified—for the defense portfolio. Instead, leaders will choose strong, aggressive, and masculine nominees. As such, we hypothesize:

Hypothesis 1: States involved in international military conflict are less likely to appoint female defense ministers.

A similar argument applies to military dictatorships. These regimes emerge from coups against nondemocratic or democratic governments. After seizing power, the military establishes a junta as a means of either formally governing the country or informally exercising control over the

government's activities (Brooker 2014). The junta, or political council, is comprised of members from the inner circle, heads of the armed services, and potential rivals from within the armed forces. Military and civilian dictatorships thus remain distinct. Whereas civilian dictators are at the "mercy of the armed forces," military dictators use their organizational apparatus to consolidate their rule (Cheibub et al. 2010, 85-86).

Given the ties between the armed forces and the government, the ministry of defense is an especially significant post within military dictatorships. This position is likely to be held by a high-ranking official with close ties to the military. Coupled with the feminine stereotypes that govern perceptions of women's leadership traits and policy expertise, it is unsurprising that Brooker (2014) makes frequent references to "military *men* in government" when describing these regimes. This leads to our second hypothesis:

Hypothesis 2: Military dictatorships are less likely to appoint female defense ministers.

Military dictatorships and countries involved in international conflict both have large defense expenditures (Bove and Brauner 2014; Nordhaus et al. 2012). More generally, the amount invested in the military likely affects the appointment of female defense ministers. When the defense portfolio oversees a large budget, its minister controls significant resources. These resources provide political capital and can be used to influence policy. Large military expenditures may likewise indicate that defense is a priority for the chief executive, thus placing this minister in the inner cabinet (Escobar-Lemmon and Taylor-Robinson 2016). Indeed, states increase military spending in an effort to project political and economic power on the international stage (Perlo-Freeman et al. 2011). Greater defense spending may thus lead domestic and international audiences to view this portfolio as especially important. Together, these factors suggest that larger military expenditures increase the resources and cachet afforded to defense ministers. Granting this portfolio more policy influence and political capital may in turn make it harder for women to access the post.

As well as these direct effects, large military expenditures suggest a political climate that is not conducive to changing norms of female exclusion. First, in autocratic states—and particularly military dictatorships—military expenditures can be an instrument to keep the ruler in power (Brauner 2015). Leaders investing heavily in military spending in an effort to maintain control are unlikely to look beyond their largely male inner circles when naming their defense ministers. Second, military expenditures are affected not only by participation in armed conflict, but also by the perceived risk of involvement in a fatal dispute (Nordhaus et al. 2012). As with countries embroiled in interstate conflicts, the perception of threat reinforces the importance of national defense and the belief that the ministry’s primary function is to protect and secure the state. This bolsters masculine stereotypes about the post. Together, this suggests:

Hypothesis 3: States with larger military expenditures are less likely to appoint female defense ministers.

PREDICTING WOMEN’S INITIAL INCLUSION IN THE DEFENSE MINISTRY

Though women largely remain excluded from the defense portfolio, a growing number of governments have nominated female defense ministers. What explains women’s initial inclusion in this conventionally masculine post? We posit that women are likely to first be appointed when the meaning of this portfolio diverges from traditional conceptions of the position. In the following subsections, we identify two mechanisms by which this occurs. First, we discuss the changing perceptions of women’s role in politics, such that women are viewed as plausible appointees. Second, we explain how the changing priorities and remit of the ministry result in the portfolio itself being perceived as less masculine than in previous eras.

Changing Perceptions of Women’s Role in Politics

Women’s inclusion in the defense portfolio appears to both reflect, and also result from, a new understanding of women’s role in the political sphere. Indeed, politicians and activists alike link the appointment of female defense ministers to broader trends in women’s access to political power.

Dutch defense minister Jeanine Hennis-Plasschaert, for example, pointed to her position within the cabinet as a sign of the “erosion of the old boys club” in European politics.² Observers likewise link the selection of female defense ministers in Latin America to a shift away from a “machismo” political culture.³ That is, women are likely to be appointed as defense ministers when politics is no longer viewed as a male domain.

These claims suggest that the nomination of female defense ministers is linked to a more widespread “feminization” of politics. Indeed, women’s appointment to (high-prestige and masculine) portfolios is often correlated with women’s access to political office more broadly (Krook and O’Brien 2012). In particular, women’s presence in parliament and as chief executives likely alters both the supply of, and demand for, female defense ministers.

To begin with, bolstering the number of female legislators increases the supply of women eligible to serve in the post. Prior experience in elected office is the principal qualification for cabinet appointments in parliamentary systems (Blondel 1987), where ministers are often drawn directly from parliament. In these cases, female parliamentarians are the “supply force for...women in ministerial lines” (Whitford et al. 2007, 563). Even in presidential systems, where ministers do not have to come from the national assembly, Escobar-Lemmon and Taylor-Robinson (2005) suggest that the presence of female legislators increases the number of women eligible for cabinet posts.

Increasing the number of female parliamentarians further feminizes politics by fundamentally reshaping the demand for women in cabinets. Davis (1997) links women’s heightened

² “Female Defence Ministers Pledge to Break Europe’s Old Boys’ Network.” *The Guardian* (<http://gu.com/p/3mcp3/stw>).

³ “Move Over Machismo: Latin America Sets A Global Example For Women In Power.” *Fox News Latino* (<http://fxn.ws/1jMco32>).

descriptive representation in legislatures to an “irreversible process of change” that alters institutional culture with respect to ministerial appointments. Women’s greater presence in legislatures, she posits, enables female parliamentarians to “mobilize the resources of the organization or institution to improve the situation for themselves” (64). Together, these supply and demand effects lead to our forth hypothesis:

Hypothesis 4: Countries with greater numbers of female parliamentarians are more likely to appoint female defense ministers.

The presence of a female chief executive likely further affects the selection of female defense ministers. The head of government often controls—or at least exercises significant influence over—ministerial appointments. Female heads of government promote women to their cabinets at higher rates than their male counterparts (Jacob et al. 2014), and thus may be more likely to first select a woman to head the defense portfolio. Female presidents and prime ministers may likewise affect societal acceptance of female defense ministers. Indeed, the (s)election of a female head of government suggests that voters and politicians alike are amenable to women taking on more masculine positions (Alexander and Jalalzai forthcoming).

Just as female heads of government may bolster the demand for female nominees to traditionally male-oriented cabinet appointments, they can also affect the supply of prospective female defense ministers. In some countries prime ministers or presidents hold multiple portfolios. This is especially the case in South and South-East Asian countries, as well as some Caribbean states. Self-appointments thus represent an important mechanism by which women can access the defense ministry. In fact, 15% of first-time female defense ministers were self-appointments.⁴ Our fifth hypothesis thus posits:

⁴ In these states both male and female heads of government have assumed the defense portfolio. Given that this practice is not uncommon, the (s)electorate can anticipate that a female chief

Hypothesis 5: Female chief executives are more likely to appoint female defense ministers.

Changing Nature of the Ministry of Defense

Women's access to the defense ministry may not only be shaped by the presence of female politicians, but also by the nature of the position itself. A large body of literature suggests that women are more likely to be appointed to less masculine and less prestigious posts (Escobar-Lemmon and Taylor-Robinson 2005; Krook and O'Brien 2012; Reynolds 1999). Though this work necessarily assigns a single coding to each portfolio—such that defense ministries are always considered high-prestige and masculine—in practice the expectations and importance placed upon different portfolios varies over time and space (Bauer and Tremblay 2011). Among cabinet posts, this variation in meaning is especially high for ministries of defense, particularly in the post-Cold War era. Our third set of hypotheses suggests that women gain office when the remit of the portfolio has shifted.

Different regime types have fundamentally different expectations for their ministries of defense. While military dictators are least apt to place women in this portfolio, the appointment of a female defense minister may be especially likely in former military dictatorships led by leftist governments. With the end of military rule, new leaders are tasked with consolidating civilian rule, strengthening state capacity, and addressing a number of other competing interests (Carothers 2002). Many former military dictatorships are thus left grappling with the legacies of military rulers years after regime transition (Roniger and Sznajder 1999). As femininity is often associated with peace, for governments seeking to disassociate themselves from former military abuses of power, the appointment of a female defense minister can offer a visible break from the past and signal change

executive could assume this post, suggesting that the norms around women's inclusion have changed. See supplementary information (SI) for details.

and renewal (Murray 2010).

Left-leaning governments in former military states have particularly strong incentives to nominate women to the defense portfolio. In contrast to right-wing parties—which sometimes bear connections to former military regimes—left-wing parties are more apt to seek to distinguish their own military agenda from their state’s history of military dominance. They also tend to favor less spending on the armed forces, greater attention to human rights, and more peaceful approaches to international relations (Koch 2009; Viola and Mainwaring 1984; Whitten and Williams 2011). Together, this suggests our sixth hypothesis:

Hypothesis 6: Left-wing governments in former military states are more likely to appoint female defense ministers.

Former military states are not the only countries in which the meanings assigned to this cabinet position have shifted over time. With the end of the Cold War in 1991, governments began to reconsider the priorities of their defense ministries. “Shrinking budgets and indefinable threats,” combined with the view that militaries could be essential for peace enforcement, together provoked widespread reevaluations of military goals in a number of states (Gyarmati and Winkler 2002, 5). In many cases this led to a shift from an exclusive emphasis on homeland defense to a broader interest in international security and the promulgation of peace (Kathman 2013).

Notably, the post-Cold War era has witnessed increased peacekeeping efforts, with militaries from across the globe committing personnel to United Nations’ missions seeking to create stability in tumultuous regions (Fortna 2004). While a traditional focus on national security represents a stereotypically masculine remit for the defense portfolio, a shift towards international security and peacebuilding signifies a more gender-neutral or even feminine approach to military duties. Conventional wisdom about women in leadership, for example, suggests that “women work for peace, and men wage war—cooperative women, conflictual men” (Caprioli and Boyer 2001, 503). Just as the “gender stereotypes which previously acted as a barrier to female participation in war

might actually enhance the potential for women in the military” in countries that emphasize peacekeeping and disaster relief (DeGroot 2001, 24), the same is likely true in the ministry of defense. Specifically, our seventh hypothesis suggests:

Hypothesis 7: Countries engaged in peacekeeping missions are more likely to appoint female defense ministers.

Finally, it is important to note that countries involved in peacekeeping appropriate some portion of their military expenditures to these efforts. More generally, in countries committed to peacebuilding, military expenditures may be used to bolster the state’s reputation as an advocate of international cooperation. Under these conditions military expenditures may not be negatively associated with the appointment of a female defense minister. Indeed, peacekeeping may attenuate this relationship. We thus posit:

Hypothesis 8: Peacekeeping mitigates the negative relationship between military expenditures and the appointment of female defense ministers.

ANALYZING THE APPOINTMENT OF FEMALE DEFENSE MINISTERS

We examine the determinants of women’s exclusion from—and inclusion in—the defense portfolio across 161 countries in the post-Cold War era.⁵ To do so we built an original and comprehensive dataset with information gathered from the Database of Political Institutions (DPI), the Central Intelligence Agency’s Directory of Chiefs of State and Cabinet Members of Foreign Governments, and the Worldwide Guide to Women in Leadership (see SI for details). Our outcome variable measures the *time until the selection of the first female defense minister* in each of these states. We focus on women’s initial promotion to this post because this represents the most important and visible departure from the male-dominated status quo. This nomination is likewise distinct from the appointments of subsequent female defense ministers. Existing work indicates that women are more

⁵ See SI for details on countries with and without defense ministries.

likely to be selected for high-prestige positions after the glass ceiling has been shattered (Jalalzai and Krook 2010). Indeed, the decision to choose women for this portfolio in the future may be colored by the successes or failures of the first female defense minister. This suggests that the mechanisms driving women's initial selection and subsequent nomination differ. We therefore focus on the first female appointee.

We begin our analysis in 1991. We chose this start date to reflect the fundamental shift in the function of the defense ministry that occurred in many countries following the end of the Cold War.⁶ This was a period of major political transformation, which altered the values, priorities, and purposes of the armed forces in many states. This era witnessed the decline of military dictatorships, for example, and growth in civilian-led regimes (Brooker 2014; Geddes et al. 2014). Countries likewise began diversifying their defense portfolios. Many states now place greater emphasis on building peace, as opposed to primarily preparing for the threat of war. The vast majority of peacekeeping operations, for instance, have occurred in the post-Cold War period (Kathman 2013).

Trends in women's access to power further reinforce the argument that the defense ministry was fundamentally transformed after 1991. Consistent with our hypotheses, women were virtually absent from these posts prior to the end of the Cold War. Other than Finland's Elisabeth Rehn, who was nominated in 1990, all female defense ministers in this era were self-appointed, as each held the chief executive post. Extending our analysis backwards in time would thus provide few additional examples of female appointees.

⁶ We use multiple lagged explanatory variables, each of which is measured in the post-Cold War period starting in 1991. The measure of the outcome variable thus begins in 1992.

