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ABSTRACT

Women have historically been excluded from combat roles in state militaries. However, in recent years, women's growing involvement in combat roles has sparked public debate. Currently, only a small minority of countries allow women into their ground combat forces. Given the policy relevance, it is important to examine the conditions under which militaries will allow women into combat roles. Using data from 1970–2016, I empirically examine how a variety of aspects of women's participation in social, political, and economic activities and institutions affects the probability that combat roles will be opened to them. The results provide robust evidence that women's participation in politics, civil society, and economic activities are associated with a higher probability that these exclusionary policies are lifted from combat roles. However, I do not find evidence of an association between expectations pertaining to women's familial roles and the probability of combat positions being opened to them.

Históricamente, se ha excluido a las mujeres de las funciones de combate en los ejércitos estatales. Sin embargo, en los últimos años, la creciente participación de las mujeres en