Predictors of Women's Continued Exclusion

Our first set of hypotheses posits that the defense ministry remains male dominated when its remit reinforces traditional perceptions about the masculinity of the post. We argue that women are excluded from this position in states that are involved in international armed conflict (H1). We test this hypothesis with a covariate capturing whether a country was involved in a *fatal dispute* in the preceding year. Specifically, we use the variable “Fatalities” from the Militarized Interstate Dispute (MID) data compiled by the Correlates of War (COW) Project to create a binary measure that takes a value of 1 for states involved in any international dispute that led to battle deaths in the previous year and 0 otherwise (Ghosn and Bennett 2003; Palmer et al. 2015). As shown in our data, there are 329 instances of countries’ involvement in interstate disputes that result in at least one battle death. Lending initial support to our hypothesis, in none of these cases was a female defense minister first selected in the subsequent year.⁷

We further contend that military dictatorships are more likely than civilian-led governments to remain male dominated (H2). We use Cheibub et al. (2010) to create a binary measure capturing whether a *military dictator* currently rules the state. Of the 3,012 total country-years in the dataset, 472 are military dictatorships. Again, lending initial support to our theory, only one such regime appointed a female defense minister in this era.

⁷ See SI for analyses with a measure that includes both international and civil conflict. Drawing on Arriola and Johnson (2014), Bauer (2011), and Hughes (2009) we also consider post-conflict countries.

Table 1
Descriptive Statistics for Discrete Variables Used in Analysis

Variable	Value	# Country-Years	% Country-Years	# Female Defense Ministers	% Female Defense Ministers
Fatal Disputes	1=Yes	329	10.9%	0	0%
	0=No	2683	89.1%	41	100%
Military Dictatorship	1=Yes	472	15.7%	1	2.4%
	0=No	2540	84.3%	40	97.6%
Female Executive	1=Yes	160	5.3%	8	19.5%
	0=No	2852	94.7%	33	80.5%
Left-Led Former Military Dictatorships	1=Yes	264	8.7%	7	17.1%
	0=No	2748	91.3%	34	82.9%
Peacekeeping	1=Yes	1661	55.1%	33	80.5%
	0=No	1351	44.9%	8	19.5%
Women in Combat	1=Yes	195	6.5%	6	14.6%
	0=No	2817	93.5%	35	85.4%
Self-Appointments	1=Yes	6	0.2%	6	14.6%
	0=No	3006	99.8%	35	85.4%
Observations		3012		41	

Notes: We list each of the discrete variables used in our analysis in the first column and the coding of the variable in the second column. The third and fourth columns show the number and percentage of observations in our data that take on a value of 1 and 0. Columns five and six show the number and percentage of first female appointments that take a value of 1 and 0 for each variable.

Extending these hypotheses, we argue that states with larger military expenditures are less likely to first appoint a female defense minister (H3). We use data from the Stockholm International Peace Research Institute and the COW National Material Capabilities Dataset to measure *logged military spending in U.S. dollars* (millions). Among countries that appoint female defense ministers, the

mean level of military spending is \$3,577 million in the year of appointment and \$6,479 million for all other years in the analysis.

Predictors of Women's Initial Inclusion: Women's Role in Politics

The second set of hypotheses concerns the feminization of politics and focuses on women's access to legislative (H4) and executive (H5) posts. To capture women's presence in legislatures, we use data from Paxton et al. (1991-1998) and the Inter-Parliamentary Union (1997-2011) to determine the *percentage of parliamentary seats held by women* in each country in the previous year. The average proportion of female legislators in the year prior to the appointment of the first female defense minister is 18.38%, as opposed to 11.85% otherwise. To test the hypothesis that female executives are more likely to appoint female defense ministers, we use information from Jalalzai (2013) to construct an indicator variable that captures *female state leaders*. Women served in this position in 160 of the country-years in our dataset. Of the female defense ministers included in the data, 8 were selected by women and 33 by men.

Predictors of Women's Initial Inclusion: The Nature of the Defense Ministry

The third set of hypotheses posits that female defense ministers are more likely to emerge after major changes to the traditional role of the military. This is especially likely in states that have transitioned from military-led governments to left-wing civilian-headed regimes (H6). We use data from Cheibub et al. (2010) to identify former military dictatorships and rely on the DPI to classify left-wing governments—those controlled by communist, socialist, social democratic, or other leftist parties (Beck et al. 2001). To test H6, we include an *interaction effect between former military dictatorships and leftist governments*. As shown in Table 1, our dataset includes 264 country-years fitting this description. Of our 41 female defense ministers, seven were first appointed in these regimes. In each instance, the woman selected was a civilian and, in several cases, a human rights activist.

Next we argue that countries that have diversified their defense portfolios to include peacekeeping efforts are more likely to first appoint women to these posts (H7). To account for this diversification we include an indicator variable that distinguishes states that *commit at least one peacekeeping troop* in the previous year from those that do not. This measure from Kathman (2013) is based on data gathered by the UN Department of Peacekeeping Operations. In total, 1,660 country-years in our analysis (or 55.1% of the observations) were involved in peacekeeping assignments. Of the instances in which a female defense minister is first appointed, 33 come from states that were involved in these missions in the year preceding the appointment. Extending this logic, our last hypothesis posits that peacekeeping mitigates the relationship between military spending and women's exclusion from the defense ministry (H8). To test this claim we include an *interaction effect between peacekeeping and military spending*.

Other Factors Shaping Women's Appointments

We control for four other factors that might otherwise bias our results. First, over time leaders become more likely to appoint a female defense minister. Our model therefore includes *mean-centered linear and mean-centered quadratic measures of time*. These time controls constitute the baseline effects of the duration model (see SI for details). Next, although our measures of female elites most directly capture the supply of women for the post (Arriola and Johnson 2012; Escobar-Lemmon and Taylor-Robinson 2005; Krook and O'Brien 2012), we include two additional variables to account for domain-specific and societal factors that may increase the number of prospective female nominees. For the former, we created a new variable to identify the country-years in which women were allowed to serve in *frontline combat positions*. We expect that when more women have military training and experience, women are more likely to be perceived as having the military expertise necessary to hold the post. For the later, we follow Krook and O'Brien (2012) by including a measure of female *labor force participation*. Finally, because advanced industrialized democracies have been shown to have

different attitudes towards both women's representation and defense, we control for *membership in the Organization for Economic Co-operation and Development (OECD)*.⁸

Modeling Strategy

Our outcome variable—the time between the end of the Cold War and the appointment of the first female defense minister—is the survival or duration time.⁹ As the exact date of women's nomination to the post is unknown in most cases, this duration time is discretized into years. The time to first female defense minister is thus modeled using a logistic discrete-time duration model. As shown in Table 1, one of our covariates—fatal disputes—perfectly predicts women's continued exclusion from the defense ministry. That is, a country involved in a deadly international conflict has never appointed a woman to the defense portfolio. When a covariate perfectly predicts the response—i.e., when we encounter complete separation—its parameter estimate diverges to infinity. To address this complete separation, we use a bias reduction method originally proposed by Firth (1993). Firth's penalized likelihood approach always yields finite estimates of parameters under complete separation, and simulation results indicate that even under extreme conditions these estimates have relatively little bias (Heinze and Schemper 2002).¹⁰

⁸ Our results are also robust to model specifications including controls for: GDP (PPP) and democracy; regime types (Cheibub et al. 2010); presidential, parliamentary and mixed regimes; unified versus coalition governments; political competition; and gender quotas (see SI for details).

⁹ See SI for information on model fit.

¹⁰ Coefficient estimates, standard errors, and predicted values were generated using the `logistf` and `brglm` packages in R.

RESULTS

In the following subsections we discuss the findings from two discrete time duration analyses estimated using Firth's penalized likelihood approach and reported in Tables 2 and 3. Interpreting the results from these models is straightforward. The exponentiated coefficient estimates (listed in the last column of each table) represent the effect of a one unit increase in the covariate on the relative odds of first appointing a female defense minister in year t_i given "survival" as a male-dominated post up to the end of the previous year. A value above (below) 1 indicates a greater (lesser) likelihood of first appointing a female defense minister as the value of the covariate increases. An estimate that is significant and far from 1 thus suggests that a one-unit increase in the explanatory variable has a large effect on the country's survival probability.

The Nature of the Defense Ministry and Women's Exclusion from Power

We argue that traditional beliefs about masculinity and power facilitate women's continued exclusion from the ministry of defense. Our first hypothesis focuses on state involvement in fatal disputes. To capture the conflicts that are most likely to shape government behavior on this front, we focus on the country's involvement in interstate hostilities with at least one battle death. As posited in H1, when the military is involved in these conflicts, the defense portfolio is significantly more likely to remain male dominated. As compared to cabinets in countries that are not involved in deadly interstate disputes, the relative odds of female appointment for these states is just 0.14 (a seven-fold decrease). In fact, and as noted above, across the entire time period under study there are no cases in which a country that experienced a battle death appointed its first female defense minister in the subsequent year.¹¹

¹¹ This finding holds for other conflict measures (see SI).

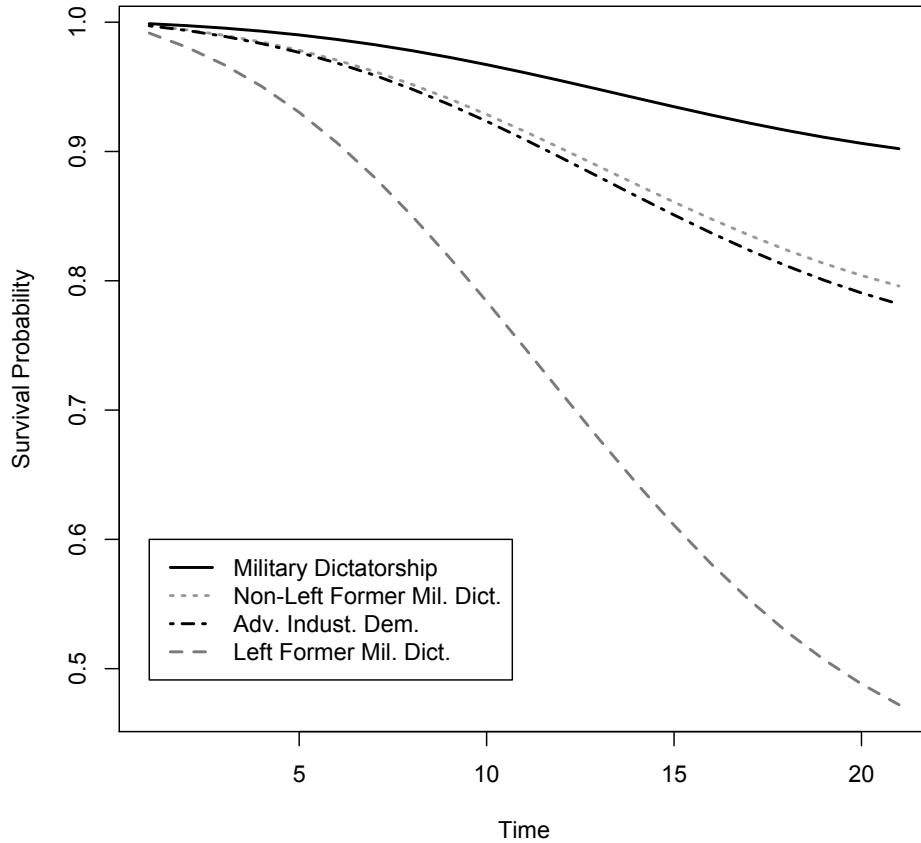
Table 2: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.69	1.03	0.01	0.07
Time	0.07	0.03	0.05	1.07
Time ²	-0.01	0.01	0.07	0.99
Fatal Dispute	-1.95	1.31	0.06	0.14
Military Dictatorship	-1.51	0.80	0.03	0.22
log(Military Spending)	-0.40	0.20	0.05	0.67
% Fem. MP	0.04	0.02	0.05	1.04
Female Executive	1.11	0.41	0.02	3.03
Left Government	-0.21	0.40	0.61	0.81
Former Military Dictatorship	-0.72	0.47	0.13	0.49
Left-Led Former Military Dictatorship	1.40	0.70	0.05	4.07
Peacekeeping	-1.17	1.01	0.29	0.31
Peacekeeping × log(Military Spending)	0.43	0.22	0.06	1.53
Wom. in Combat	0.40	0.50	0.46	1.50
Fem. Labor Force Part.	-0.00	0.01	0.74	1.00
OECD Membership	-0.65	0.49	0.21	0.52

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

Lending support to H2, the ministry of defense is also significantly more likely to remain male-led in military dictatorships. As compared to other regimes, the relative odds of female appointment in these countries is just 0.22 (an almost five-fold decrease). Figure 1 plots the survival probabilities for these regimes over time. Like other states, the probability that the defense portfolio in military dictatorships survives as a male-dominated post is near one during the first year of the study (1992). Unlike other regime-types, however, the survival probability for these states remains high over the course of time (never falling below 0.90).

Figure 1
Probability of Defense Ministry Remaining Male-Dominated Over Time



Note: Survival probabilities were generated holding all other variables at their median or modal values.

Women have been conspicuously absent from the ministry of defense under military dictators. Only one woman has ever held this post in these regimes, and she served only in an interim capacity. In 2010 Lesego Motsumi was appointed as Acting Defense Minister of Botswana. As she already held the portfolio for presidential affairs and public administration—and was presumably part of the inner circle given her long history of executive appointments—she was selected to stand in as Acting Minister of Defense and Acting Minister of Justice when these positions were briefly vacated. Not only was Motsumi uniquely positioned for the post, but

Botswana is also an unusual case. Prior to 2008 it was considered a civilian dictatorship (Cheibub et al. 2010), and it is one of the few countries classified as a military dictatorship that enjoys a comparatively high Polity IV score (though Geddes et al. (2014) also categorize it as an autocratic regime).¹² With the exception of this atypical military dictatorship, women remain wholly excluded from power in these states.

Finally, we posit that larger military expenditures are associated with women's exclusion from the defense ministry (H3), but only among countries that refrain from peacekeeping (H8). Consistent with our expectations, the marginal effect for military spending is negative and significant when peacekeeping equals zero. That is, states that invest a great deal of resources into defense and do not engage in peacebuilding activities are significantly less likely to select a woman to head this portfolio. The interaction effect, on the other hand, is positive. In fact, participation in peacekeeping missions counterbalances the effect of defense spending. In sum, the interaction term differentiates countries like Denmark and Canada—which invest in the military with more peaceful aims—from those including Iran and Burma, which are more focused on state security. The latter are especially unlikely to nominate female defense ministers.¹³

Changing Nature of Women's Role in Politics and Women's Inclusion in Power

Shifting focus from exclusion to inclusion, the selection of a female defense minister is most likely when beliefs about women's role in politics have shifted and when the meanings and

¹² Including Botswana biases our results towards the null. See SI for a discussion of the coding rules used by Cheibub et al. (2010) to classify Botswana and for alternative specifications that exclude and reclassify this case.

¹³ See SI for analyses with alternative measures of military strength (e.g., military capabilities and conscription), which also predict women's exclusion.

expectations placed on the ministry itself have fundamentally changed. With respect to the feminization of politics, the covariates capturing women's presence in elected office affect women's nomination to this post. Consistent with H4, a 10% gain in women's seat share in parliament increases the relative odds of appointment by a factor of 1.50. This represents a one-and-a-half-fold increase. Not surprisingly, a number of female defense ministers have been appointed in countries where women's numeric representation far exceeds the global average. Notably, Argentina, Denmark, Finland, the Netherlands, Norway, Spain, and Sweden have each selected a woman for the portfolio. In the year preceding the appointment, each of these countries ranked among the top ten states in the world in terms of the percentage of women in parliament.¹⁴

Offering support for H5, the presence of a female chief executive has an even greater effect on the selection of female defense ministers. As compared to their male counterparts, the relative odds of a female appointee increase by 3.03 with a female state leader (a more than three-fold gain). This effect, however, is driven almost entirely by self-appointments. In six countries—14.6% of cases—women preside over the defense portfolio while also serving as chief executive. As prime minister of Jamaica, for example, Portia Simpson-Miller held the defense portfolio from 2006 to 2007 and again in 2012. As shown in Table 3, when controlling for female self-appointments the covariate capturing female chief executives loses significance, indicating that the positive correlation

¹⁴ See SI for analyses with alternative measures of the feminization of politics (i.e., the share of female ministers and women's appointments to high-profile cabinet portfolios), which also predict women's appointments. The results are also robust to other supply side factors, including years since women's suffrage, eligibility to stand for office, and first election to parliament.

shown in Table 2 is explained by supply- rather than demand-side factors.¹⁵ That is, rather than female chief executives letting down the ladder to other women, they are taking the position for themselves. At the same time, self-appointments represent an important mechanism through which women first access the defense ministry.

Table 3: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (Accounting for Self-Appointments)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.23	1.07	0.05	0.11
Time	0.09	0.04	0.02	1.10
Time ²	-0.01	0.01	0.06	0.99
Fatal Dispute	-1.75	1.30	0.11	0.17
Military Dictatorship	-1.52	0.80	0.03	0.22
log(Military Spending)	-0.57	0.22	0.01	0.57
% Fem. MP	0.05	0.02	0.02	1.05
Female Executive	-0.27	0.65	0.69	0.77
Left Government	-0.42	0.44	0.37	0.66
Former Military Dictatorship	-0.81	0.51	0.12	0.45
Left-Led Former Military Dictatorship	1.65	0.74	0.03	5.23
Peacekeeping	-2.10	1.07	0.08	0.12
Peacekeeping × log(Military Spending)	0.62	0.24	0.01	1.86
Wom. in Combat	0.60	0.51	0.28	1.82
Fem. Labor Force Part.	-0.00	0.01	0.87	1.00
OECD Membership	-0.57	0.53	0.31	0.56
Self-Appointments	8.36	2.02	<0.01	4277.64

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

¹⁵ The direction and significance of the other predictors remain largely unchanged. We note the p-value for fatal disputes shifts from 0.06 to 0.11. Importantly, this remains a perfect predictor of women's exclusion from the defense ministry. It is to be expected that the removal of six cases from the analysis increases the uncertainty around the penalized likelihood estimate.

Changing Nature of the Ministry of Defense and Women's Inclusion in Power

Beyond the feminization of politics, the covariates capturing the changing nature of the ministry of defense are also significant. First, women's limited access to the defense ministry under military rule stands in sharp contrast to women's appointments in former military dictatorships. As shown in Tables 2 and 3, the prospect of nominating the first female defense minister increases dramatically in these regimes. This relationship, however, is conditioned on government ideology. Consistent with H6, left-wing governments in former military states are significantly more likely than non-left former military dictatorships to first allocate this portfolio to a woman (though there is no difference between left- and right-executives in other regimes).¹⁶

Figure 1 clearly illustrates these findings. Initially, all regimes are likely to remain male-dominated, and for many states these survival probabilities remain high over time. Even in former military dictatorships, after 10 years of non-left party governments the probability of the state surviving without a female defense minister is 0.93, and by year 15 it is still 0.86. In contrast, over time left-leaning governments in former military dictatorships are much more likely to first appoint a woman to this portfolio than any other type of regime. Their probability of surviving without a female defense minister drops to 0.78 by year 10 and 0.61 by year 15. While left-leaning governments in these states are unlikely to immediately choose a woman to fill this role—in part because of the need to balance competing interests directly following the transition—national history and governing ideology can together create the space for the eventual appointment of women to these posts.

Since the end of the Cold War, women have broken the glass ceiling in seven former military dictatorships now led by left-wing executives. With the appointment of Michelle Bachelet in 2002,

¹⁶ This result does not hold for former civilian dictatorships (see SI).

for example, Richard Lagos became one of the first Latin American presidents to select a woman for this portfolio. This nomination was particularly symbolic, given the country's history. Chile's former military dictator Augusto Pinochet is often remembered for his brutality. Bachelet's family, moreover, was victimized by the Pinochet regime. Her selection is thus a clear break from Chile's legacy of military abuse of power. Similar trends are observed in former military states across Latin America, including Uruguay, Argentina, and Ecuador. The appointment of female defense ministers (many of whom are also human rights activists) sends a strong signal to domestic and international audiences about the redefined role of the armed forces vis-à-vis the state.

The relationship between peacekeeping forces and time to first female defense minister (H7) further supports our theory. At median levels of defense spending, peacekeeping states are significantly more likely than their non-peacekeeping counterparts to select a female defense minister. Holding all other variables constant and conditioning on survival up until time t , the hazard is 0.05 for peacekeepers but only 0.01 for non-peacekeeping states. Likewise, while increasing military expenditures from the first to the third quartile decreases the likelihood of women's appointment among countries that do not engage in peacekeeping operations, the hazard ratio remains effectively unchanged among peacekeepers. Notably, Bangladesh, Sweden, and Canada have each nominated female defense ministers. They also rank among the top five most frequent contributors to peacekeeping missions in the post-Cold War period.¹⁷

Other Factors Shaping Women's Access to Power

Finally, our models include four control variables. With respect to time, the linear coefficient is positive whereas the quadratic term is negative. Plotting the baseline odds suggests that countries

¹⁷ Having an alliance partner with a female defense minister also significantly increases the likelihood of appointing a woman to this post (see SI for results and discussion).

were least likely to first appoint a female defense minister in the years immediately following the end of the Cold War. Through the mid-2000s, states became more likely to select women for this role over time. At this point, the baseline probability of women's appointment began to decline. Though the baseline odds of the initial selection of a female defense minister are still greater in 2012 than in 1992, they are lower than they were in 2005.

Turning to the other controls, neither the domain-specific nor societal measure of supply is correlated with the appointment of a female defense minister. Women have only been allowed to participate in frontline combat in a small subset of countries and only in recent years. It is thus unlikely that individual women have had the opportunity to climb the military ranks or that they have served on the frontline long enough to shift broader societal beliefs about women's capacity to serve in the defense ministry. Although this may become an important predictor as more women enter the armed forces, to date female defense ministers have largely come from civilian backgrounds (see SI for details). As for labor force participation, our finding is consistent with Escobar-Lemmon and Taylor-Robinson (2005) and Arriola and Johnson (2014), who also do not find a positive relationship. Lastly, the covariate capturing advanced industrialized democracies is not significant.

IMPLICATIONS OF WOMEN'S APPOINTMENTS TO THE DEFENSE MINISTRY

As well as providing women with access to one of the most conventionally masculine political posts, the appointment of female defense ministers also has important implications for women's descriptive, symbolic, and substantive representation. With respect to descriptive representation, research examining ministers' career patterns after they exit their initial post demonstrates that both men and women leverage their political capital and experience to maneuver into other influential positions (Claveria and Verge 2015). Serving in the defense ministry helps women gain the credentials necessary to take on other high-profile public and private sector posts.

Women's appointments to this portfolio can also shatter the glass ceiling and grant other women access to power. Of the 41 countries appointing a female defense minister, over one-quarter have subsequently nominated another woman to the post. Preliminary analyses further indicate that the appointment of a female defense minister increases the likelihood of women's ascension to other prestigious portfolios, including foreign affairs and finance (see SI for details). Women's inclusion in this ministry thus fundamentally alters traditional gendered patterns of governance.

As for symbolic consequences, women's presence in politics engenders political engagement among female citizens (Barnes and Burchard 2013) and fosters trust and satisfaction with the government (Karp and Banducci 2008). Female political leaders also transform gendered ideas about leadership and inspire confidence in women's ability to govern (Alexander 2012; Alexander and Jalalzai forthcoming; Morgan and Buice 2013). Given that cabinet ministers in general—and defense ministers in particular—are more visible than other politicians (Escobar-Lemmon & Taylor-Robinson 2016), we have reason to believe that the appointment of women to this portfolio can encourage political participation and feelings of efficacy among female citizens. Likewise, women's nominations may alter perceptions of, and erode gendered beliefs about, the military and national defense. These changing perceptions may further facilitate the redefinition of women's domains within society more broadly. Exploring the relationship between high-profile (ministerial) appointments and public behavior and attitudes thus represents a promising area for future study.

Finally, ministers are among the most important state policy actors and women's presence in cabinets has already been shown to influence defense and foreign policy. Yet, the direction of these effects is disputed. The presence of female foreign policy leaders is in some cases associated with gender-focused aid and "pro-feminist [policy] rhetoric" (Bashevkin 2014). At the same time, female defense ministers increase military expenditures and conflict behavior (Koch and Fulton 2011) and female foreign ministers decrease foreign aid spending (Lu and Breuning 2014).

Moving forward, more work is needed to elucidate the conditions under which female defense ministers promote hawkish or dovish policies. We believe that the circumstances that bring women into power may shed light on this variation. Women appointed in states where the position is less masculine and conflict-oriented may feel more able to promote pacifistic or female-friendly policies. Those women who are self-appointed—or manage to access the post despite the traditional remit—may feel obligated to act as (or more) aggressively than their male counterparts.

Beyond spending and conflict behavior, there are likely other implications associated with women's presence in the defense portfolio. Female ministers, for example, may bring more women into the defense domain, encourage a redefinition of combat roles that includes women soldiers, and alter the procedures for dealing with rape and assault in the military, among other institutional reforms. Indeed, a preliminary analysis suggests that the presence of a female defense minister increases the likelihood that women are allowed to serve in frontline combat roles (see SI for details). Women's appointment to this post thus has clear implications far beyond descriptive representation alone.

CONCLUSIONS

Despite the importance of the defense ministry, no study to date has asked when and where women gain access to this position, nor what the growing number of female defense ministers might suggest about the portfolio itself. Our comprehensive study demonstrates that women remain excluded from the post when its remit reinforces conventional expectations about its masculinity and prominence. They are more likely to be appointed to the position, in contrast, when politics is feminized and when the portfolio has become less masculine and conflict-centered.

These results provide cause for optimism and pessimism alike. On one hand, the link between the appointment of female defense ministers and women's presence in politics more broadly is encouraging. If women continue to make gains in parliament, the feminization of politics

will likely erode traditional patterns of male dominance in many arenas, paving the way for women's inclusion in high-profile legislative and executive posts. On the other hand, this does not imply that all cabinet positions are now accessible to women. As we have made clear, the meaning and significance attached to the defense ministry varies considerably across countries. Importantly, it is in states where the portfolio has arguably become less masculine (and less conflict-oriented) that women have made the greatest inroads. Thus, even after women have made gains in politics more broadly, they continue to face barriers to the most masculine (and desirable) posts.

Extending this logic, our work highlights the importance of considering the variable meanings attached to political posts over place and time. As with the ministry of defense, the perceptions and remit of other high-prestige and masculine positions likely shape women's access to power. Our theoretical framework thus encourages scholars to consider the (re)gendering of political appointments. This approach can be used to identify the unique mechanisms promoting women's inclusion in (and exclusion from) the last bastions of male power both within and beyond the executive branch.

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Defending the Realm: The Appointment of Female Defense Ministers Worldwide

Supplementary Information

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1 Overview of the Outcome Variable

In recent years a diverse but growing number of states have appointed women to the ministry of defense. Using information gathered from the Database of Political Institutions (DPI) (Beck et al. 2001), the Central Intelligence Agency's Directory of Chiefs of State and Cabinet Members of Foreign Governments, and the Worldwide Guide to Women in Leadership (Christensen 2016), we examine women's nomination to the defense portfolio across the 161 countries that include this post in their governments. Between 1992 and 2012, 55 women were appointed to this cabinet position in 41 different states. In the vast majority of cases, only one woman has served in this capacity, though ten countries appointed multiple women to the ministry of defense over this period.

Countries are identified as having defense portfolios based on the DPI and the CIA's online directory. The DPI lists countries without armed forces or in which there is no ministry responsible for defense. We supplement this data with information from the CIA, which identifies all cabinet ministers for every state. During the period under study there are 31 countries that do not have defense ministries. They are: Andorra, Barbados, Bhutan, Costa Rica, Dominica, Fiji (prior to 2011), Guyana, Grenada, Iceland, Kiribati, Kosovo, Liechtenstein, Libya, Malta, Marshall Islands, Federal States of Micronesia, Monaco, Morocco, Nauru, Palau, Panama, Samoa, San Marino, Solomon Islands, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Swaziland, Trinidad and Tobago, Tuvalu, and Vanuatu.

Costa Rican President José Figueres Ferrer dissolved the defense ministry at the end of the civil war in 1948. Panamanian President Guillermo Endara abolished the army and defense ministry in 1990 following the 1989 U.S. military invasion that removed a longstanding military dictatorship. In Libya the defense portfolio falls under the duties of the "Fourth Deputy Prime Minister and Head of Authorities." According to the CIA Chiefs of State and Cabinet Members of Foreign Governments there is no defense minister in Libya. Morocco appoints a Delegate-Minister of defense, which is a rank below a Minister. Prior to 2001 there are conflicting reports regarding the presence of a defense ministry in Swaziland. There is no defense ministry in the post-2001 period. The other countries without defense ministries all have populations under 250,000.

Below, Figure 1 illustrates women's access to defense ministries. The map indicates in black those countries that have appointed a female defense minister, in gray the countries with no female defense minister, and in white the countries without defense ministries. We also provide a table with additional details about the data used in our analysis.

Figure 1: Female Defense Ministers Worldwide, 1992-2012

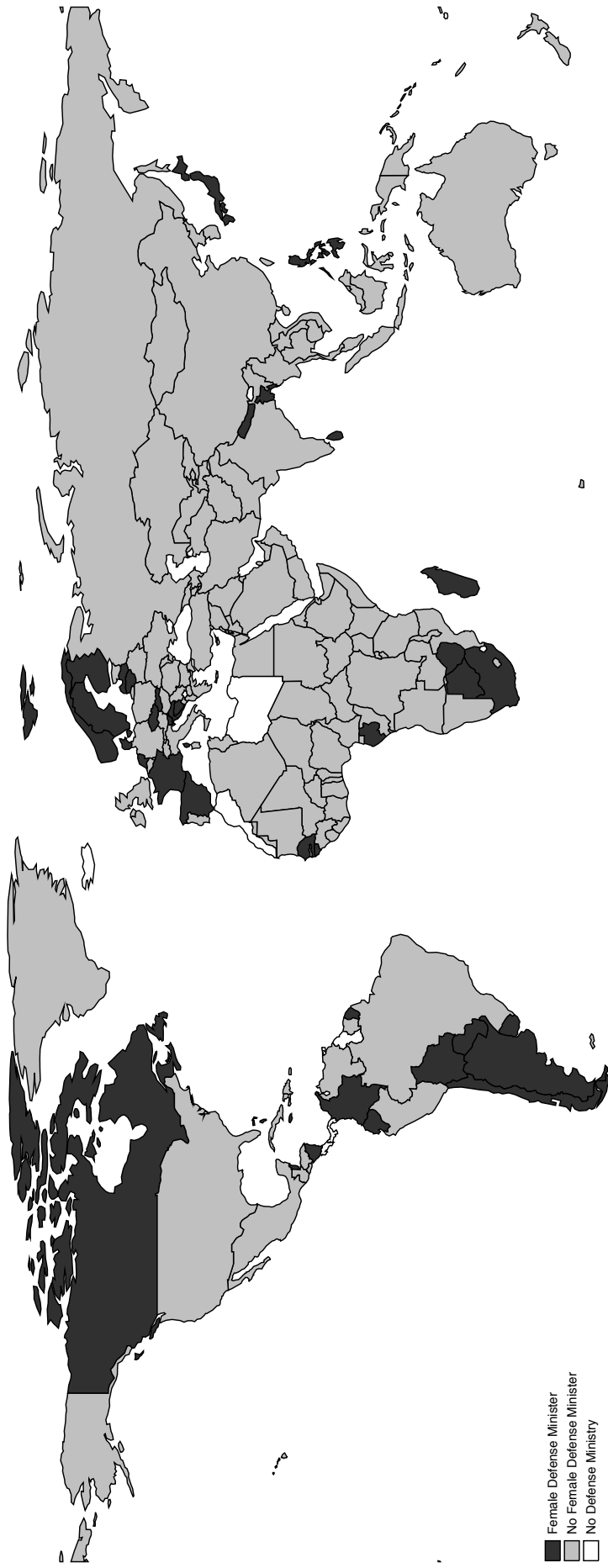


Chart 1: Countries Appointing Female Defense Ministers

Country	Year of First Appointment	Year of Later Appointment	Military Spending	% Women in Parliament	Self Appointment	Women in Combat
Canada	1993		10789.0	13.3	--	1989
Sri Lanka	1994	2003	397.5	5.3	Yes	--
Finland	1995		1756.0	39	--	--
Bangladesh	1996	2001	524.5	10.6	Yes	--
Norway	1999	2001, 2005, 2009, 2012	3325.0	36.4	--	1980
Nicaragua	2000		29.5	9.7	--	--
Zimbabwe	2001		346.0	9.3	--	--
Bahamas	2002		28.0	15	--	--
Belize	2002		13.5	6.9	--	--
Chile	2002	2006	1893.0	10.8	--	--
Colombia	2002		3264.0	11.8	--	--
Croatia	2002		629.0	20.5	--	--
France	2002		33277.0	10.9	--	1989
Senegal	2002		88.5	16.7	Yes	--
Sweden	2002	2012, 2012	4128.0	42.7	--	--
Guinea-Bissau	2003		9.3	7.8	--	--
Philippines	2003	2006	1199.0	17.8	Yes	--
Argentina	2005		1466.0	33.7	--	--
Latvia	2005	2006	159.7	21	--	--
Uruguay	2005		203.3	12.1	--	--
Cape Verde	2006		7.6	11.1	--	--
Jamaica	2006	2012	53.1	11.7	Yes	--
Bosnia & Herzegovina	2007		178.5	14.3	--	--
Czech Rep.	2007	2012	2450.0	15.5	--	--
Ecuador	2007	2007, 2012	950.0	25	--	--
Japan	2007		42180.0	9.4	--	--
Madagascar	2007		53.0	6.9	--	--
Lithuania	2008		443.5	22.7	--	2001
Sao Tome & Principe	2008		106.0	1.8	--	--
Slovenia	2008		693.0	12.2	--	--
Spain	2008		16724.0	36.6	--	--
Gabon	2009		88.4	16.7	--	--
Nepal	2009		187.0	33.2	--	--
South Africa	2009	2012	3286.0	33	--	--
Botswana	2010		330.0	7.9	--	--
Denmark	2010		4337.0	38	--	1988
Bolivia	2011		328.0	25.4	--	--
Slovakia	2011		1130.0	15.3	Yes	--
Montenegro	2012		79.4	12.3	--	--
Netherlands	2012		11648.0	40.7	--	1944
Paraguay	2012		302.0	12.5	--	--

Notes: Data on military spending and the percentage of women in parliament are taken from the year before the initial appointment of a female defense minister. Data on military spending is taken from the SIPRI Military Expenditure Database (2015) and the Correlates of War (COW) Project (Ghosn and Bennett 2003, Jones, Bremer and Singer 1996). Data on women in parliament are taken from Paxton, Green and Hughes (2008) and the Inter-Parliamentary Union (2012). The women in combat variable captures the year that women were first allowed in front-line combat posts and is gathered from numerous primary and secondary sources, including the WomanStats Project Database (2016).

2 Supply of Prospective Female Cabinet Ministers

In this section we consider alternative measures of the supply of women in politics who may occupy the defense ministry. We began by constructing an extensive dataset cataloging women's appointments to cabinets worldwide. We also theorized about the types of cabinet access that might be most important for explaining women's ascension to the defense portfolio. This led us to incorporate additional information on women's nomination to other high-profile cabinet posts. Finally, we moved beyond these alternative specifications and considered how women's access to politics more broadly may influence the supply of female nominees. The findings reported in the manuscript are robust to these alternative conceptualizations, as we describe below.

2.1 Proportion of Cabinet Posts Held by Women

Despite the growing interest in women's access to cabinets, there is no comprehensive, cross-national time-series database of the percentage of portfolios held by women. To build an original dataset would require a large team of area experts with the language skills necessary to identify feminine and masculine names in every country in the world. For more discussion of the challenges associated with coding female ministers see Arriola and Johnson (2014).

To collect data on women's presence in cabinets, we took the following steps:

1. We collected replication data from previous cross-national time-series studies that examine women's access to the cabinet. From each dataset, we culled information only for the time period under study and for countries with defense ministries. Specifically, we used the following country-years:
 - a. 16 Latin American countries from 1991-2008, Escobar-Lemmon and Taylor-Robinson (2005, 2009, 2016)
 - b. 23 Western European countries from 1991-2010, Claveria (2014)
 - c. 12 Eastern European countries from 1992-2012, Bego (2014)
 - d. 34 African countries from from 1992-2006, Arriola and Johnson (2014)
2. We supplemented this data with publicly available information from the following sources:
 - a. Inter-Parliamentary Union: 2005, 2008, 2010, 2015 (note this is the same data reported by the World Bank)
 - b. United Nations Development Programme: 1994, 1998, 1999, 2000, 2001
3. For country-years without any information available we used the Worldwide Guide to Women in Leadership to identify observations where no women served in the cabinet.
4. We imputed the missing observations. Of importance here, we use data from UNDP from 1987 to inform our imputations for the pre-1994 period.

We fit models including all three variables capturing the supply of female politicians for the defense ministry: female legislators, female chief executives, and female ministers. Consistent with existing studies of women’s ministerial appointments (Arriola and Johnson 2014, Bego 2014, Claveria 2014, Escobar-Lemmon and Taylor-Robinson 2005, Krook and O’Brien 2012), the percentage of cabinet portfolios occupied by women is highly correlated with the proportion of legislative seats held by women. When both predictors are included in the model, this multicollinearity makes our coefficient estimates unstable and difficult to interpret. We opt to include the measure of female legislators in the main model, as this data is both more complete and also more uniform (i.e., the data on women in cabinets comes from different sources that each adopt their own coding rules). As we show in Table 1 below, however, our results are robust to this alternative measure of the supply of prospective female defense ministers.

Table 1: Logistic Discrete-Time Duration Model (with Firth’s Correction) of Women’s Appointment as Defense Ministers (with %Female Cabinet Ministers)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.65	1.10	0.02	0.07
Time	0.10	0.04	0.01	1.10
Time ²	-0.01	0.01	0.09	0.99
Fatal Dispute	-1.83	1.32	0.09	0.16
Military Dictatorship	-1.44	0.81	0.05	0.24
Female Executive	-0.26	0.65	0.70	0.77
Left Government	-0.43	0.43	0.35	0.65
Former Military Dictatorship	-0.92	0.51	0.07	0.40
Peacekeeping	-2.09	1.10	0.09	0.12
Military Dictatorship	-0.57	0.23	0.02	0.56
OECD	-0.58	0.52	0.30	0.56
Wom. in Combat	0.58	0.50	0.29	1.78
Fem. Labor Force Part.	0.00	0.01	0.71	1.00
Self-Appointments	8.52	1.98	0.00	5038.49
% Fem. Cabinet	0.05	0.01	0.00	1.05
Left-Led Former Military Dictatorship	1.64	0.73	0.03	5.17
Peacekeeping × log(Military Spending)	0.63	0.25	0.02	1.88

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=2,985 country-years.

2.2 Women in Other High Prestige Cabinet Posts

In addition to the proportion of portfolios held by women, we also consider whether women have been appointed to other high-prestige ministries, specifically the finance and foreign affairs posts. This covariate directly captures the presence of female politicians who are deemed suitably “qualified” for high-prestige positions. It also suggests that politics is sufficiently feminized to allow for the appointment of women to powerful posts. As shown in Table 2, the presence of a female politician in these other prestigious portfolios increases the likelihood that the government selects a female defense minister. The other predictors are largely robust to the inclusion of this alternative measure.

Table 2: Logistic Discrete-Time Duration Model (with Firth’s Correction) of Women’s Appointment as Defense Ministers (with High-Prestige Female Cabinet Ministers)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.44	1.11	0.04	0.09
Time	0.07	0.04	0.10	1.07
Time ²	-0.01	0.01	0.08	0.99
Fatal Dispute	-1.69	1.30	0.13	0.18
Military Dictatorship	-1.31	0.80	0.08	0.27
% Fem. MP	0.04	0.02	0.04	1.04
Female Executive	-0.19	0.64	0.78	0.83
Left Government	-0.42	0.44	0.37	0.66
Former Military Dictatorship	-0.93	0.51	0.07	0.39
Peacekeeping	-2.65	1.11	0.04	0.07
log(Military Spending)	-0.58	0.23	0.02	0.56
OECD Membership	-0.77	0.53	0.17	0.46
Fem. Labor Force Part.	-0.00	0.01	0.96	1.00
Wom. in Combat	0.75	0.51	0.18	2.13
Self-Appointments	8.36	1.97	0.00	4259.10
Other High-Prestige Fem. Min.	0.83	0.36	0.03	2.30
Left-Led Former Military Dictatorship	1.84	0.74	0.02	6.27
Peacekeeping × log(Military Spending)	0.70	0.25	0.01	2.02

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

2.3 Women's Access to Politics More Broadly

Finally, we consider three other factors that may influence the supply of qualified female nominees. Specifically, we account for the number of years since women's 1) suffrage, 2) eligibility to stand for office, and 3) first election to parliament. This data come from *Les Femmes dans les Parlements 1945-1995 Etude statistique mondiale* (Interparlementaire Union 1995). Our results are robust to the inclusion of each of these additional variables.

Table 3: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (with Years Since Female Suffrage)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-1.92	1.15	0.11	0.15
Time	0.10	0.04	0.01	1.10
Time ²	-0.01	0.01	0.06	0.99
Fatal Dispute	-1.74	1.29	0.11	0.18
Military Dictatorship	-1.58	0.81	0.03	0.21
% Fem. MP	0.05	0.02	0.02	1.05
Female Executive	-0.24	0.65	0.72	0.78
Left Government	-0.47	0.44	0.32	0.63
Former Military Dictatorship	-0.84	0.51	0.10	0.43
Peacekeeping	-2.05	1.05	0.09	0.13
log(Military Spending)	-0.56	0.22	0.01	0.57
OECD Membership	-0.48	0.54	0.40	0.62
Fem. Labor Force Part.	-0.00	0.01	0.85	1.00
Wom. in Combat	0.71	0.54	0.23	2.04
Self-Appointments	8.36	2.02	0.00	4289.55
Years Since Suffrage	-0.01	0.01	0.53	0.99
Left-Led Former Military Dictatorship	1.71	0.75	0.03	5.56
Peacekeeping \times log(Military Spending)	0.61	0.23	0.01	1.83

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

Table 4: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (with Years Since Women Eligible to Serve in Political Office)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.24	1.18	0.07	0.11
Time	0.09	0.04	0.03	1.09
Time ²	-0.01	0.01	0.11	0.99
Fatal Dispute	-1.72	1.29	0.12	0.18
Military Dictatorship	-1.41	0.81	0.06	0.24
% Fem. MP	0.05	0.02	0.02	1.05
Female Executive	-0.77	0.82	0.32	0.46
Left Government	-0.45	0.46	0.35	0.64
Former Military Dictatorship	-0.61	0.52	0.26	0.54
Peacekeeping	-1.92	1.19	0.17	0.15
log(Military Spending)	-0.61	0.27	0.03	0.54
OECD Membership	-0.24	0.56	0.70	0.79
Fem. Labor Force Part.	0.00	0.01	0.94	1.00
Wom. in Combat	0.74	0.51	0.19	2.10
Self-Appointments	9.45	2.33	0.00	12700.64
Years Since Eligible	-0.01	0.01	0.31	0.99
Left-Led Former Military Dictatorship	1.65	0.75	0.04	5.21
Peacekeeping × log(Military Spending)	0.67	0.28	0.03	1.95

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=2,794 country-years.

Table 5: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (with Years Since Women First Elected to Political Office)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.04	1.13	0.09	0.13
Time	0.10	0.04	0.02	1.10
Time ²	-0.01	0.01	0.06	0.99
Fatal Dispute	-1.70	1.28	0.12	0.18
Military Dictatorship	-1.57	0.80	0.03	0.21
% Fem. MP	0.05	0.02	0.02	1.05
Female Executive	-0.27	0.65	0.68	0.76
Left Government	-0.44	0.44	0.35	0.64
Former Military Dictatorship	-0.83	0.51	0.11	0.43
Peacekeeping	-2.11	1.06	0.08	0.12
log(Military Spending)	-0.56	0.22	0.01	0.57
OECD Membership	-0.51	0.53	0.37	0.60
Fem. Labor Force Part.	-0.00	0.01	0.89	1.00
Wom. in Combat	0.65	0.53	0.26	1.92
Self-Appointments	8.39	2.03	0.00	4397.63
Years Since Elected	-0.00	0.01	0.65	1.00
Left-Led Former Military Dictatorship	1.67	0.74	0.03	5.32
Peacekeeping \times log(Military Spending)	0.62	0.24	0.01	1.85

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

3 Recovery from Conflict

Drawing on Arriola and Johnson (2014), Bauer (2011), and Hughes (2009) we also consider women's access to the defense portfolio in post-conflict countries. In doing so we used data from the UCDP/PRIO Armed Conflict Dataset (Gleditsch et al. 2002, Themnér and Wallensteen 2014) to create two new variables capturing post-conflict countries. PRIO identifies four different types of conflict. As enumerated on page 9 of their codebook, they include:

1. Extrasystemic armed conflict, which occurs between a state and a non-state group outside its own territory.
2. Interstate armed conflict, which occurs between two or more states.
3. Internal armed conflict, which occurs between the government of a state and one or more internal opposition group(s) without intervention from other states.
4. Internationalized internal armed conflict, which occurs between the government of a state and one or more internal opposition group(s) with intervention from other states.

Based on this classification scheme, our first variable takes a value of 1 if the state is within ten years of the end of any conflict with 25 or more fatalities (as coded by PRIO), and 0 otherwise. The second takes a value of 1 if the state is within ten years of the end of an internal or internationalized internal conflict and 0 otherwise. Drawing on this data, we estimate four new models. The first accounts for post-conflict states, the second captures left-led post-conflict countries, the third controls for states that are recovering from internal conflict, and the fourth accounts for left-led post-internal conflict countries.

We find no relationship between post-conflict recovery and the appointment of the first female defense minister. We also interact this covariate with our measure of left governments, and it remains non-significant (see Tables 6 through 9). Although post-conflict environments have been shown to increase women's access to political posts in developing states generally (and sub-Saharan Africa in particular), they are not always correlated with women's pathways to power in other countries. Even in developing states, where conflict can create critical junctures for women's representation in legislative and executive politics more broadly, these crises are less likely to permit entry to the defense ministry. This is because post-conflict situations do not uniformly result in peace and stability. Where state security remains paramount, our work suggests that women are likely to remain excluded from this office.

Table 6: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (with Post-Conflict Recovery)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.23	1.07	0.05	0.11
Time	0.10	0.04	0.01	1.11
Time ²	-0.01	0.01	0.06	0.99
Fatal Dispute	-1.65	1.30	0.13	0.19
Military Dictatorship	-1.41	0.79	0.05	0.24
% Fem. MP	0.04	0.02	0.03	1.04
Female Executive	-0.33	0.65	0.62	0.72
Left Government	-0.38	0.43	0.41	0.69
Former Military Dictatorship	-0.72	0.51	0.17	0.49
Peacekeeping	-1.83	1.04	0.12	0.16
Military Dictatorship	-0.56	0.22	0.01	0.57
Wom. in Combat	0.46	0.49	0.39	1.58
Fem. Labor Force Part.	0.00	0.01	0.98	1.00
Self-Appointments	8.45	2.00	0.00	4690.61
Recovery	-0.39	0.48	0.44	0.68
Left-Led Former Military Dictatorship	1.63	0.73	0.03	5.09
Peacekeeping \times log(Military Spending)	0.55	0.23	0.03	1.73

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

Table 7: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (with Post-Conflict Recovery \times Left)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.50	1.09	0.03	0.08
Time	0.11	0.04	0.01	1.11
Time ²	-0.01	0.01	0.06	0.99
Fatal Dispute	-1.80	1.31	0.09	0.17
Military Dictatorship	-1.29	0.79	0.08	0.28
% Fem. MP	0.04	0.02	0.05	1.04
Female Executive	-0.43	0.65	0.51	0.65
Former Military Dictatorship	-0.01	0.36	0.99	0.99
Peacekeeping	-1.82	1.04	0.12	0.16
log(Military Spending)	-0.51	0.22	0.02	0.60
Wom. in Combat	0.43	0.50	0.42	1.54
Fem. Labor Force Part.	-0.00	0.01	0.93	1.00
Self-Appointments	8.58	2.07	0.00	5314.40
Left Government	0.09	0.36	0.81	1.09
Peacekeeping \times log(Military Spending)	0.54	0.23	0.03	1.72
Recovery	-0.68	0.64	0.29	0.51
Left-Led Recovery	0.72	0.93	0.48	2.05

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

Table 8: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (with Internal Post-Conflict Recovery)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.22	1.07	0.05	0.11
Time	0.10	0.04	0.01	1.11
Time ²	-0.01	0.01	0.06	0.99
Fatal Dispute	-1.63	1.29	0.14	0.20
Military Dictatorship	-1.42	0.79	0.05	0.24
% Fem. MP	0.04	0.02	0.03	1.04
Female Executive	-0.33	0.65	0.62	0.72
Left Government	-0.38	0.43	0.41	0.69
Former Military Dictatorship	-0.74	0.51	0.16	0.48
Peacekeeping	-1.83	1.03	0.12	0.16
log(Military Spending)	-0.56	0.22	0.01	0.57
Wom. in Combat	0.48	0.49	0.37	1.61
Fem. Labor Force Part.	-0.00	0.01	0.98	1.00
Self-Appointments	8.46	2.01	0.00	4701.85
Internal Recovery	-0.21	0.48	0.69	0.81
Left-Led Former Military Dictatorship	1.65	0.73	0.03	5.19
Peacekeeping \times log(Military Spending)	0.55	0.23	0.02	1.73

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

Table 9: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (with Internal Post-Conflict Recovery \times Left)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.50	1.09	0.03	0.08
Time	0.11	0.04	0.01	1.11
Time ²	-0.01	0.01	0.06	0.99
Fatal Dispute	-1.80	1.31	0.09	0.17
Military Dictatorship	-1.29	0.79	0.08	0.28
% Fem. MP	0.04	0.02	0.05	1.04
Female Executive	-0.43	0.65	0.51	0.65
Former Military Dictatorship	-0.01	0.36	0.99	0.99
Peacekeeping	-1.82	1.04	0.12	0.16
log(Military Spending)	-0.51	0.22	0.02	0.60
Wom. in Combat	0.43	0.50	0.42	1.54
Fem. Labor Force Part.	-0.00	0.01	0.93	1.00
Self-Appointments	8.58	2.07	0.00	5314.40
Left Government	0.09	0.36	0.81	1.09
Peacekeeping \times log(Military Spending)	0.54	0.23	0.03	1.72
Internal Recovery	-0.68	0.64	0.29	0.51
Left-Led Internal Recovery	0.72	0.93	0.48	2.05

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

4 Cabinet Size

We used data from the Banks' Cross-National Time-Series (CNTS) Data Archive (Banks and Wilson 2016) and the Inter-Parliamentary Union to create a variable that accounts for the number of ministers in the cabinet. As we show in Table 10, this variable is not a significant predictor of women's appointment to the defense ministry. Our results also hold when this measure is included in the model. This finding is consistent with the broader literature on women in executive politics. Few studies of women's access to ministerial portfolios control for the size of the cabinet, and those that do find that this is not a significant predictor of women's access to power (Escobar-Lemmon and Taylor-Robinson 2005, Claveria 2014).

Table 10: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (with Cabinet Size)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-1.90	1.09	0.11	0.15
Time	0.10	0.04	0.02	1.10
Time ²	-0.01	0.01	0.05	0.99
Fatal Dispute	-1.62	1.29	0.15	0.20
Military Dictatorship	-1.35	0.80	0.07	0.26
% Fem. MP	0.05	0.02	0.03	1.05
Female Executive	-0.22	0.64	0.74	0.80
Left Government	-0.33	0.44	0.48	0.72
Former Military Dictatorship	-0.80	0.51	0.12	0.45
Peacekeeping	-1.94	1.07	0.11	0.14
log(Military Spending)	-0.49	0.23	0.04	0.61
OECD Membership	-0.71	0.54	0.22	0.49
Fem. Labor Force Part.	0.00	0.01	0.96	1.00
Wom. in Combat	0.57	0.50	0.30	1.78
Self-Appointments	8.70	2.13	0.00	6027.31
Cabinet Size	-0.04	0.02	0.14	0.96
Left-Led Former Military Dictatorship	1.62	0.74	0.04	5.07
Peacekeeping \times log(Military Spending)	0.58	0.24	0.02	1.78

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,002 country-years.

5 Regimes Types

5.1 Democracies, Military Dictatorships, Other Autocratic Regimes

Model 11 examines the difference in women's appointment to the defense ministry among democracies, military dictators, and all other autocratic regimes. The results demonstrate that military dictatorships are significantly less likely than all other regimes to appoint a female defense minister, while democracies are significantly more likely to do so.

To distinguish between different regimes, we rely on Cheibub, Gandhi and Vreeland (2010). Democracies are identified as those countries that hold multiparty elections and experience an alternation in power under the same electoral rules. All other regimes are coded as autocracies. Cheibub, Gandhi and Vreeland distinguish between different types of autocracies based on the characteristics of the elite who keep the ruler in power. Military dictatorships, for example, are those in which "military rulers confine key potential rivals from the armed forces within juntas" (84). Military dictators are thus distinct from other types of dictators who maintain power through family and kin networks (monarchs) or other small groups within the regime (civilians).

Although there are other democracy indicators (Polity IV, Freedom House, etc.), few distinguish between different types of dictatorships (i.e., military versus civilian). The only other source for this information—Geddes, Wright and Frantz (2014)—does not include all countries in our analysis. Cheibub, Gandhi and Vreeland thus provides the only measure for evaluating the differences between military dictators and other autocrats.

Table 11: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (Controlling for Regime-Type)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-3.19	1.19	0.01	0.04
Time	0.09	0.04	0.02	1.10
Time ²	-0.01	0.01	0.05	0.99
Fatal Dispute	-1.76	1.29	0.11	0.17
% Fem. MP	0.05	0.02	0.01	1.05
Female Executive	-0.31	0.64	0.64	0.73
Left Government	-0.23	0.43	0.62	0.79
Former Military Dictatorship	-0.95	0.51	0.06	0.39
Peacekeeping	-2.07	1.07	0.09	0.13
log(Military Spending)	-0.46	0.22	0.05	0.63
OECD Membership	-0.98	0.56	0.10	0.38
Wom. in Combat	0.50	0.50	0.36	1.65
Fem. Labor Force Part.	-0.00	0.01	0.97	1.00
Self-Appointments	7.89	1.93	0.00	2658.31
Military Dictatorship	-1.15	0.83	0.16	0.32
Democracy	0.88	0.44	0.06	2.40
Left-Led Former Military Dictatorship	1.60	0.73	0.04	4.96
Peacekeeping × log(Military Spending)	0.55	0.24	0.03	1.74

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). For regime-type, the baseline is other authoritarian regimes. Number of Observations=3,012 country-years.

5.2 Former Civilian Dictatorships

We demonstrate that women are more likely to be appointed in left-led former military dictatorships. Here, we assess whether this result is unique to military dictatorships, or if women are also more likely to assume the post under a left-led former civilian dictatorship. We code former civilian dictatorships using data from Cheibub, Gandhi and Vreeland (2010), which begins in 1946. We thus capture countries that transitioned from civilian dictatorships to other regime-types in the post-WWII era.

We do not find that former civilian dictatorships are more likely than other regimes to appoint female defense ministers. Perhaps this is unsurprising, as many civilian dictators were ousted by a coups d'état and thus transitioned to military dictatorships.

Table 12: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (Controlling for Former Civilian Dictatorships)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.24	1.07	0.05	0.11
Time	0.09	0.04	0.02	1.10
Time ²	-0.01	0.01	0.06	0.99
Fatal Dispute	-1.74	1.30	0.11	0.18
Military Dictatorship	-1.61	0.85	0.04	0.20
% Fem. MP	0.05	0.02	0.02	1.05
Female Executive	-0.26	0.65	0.69	0.77
Left Government	-0.41	0.44	0.37	0.66
Former Military Dictatorship	-0.85	0.54	0.12	0.43
Peacekeeping	-2.13	1.07	0.08	0.12
log(Military Spending)	-0.56	0.22	0.01	0.57
OECD Membership	-0.59	0.53	0.30	0.56
Wom. in Combat	0.59	0.51	0.29	1.80
Fem. Labor Force Part.	-0.00	0.01	0.85	1.00
Self-Appointments	8.23	2.00	0.00	3745.72
Former Civilian Dictatorships	0.12	0.40	0.78	1.13
Left-Led Former Military Dictatorship	1.67	0.74	0.03	5.30
Peacekeeping × log(Military Spending)	0.62	0.24	0.01	1.86

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

5.3 Democracies and GDP (PPP)

There are two key attributes of advanced industrialized democracies that may influence these states' attitudes towards women's representation in the defense ministry: advancement in human development and democracy. We fit two alternative models to account for these factors. The first captures status as a democracy (Cheibub, Gandhi and Vreeland 2010) and OECD membership (see Table 11). The second, included below, uses logged GDP (PPP) in place of OECD membership (Table 13).

Table 13: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (with GDP (PPP))

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-3.00	1.22	0.02	0.05
Time	0.10	0.04	0.01	1.11
Time ²	-0.01	0.01	0.10	0.99
Fatal Dispute	-1.54	1.26	0.17	0.22
Military Dictatorship	-1.14	0.83	0.16	0.32
% Fem. MP	0.03	0.02	0.10	1.03
Female Executive	-0.40	0.65	0.53	0.67
Left Government	-0.20	0.43	0.66	0.82
Former Military Dictatorship	-0.82	0.51	0.11	0.44
Peacekeeping	-1.83	1.12	0.14	0.16
log(Military Spending)	-0.47	0.23	0.05	0.63
Fem. Labor Force Part.	0.00	0.01	0.82	1.00
Wom. in Combat	0.39	0.50	0.47	1.48
Self-Appointments	8.07	1.96	0.00	3183.97
Democracy	0.57	0.43	0.21	1.77
log(GDP-PPP)	-0.49	0.22	0.06	0.61
Left-Led Former Military Dictatorship	1.44	0.73	0.06	4.20
Peacekeeping × log(Military Spending)	0.49	0.25	0.07	1.63

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). For regime-type, the baseline is other authoritarian regimes. Number of Observations=2,814 country-years.

5.4 Presidential versus Parliamentary Systems

Model 14 draws on the Cheibub, Gandhi and Vreeland (2010) data to examine the effects of presidential and parliamentary systems on the appointment of female defense ministers. Cheibub, Gandhi and Vreeland rely on the relationship between the executive and the legislature to distinguish between different types of democracies. Presidential systems are those in which the elected assembly cannot remove the executive. In parliamentary democracies, the elected assembly has the authority to remove the executive. They also denote mixed, or semi-presidential, systems. This model demonstrate that presidential democracies are no more likely than parliamentary systems to first appoint female defense ministers.

Table 14: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (Controlling for Presidential versus Parliamentary Systems)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.60	1.25	0.06	0.07
Time	0.09	0.04	0.02	1.10
Time ²	-0.01	0.01	0.06	0.99
Fatal Dispute	-1.86	1.29	0.10	0.16
% Fem. MP	0.05	0.02	0.02	1.05
Female Executive	-0.29	0.64	0.66	0.75
Left Government	-0.24	0.43	0.60	0.79
Former Military Dictatorship	-0.85	0.56	0.15	0.43
Peacekeeping	-1.91	1.06	0.12	0.15
log(Military Spending)	-0.43	0.22	0.08	0.65
OECD Membership	-1.16	0.60	0.07	0.31
Fem. Labor Force Part.	0.00	0.01	0.98	1.00
Wom. in Combat	0.47	0.51	0.40	1.59
Self-Appointments	7.80	1.93	0.00	2452.20
Parliamentary Democracy	0.34	0.57	0.59	1.40
Mixed Democracy	0.04	0.55	0.95	1.04
Military Dictatorship	-1.80	0.89	0.04	0.17
Other Authoritarian Regimes	-0.85	0.55	0.15	0.43
Left-Led Former Military Dictatorship	1.58	0.73	0.04	4.86
Peacekeeping × log(Military Spending)	0.52	0.24	0.04	1.69

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). For regime-type, the baseline is presidential systems. Number of Observations=3,012 country-years.

5.5 Excluding Botswana

Cheibub, Gandhi and Vreeland (2010) conceptualize democracies as countries that have held multiparty elections and have experienced an alternation in power under the same set of electoral rules. They further distinguish between different types of dictators according to the inner sanctum that keeps them in power.

As Botswana is a dominant party system—and thus has not undergone an alternation in power—and elected a former military commander in 2008, it is currently a military dictatorship according to the Cheibub, Gandhi and Vreeland (2010) coding scheme. This coding decision may be the result of a type I error, as Botswana will be coded as a democracy if there is (at some point in the future) an alternation in power under the current electoral rules. Including Botswana in our analysis biases our results towards the null. Thus, it is not surprising that our findings are robust to: 1) the omission of this case from our analysis, and 2) coding Botswana as a democracy (a potential type II error).

Table 15: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (Excluding Botswana)

	Estimate	Std. Error	p-value	e^{β_p}
Intercept	-2.11	1.08	0.07	0.12
Time	0.09	0.04	0.03	1.09
Time ²	-0.01	0.01	0.05	0.99
Fatal Dispute	-1.68	1.30	0.13	0.19
Military Dictatorship	-2.63	1.32	0.01	0.07
% Fem. MP	0.06	0.02	0.01	1.06
Female Executive	-0.26	0.65	0.70	0.77
Left Government	-0.43	0.44	0.36	0.65
Former Military Dictatorship	-0.80	0.51	0.12	0.45
Peacekeeping	-2.15	1.08	0.08	0.12
log(Military Spending)	-0.57	0.22	0.01	0.56
OECD Membership	-0.63	0.53	0.27	0.53
Fem. Labor Force Part.	-0.00	0.01	0.75	1.00
Wom. in Combat	0.57	0.51	0.30	1.77
Self-Appointments	8.30	1.99	0.00	4040.07
Left-Led Former Military Dictatorship	1.67	0.75	0.03	5.33
Peacekeeping \times log(Military Spending)	0.62	0.24	0.02	1.85

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations= 2,993 country-years.

Table 16: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (Coding Botswana as a Democracy)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.22	1.08	0.05	0.11
Time	0.09	0.04	0.02	1.10
Time ²	-0.01	0.01	0.06	0.99
Fatal Dispute	-1.72	1.30	0.12	0.18
Military Dictatorship	-2.70	1.32	0.00	0.07
% Fem. MP	0.05	0.02	0.01	1.05
Female Executive	-0.30	0.65	0.65	0.74
Left Government	-0.45	0.44	0.33	0.64
Former Military Dictatorship	-0.86	0.51	0.09	0.42
Peacekeeping	-2.12	1.08	0.08	0.12
log(Military Spending)	-0.58	0.22	0.01	0.56
OECD Membership	-0.62	0.53	0.27	0.54
Fem. Labor Force Part.	-0.00	0.01	0.93	1.00
Wom. in Combat	0.56	0.51	0.31	1.75
Self-Appointments	8.37	2.02	0.00	4318.08
Left-Led Former Military Dictatorship	1.69	0.74	0.03	5.43
Peacekeeping \times log(Military Spending)	0.62	0.24	0.01	1.86

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

6 Government Type

In this section we consider different institutional features that influence the chief executive's flexibility in making cabinet appointments. If the chief executive has greater flexibility on this front, then s/he may be more likely to select a female defense minister.

6.1 Unified vs. Coalition Governments

Chief executives presiding over unified governments may have more flexibility when naming their cabinet ministers. To account for coalition versus unified governments, we use the Herfindahl Government Index (HERFGOV) from the DPI (Beck et al. 2001). We create a binary measure that distinguishes between unified governments (those with a score of 1) and all other governments. As we show below, this measure is not correlated with the initial selection of a female defense minister.

Table 17: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (Controlling for Unified Governments)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-0.96	1.18	0.46	0.38
Time	0.10	0.04	0.02	1.10
Time ²	-0.01	0.01	0.05	0.99
Fatal Dispute	-1.57	1.29	0.16	0.21
Military Dictatorship	-1.63	0.83	0.03	0.20
% Fem. MP	0.06	0.02	0.00	1.06
Female Executive	-0.36	0.65	0.58	0.70
Left Government	-0.41	0.46	0.40	0.67
Former Military Dictatorship	-0.91	0.54	0.10	0.40
Peacekeeping	-3.80	1.22	0.01	0.02
log(Military Spending)	-0.94	0.28	0.00	0.39
OECD Membership	-0.72	0.54	0.21	0.48
Fem. Labor Force Part.	0.00	0.01	0.82	1.00
Wom. in Combat	0.38	0.53	0.50	1.46
Self-Appointments	9.61	2.33	0.00	14957.77
Unified Gov.	-0.48	0.37	0.23	0.62
Left-Led Former Military Dictatorship	1.86	0.77	0.02	6.42
Peacekeeping × log(Military Spending)	1.01	0.30	0.00	2.75

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). For government-type, the baseline is coalition governments. Number of Observations=2,921 country-years.

6.2 Competitiveness

We further account for political flexibility by considering whether the executive governs during a competitive electoral climate. To do so, we include the Herfindahl Government Index in our model as a continuous measure of the competitiveness of cabinet posts. The index ranges from 0 to 1 and captures the sum of the squared seat shares of all parties in government. It increases both as the number of parties in the government decreases and as the disparity in size between these parties grows. It thus measures competition for power, with low values suggesting the presence of more smaller parties vying for cabinet posts and larger values representing the concentration of power. As we show in Table 18, this measure is not correlated with the initial selection of a female defense minister.

Table 18: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (Controlling for Political Party Competitiveness)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-1.20	1.14	0.34	0.30
Time	0.10	0.04	0.02	1.10
Time ²	-0.01	0.01	0.05	0.99
Fatal Dispute	-1.62	1.29	0.14	0.20
Military Dictatorship	-1.71	0.82	0.02	0.18
% Fem. MP	0.06	0.02	0.01	1.06
Female Executive	-0.32	0.65	0.63	0.73
Left Government	-0.48	0.46	0.32	0.62
Former Military Dictatorship	-0.89	0.53	0.10	0.41
Peacekeeping	-3.62	1.19	0.01	0.03
log(Military Spending)	-0.90	0.27	0.00	0.41
OECD Membership	-0.66	0.54	0.25	0.52
Fem. Labor Force Part.	0.00	0.01	0.92	1.00
Wom. in Combat	0.54	0.52	0.34	1.71
Self-Appointments	9.20	2.24	0.00	9881.60
Competitiveness	-0.00	0.00	0.83	1.00
Left-Led Former Military Dictatorship	1.79	0.76	0.02	5.98
Peacekeeping × log(Military Spending)	0.97	0.29	0.00	2.64

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=2,921 country-years.

7 Importance of the Defense Ministry

Our theory posits that women are more likely to remain excluded from the defense ministry where its remit reinforces conventional expectations about the masculinity and prominence of the post. Indeed, we find that women are less likely to be appointed in countries that are engaged in fatal disputes, as well as states that are governed by military dictators and those that invest heavily in military operations while forgoing peacekeeping. In this section we consider three alternative measures capturing the importance of the defense ministry. In each instance we use these measures as alternatives to our main predictors, as these factors are highly collinear.

7.1 CINC

As an alternative measure of the relative power and importance of the defense ministry, we first consider military capabilities. We use the Composite Index of National Capability (CINC) from the Correlates of War Project. The CINC measure combines six variables: total population, urban population, iron and steel production, energy consumption, military personnel, and military expenditures (Singer, Bremer and Stuckey 1972). This measure ranges from $2.640e - 06$ to $1.986e - 01$, with larger values indicating greater military capabilities. Including the logged CINC measure in the analysis as an alternative measure of military importance yields negative and statistically significant results in Table 19. As our theory suggests the likelihood of first selecting a female defense minister is lower in countries with greater military capabilities. While we are reassured by these findings, we opt not to include this result in our main analysis because the COW data does not cover all of the countries in our dataset.

Table 19: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (with CINC)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-7.42	1.08	0.00	0.00
Time	0.08	0.04	0.04	1.09
Time ²	-0.01	0.01	0.05	0.99
% Fem. MP	0.05	0.02	0.02	1.05
Female Executive	-0.10	0.67	0.88	0.90
Left Government	-0.25	0.44	0.59	0.78
Former Military Dictatorship	-0.36	0.52	0.50	0.70
Peacekeeping	1.08	0.44	0.01	2.95
OECD Membership	0.15	0.47	0.77	1.16
Fem. Labor Force Part.	-0.00	0.01	0.70	1.00
Wom. in Combat	0.78	0.51	0.16	2.18
Self-Appointments	8.25	1.96	0.00	3838.48
log(CINC)	-0.30	0.10	0.01	0.74
Left-Led Former Military Dictatorship	1.59	0.73	0.03	4.91

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

7.2 Conscription vs. Recruitment

As a second alternative, we created a new variable capturing mandatory military service. There is no single source that addresses conscription. Data from before 2005 were taken from the Military Recruitment Dataset (Toronto 2005). Data from 2005 onwards were gathered from a variety of sources including the Central Intelligence Agency’s World Factbook 2010: Military service age and obligation. Based on this information we created a binary measure that takes a value of 1 for country-years in which the state relies solely on a voluntary army and 0 for those using conscription. In the following model, we include it as an alternative measure of military importance. We show that as compared to countries relying on conscription, the likelihood of first selecting a female defense minister is higher in countries with wholly voluntary armies. This result only holds, however, when including self-appointments.

Table 20: Logistic Discrete-Time Duration Model (with Firth’s Correction) of Women’s Appointment as Defense Ministers (with Voluntary Military vs. Conscription Indicator Variable)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-5.35	0.63	0.00	0.00
Time	0.06	0.03	0.09	1.06
Time ²	-0.01	0.01	0.05	0.99
% Fem. MP	0.04	0.02	0.04	1.04
Female Executive	1.31	0.41	0.01	3.71
Left Government	-0.09	0.40	0.83	0.91
Former Military Dictatorship	-0.42	0.47	0.38	0.66
Peacekeeping	0.86	0.39	0.03	2.36
OECD Membership	-0.42	0.43	0.34	0.66
Fem. Labor Force Part.	-0.00	0.01	0.91	1.00
Wom. in Combat	0.49	0.50	0.36	1.64
Voluntary Military	0.56	0.31	0.09	1.74
Left-Led Former Military Dictatorship	1.31	0.69	0.06	3.69

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). For military service, the baseline is conscription. Number of Observations=3,012 country-years.

7.3 Military Officers

A third factor that proxies the importance of the defense portfolio is the requirement that a military officer hold the post. This prerequisite further reinforces the masculinity and prestige of the position, as only a small subset of powerful individuals may occupy the ministry. If the portfolio is reserved exclusively for military officers, we thus expect that women are less likely to be selected for this position. To assess this possibility, we consider a measure from the DPI (Beck et al. 2001) that codes whether the defense minister must be a military officer. Of the 41 female defense ministers in our analysis, only one was appointed in a country with this requirement. Indeed, the vast majority of female defense ministers come from civilian backgrounds. Consistent with our theory, Table 21 shows that women are indeed less likely to be appointed in these cases.

Table 21: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (with Military Officer as Defense Minister Indicator Variable)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-4.97	0.69	0.00	0.01
Time	0.08	0.04	0.08	1.08
Time ²	-0.01	0.01	0.04	0.99
% Fem. MP	0.06	0.02	0.00	1.07
Female Executive	-0.12	0.66	0.86	0.89
Left Government	-0.53	0.47	0.28	0.59
Former Military Dictatorship	-0.46	0.51	0.37	0.63
Peacekeeping	0.29	0.46	0.54	1.34
OECD Membership	-0.54	0.48	0.28	0.58
Wom. in Combat	0.57	0.50	0.29	1.77
Fem. Labor Force Part.	0.00	0.01	0.72	1.00
Self-Appointments	7.52	1.79	0.00	1840.84
Military Defense Min.	-1.86	0.67	0.00	0.16
Left-Led Former Military Dictatorship	1.79	0.75	0.02	5.98

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=2,831 country-years.

8 Quota Policies

Increases in women’s representation that were imposed by a gender quota may have a different effect on the selection of female defense ministers than those that came about more “naturally.” To account for this possibility, we gathered data on quota policies from Krook (2009) and the Quota Project (International IDEA & Stockholm University 2009). We then estimated an additional model that includes an interaction effect between the presence of a gender quota and the percentage of seats held by women in parliament in order to determine whether these alternative “pathways to power” had different effects on women’s appointments. As we show below, our results suggest that quota policies do not influence this relationship.

Table 22: Logistic Discrete-Time Duration Model (with Firth’s Correction) of Women’s Appointment as Defense Ministers (Controlling for Quota Policies)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.17	1.07	0.06	0.11
Time	0.09	0.04	0.03	1.09
Time ²	-0.01	0.01	0.05	0.99
Fatal Dispute	-1.71	1.28	0.12	0.18
Military Dictatorship	-1.46	0.79	0.04	0.23
% Fem. MP	0.05	0.02	0.03	1.05
Quota	0.88	0.82	0.34	2.42
Female Executive	-0.28	0.65	0.67	0.76
Left Government	-0.42	0.44	0.38	0.66
Former Military Dictatorship	-0.94	0.52	0.08	0.39
Peacekeeping	-2.16	1.07	0.08	0.12
Military Dictatorship	-0.59	0.22	0.01	0.55
OECD	-0.49	0.53	0.40	0.61
Fem. Labor Force Part.	-0.00	0.01	0.86	1.00
Wom. in Combat	0.60	0.52	0.30	1.82
Self-Appointments	8.44	2.01	0.00	4631.84
% Fem. MP × Quota	-0.02	0.04	0.61	0.98
Left-Led Former Military Dictatorship	1.68	0.75	0.03	5.35
Peacekeeping × log(Military Spending)	0.63	0.24	0.01	1.88

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

9 Interstate Relations

International ties may be important for the maintenance and/or diffusion of gender norms. Transnational relationships may reinforce the traditional nature of the defense ministry when countries have ties with conflictual and powerful militaries. Likewise, they may transform the meaning of the portfolio when countries cooperate with peacebuilders. In this section we consider whether interstate relations influence the appointment of a female defense minister.

9.1 European Union Membership

To investigate whether international ties between countries influence the appointment of a female defense minister we consider three different measures. To begin with, we examine whether European Union membership is correlated with the selection of the first female defense minister. In Table 23 we show that this is not the case and that our results are robust to the inclusion of this variable.

Table 23: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (Controlling for EU Membership)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.24	1.07	0.05	0.11
Time	0.09	0.04	0.02	1.10
Time ²	-0.01	0.01	0.06	0.99
Fatal Dispute	-1.74	1.30	0.11	0.18
Military Dictatorship	-1.52	0.80	0.03	0.22
% Fem. MP	0.05	0.02	0.02	1.05
Female Executive	-0.25	0.65	0.71	0.78
Left Government	-0.41	0.44	0.37	0.66
Former Military Dictatorship	-0.81	0.51	0.12	0.45
Peacekeeping	-2.08	1.07	0.09	0.12
log(Military Spending)	-0.57	0.22	0.01	0.57
OECD Membership	-0.61	0.61	0.35	0.55
Fem. Labor Force Part.	-0.00	0.01	0.88	1.00
Wom. in Combat	0.59	0.51	0.29	1.80
Self-Appointments	8.33	2.02	0.00	4142.52
EU	0.10	0.55	0.87	1.11
Left-Led Former Military Dictatorship	1.66	0.74	0.03	5.23
Peacekeeping \times log(Military Spending)	0.62	0.24	0.01	1.85

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

9.2 Contiguity

To account for spatial contagion, we use country-dyad level data from EUGene (Bennett and Stam 2000) that denotes whether each country pair is contiguous. For every country in our data, we create a variable measuring the number of contiguous states that have ever appointed a female defense minister prior to the year under consideration. This data ranges from 0 (for countries that do not border any states with a female defense minister) to 4. By 2011, for example, four of Brazil's neighboring states had appointed a woman to the post: Argentina, Bolivia, Colombia, and Uruguay. In Table 24 we show that this measure of spatial contagion is not associated with our outcome variable and that our results are robust to the inclusion of this measure.

These null results are perhaps unsurprising. On one hand, we expect the diffusion of norms concerning women's political representation across bordering states. Countries with more adjacent states have greater opportunities to be exposed to a neighboring female defense minister. On the other hand, states with more neighbors may have greater national security concerns, reinforcing traditional conceptions of the post.

Table 24: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (Controlling for Contiguous Appointments)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.15	1.07	0.06	0.12
Time	0.09	0.04	0.04	1.09
Time ²	-0.01	0.01	0.05	0.99
Fatal Dispute	-1.72	1.28	0.12	0.18
Military Dictatorship	-1.48	0.80	0.04	0.23
% Fem. MP	0.05	0.02	0.02	1.05
Female Executive	-0.34	0.66	0.61	0.71
Left Government	-0.42	0.44	0.36	0.66
Former Military Dictatorship	-0.80	0.51	0.12	0.45
Peacekeeping	-2.07	1.07	0.09	0.13
log(Military Spending)	-0.57	0.22	0.01	0.56
Fem. Labor Force Part.	-0.00	0.01	0.84	1.00
Wom. in Combat	0.66	0.51	0.24	1.93
OECD Membership	-0.53	0.53	0.35	0.59
Self-Appointments	8.39	2.01	0.00	4418.97
Appointment by Neighbor	0.23	0.23	0.38	1.25
Left-Led Former Military Dictatorship	1.60	0.74	0.04	4.96
Peacekeeping × log(Military Spending)	0.61	0.24	0.02	1.83

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

9.3 Allies

To better assess these diffusion effects, we consider a third measure of the linkages across defense ministries: alliances. Using data from Gibler (2008) we create a variable that is coded 1 for each year in which a country has an alliance partner who has ever appointed a female defense minister. The results presented in Table 25 suggest that having an alliance partner with a female defense minister significantly increases the likelihood of first appointing a woman to this post.

There are two alternative explanations for this finding. First, it may be that this positive correlation is consistent with our broader theoretical expectations about the feminization of politics and changing nature of the portfolio. Exposure to an alliance partner with a female defense minister may normalize women's appointment to the post. Second, states that are likely to appoint female defense ministers (because of their commitment to promulgating peace) are likely to ally themselves with states that have similar values. Likewise, these same states are less likely to ally with dictators seeking to maintain their grip on power and states involved in fatal disputes.

Table 25: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (Controlling for Allies' Appointments)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.72	1.11	0.02	0.07
Time	0.08	0.04	0.04	1.09
Time ²	-0.01	0.01	0.07	0.99
Fatal Dispute	-1.60	1.29	0.16	0.20
Military Dictatorship	-1.58	0.81	0.03	0.21
% Fem. MP	0.05	0.02	0.02	1.05
Female Executive	-0.19	0.65	0.78	0.83
Left Government	-0.34	0.43	0.46	0.71
Former Military Dictatorship	-1.10	0.53	0.04	0.33
Peacekeeping	-1.86	1.06	0.12	0.16
log(Military Spending)	-0.51	0.22	0.03	0.60
Fem. Labor Force Part.	0.00	0.01	1.00	1.00
Wom. in Combat	0.51	0.53	0.38	1.66
OECD Membership	-0.84	0.56	0.15	0.43
Self-Appointments	8.30	2.00	0.00	4021.88
Appointment by Ally	0.73	0.36	0.06	2.08
Left-Led Former Military Dictatorship	1.67	0.74	0.03	5.31
Peacekeeping × log(Military Spending)	0.56	0.24	0.03	1.74

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

10 Conflict Measure

We argue that women are excluded from the defense ministry in states that are involved in international armed conflicts. We test this hypothesis with a covariate capturing whether a country was involved in a fatal dispute in the preceding year. The casualty threshold for classifying wars is subject to debate.

The COW project requires a minimum of 1,000 battle-deaths (Singer and Small 1972, Small and Singer 1982), while the UCDP/PRIO Armed Conflict Dataset (Gleditsch et al. 2002, Themnér and Wallensteen 2014) uses a significantly lower threshold (25 battle-deaths). Our theory does not require interstate disputes to escalate to the level of war in order to perpetuate the exclusion of women from the defense ministry. To the contrary, even low levels of fatalities are likely sufficient to reinforce the perceptions of the defense portfolio as a high-profile and masculinized post. Indeed, no government has ever first appointed a female defense minister in the year following an interstate conflict with at least one fatality. Clearly, this relationship holds even when setting higher casualty thresholds. We thus opt for an inclusive measure: an interstate conflict that results in at least one death.

Though our theory focuses on the role of the defense minister during periods of interstate conflict, we fit an alternative model with a measure that includes both inter and intrastate conflict. Our results are robust to this alternative specification.

Table 26: Binomial Logistic Regression Model of Women's Appointment as Defense Ministers (Any Conflict)

	Estimate	Std. Error	z value	Pr(> z)
Intercept	-2.2151	1.2245	-1.81	0.0705
Time	0.1034	0.0468	2.21	0.0270
Time ²	-0.0138	0.0071	-1.95	0.0514
Military Dictatorship	-1.9299	1.0536	-1.83	0.0670
% Fem. MP	0.0500	0.0206	2.42	0.0154
Female Executive	-0.4538	0.7608	-0.60	0.5509
Left Government	-0.4442	0.4859	-0.91	0.3606
Former Military Dictatorship	-0.8240	0.5762	-1.43	0.1527
Peacekeeping	-2.2305	1.2044	-1.85	0.0640
log(Military Spending)	-0.6325	0.2701	-2.34	0.0192
OECD Membership	-0.6591	0.5766	-1.14	0.2530
Fem. Labor Force Part.	-0.0015	0.0141	-0.10	0.9168
Wom. in Combat	0.5575	0.5506	1.01	0.3112
Self-Appointments	24.1664	815.1309	0.03	0.9763
Any Conflict	-1.7311	1.0416	-1.66	0.0965
Left-Led Former Military Dictatorship	1.7171	0.8227	2.09	0.0369
Peacekeeping × log(Military Spending)	0.6902	0.2875	2.40	0.0163

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=3,012 country-years.

11 Excluding Self-Appointments

In six different cases—14.6% of our data—women presided over the defense portfolio while also serving as chief executives. The table “Countries Appointing Female Defense Ministers” in the first section of this document identifies these appointments.

In states with female self-appointees, this behavior is not unique to female chief executives. Rather, both men and women who serve as head of government in these states also frequently hold the defense portfolio. Consider, for example, Jamaica, where the defense ministry falls under the prime minister’s purview. Likewise, in Sri Lanka the president typically appoints himself or herself to this post. In Bangladesh the defense ministry is always held by another member of the cabinet, generally the prime minister. Though less common in the Philippines, before Gloria Macapagal-Arroyo’s self-appointment, Ferdinand E. Marcos simultaneously served as president and defense minister.

In the manuscript we present two models. Model 1 does not account for self-appointments, while Model 2 includes an indicator variable capturing these cases. The results from the first model largely hold in Model 2, with the exception of the positive and significant effect for female chief executives.

Here, we replicate our results excluding the six countries with self-appointments from the analysis. As with the model specification that includes a dummy variable to denote self-appointments, the findings reported here show that the covariate capturing female chief executives is not significant. This finding further reinforces the notion that self-appointments represent an important mechanism by which women can access the defense ministry. The other results are largely robust to the exclusion of these six countries.

Table 27: Logistic Discrete-Time Duration Model (with Firth's Correction) of Women's Appointment as Defense Ministers (Excluding States with Self-Appointments)

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-2.22	1.07	0.05	0.11
Time	0.09	0.04	0.02	1.10
Time ²	-0.01	0.01	0.05	0.99
Fatal Dispute	-1.75	1.30	0.11	0.17
Military Dictatorship	-1.54	0.80	0.03	0.21
% Fem. MP	0.05	0.02	0.02	1.05
Female Executive	-0.25	0.65	0.70	0.78
Left Government	-0.38	0.44	0.41	0.68
Former Military Dictatorship	-0.81	0.51	0.11	0.44
Peacekeeping	-2.07	1.07	0.09	0.13
log(Military Spending)	-0.57	0.23	0.01	0.56
OECD Membership	-0.54	0.53	0.34	0.58
Fem. Labor Force Part.	-0.00	0.01	0.90	1.00
Wom. in Combat	0.57	0.51	0.30	1.77
Left-Led Former Military Dictatorship	1.62	0.74	0.04	5.04
Peacekeeping \times log(Military Spending)	0.62	0.24	0.01	1.86

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female defense minister. The time covariates capture the number of years since 1992 (or state founding date if later). Number of Observations=2,948 country-years.

12 Model Fit

Both duration models presented in this paper were estimated using five different formulations of the baseline hazard. Using ANOVA to assess goodness of fit (for both Model 1 and Model 2) suggests that including the linear and quadratic terms for time provides the best fit without sacrificing parsimony.

Aside from the baseline hazard, the inclusion/exclusion of covariates in the model was driven principally by theoretical considerations. When alternative measures of the same concept were available, we prioritized data reliability, uniformity, and coverage. At the same time, we did use stepwise elimination procedures to assess goodness of fit. We started with all candidate variables and tested the deletion of each measure using AIC and penalized likelihood ratio tests. These methods delete the variable that improves the model when eliminated and repeats this process until no further improvement can be made. These tests support the inclusion of our main predictors but suggest the deletion of our supply-side controls (i.e., women's labor force participation, women in combat, and OECD member states). We opted to retain these variables in all models because they reflect important theoretical considerations for scholars of political representation.

13 Predicting Women’s Appointment to Other High-Prestige Posts

We posit that the appointment of a female defense minister may shatter the glass ceiling and grant other women access to power. We note that of the 41 countries that appointed a female defense minister in our sample, over one-quarter have subsequently included another woman in the post. To further explore this glass ceiling effect, we conduct additional analyses to evaluate whether the appointment of a female defense minister increases the likelihood of women’s inclusion in other prestigious portfolios, including foreign affairs and finance. Table 28 shows that even when controlling for other factors—including the proportion of seats held by women, the presence of a female chief executive, and left-leaning government ideology—there is a positive and statistically significant relationship between women’s appointment to the defense portfolio and their access to other high-prestige posts. Together, these findings suggest that women’s inclusion in this defense ministry fundamentally alters traditional gendered patterns of governance.

Table 28: Logistic Discrete-Time Duration Model (with Firth’s Correction) of Women’s Appointment to Other High-Prestige Posts

	Estimate	Std. Error	p-value	exp(estimate)
Intercept	-3.82	0.20	0.00	0.02
Time	0.02	0.02	0.36	1.02
Fem. Def. Min. Appoint	1.60	0.57	0.01	4.94
% Fem. MP	0.04	0.01	0.00	1.04
Female Executive	0.18	0.41	0.66	1.20
Left Government	-0.07	0.24	0.77	0.93
OECD Membership	0.29	0.29	0.34	1.33

Notes: The unit of analysis is the country. The outcome variable is the initial selection of a female finance or foreign affairs minister. The time covariate captures the number of years since 1992 (or state founding date if later). Number of Observations=2,410 country-years.

14 Predicting Women in Combat

To explore the implications of our findings, we model female defense ministers' effects on women in the military. In particular, we fit a logistic regression model that considers whether women's presence in the post is correlated with states' willingness to allow women to hold frontline combat positions. We find a positive and significant relationship even when controlling for women's labor force participation, women's presence in politics, and the covariates predicting the initial appointment of a female defense minister.

The following states allow women in frontline combat posts (initial date noted in parenthesis): Netherlands (1944), North Korea (1950), Norway (1980), France (1983), South Korea (1987), Denmark (1988), Poland (1988), Canada (1989), Eritrea (1995), Finland (1995), Germany (2000), Israel (2000), Lithuania (2001), New Zealand (2001), Romania (2001), Australia (2011), and Estonia (2013).

Table 29: Binomial Logistic Regression Model Predicting Women's Access to Frontline Combat Posts

	Estimate	Std. Error	z value	Pr(> z)
Intercept	-11.8630	0.8851	-13.40	0.0000
Fem. Defense Min.	0.7612	0.2259	3.37	0.0008
Fatal Dispute	0.5365	0.2493	2.15	0.0314
Military Dictatorship	-2.6725	0.7477	-3.57	0.0004
% Fem. MP	0.0525	0.0083	6.32	0.0000
Female Executive	0.6880	0.2413	2.85	0.0044
Left Government	-0.2916	0.1938	-1.50	0.1324
Former Military Dictatorship	-0.0220	0.2364	-0.09	0.9258
Peacekeeping	1.3564	0.7290	1.86	0.0628
log(Military Spending)	0.6775	0.0916	7.39	0.0000
OECD Membership	1.8243	0.2498	7.30	0.0000
Fem. Labor Force Part.	0.0676	0.0081	8.39	0.0000
Left-Led Former Military Dictatorship	0.1948	0.3606	0.54	0.5891
Peacekeeping \times log(Military Spending)	-0.3383	0.0992	-3.41	0.0006

Notes: The unit of analysis is the country-year. The outcome variable is women's inclusion in frontline combat positions. Number of Observations=3,304 country-years.

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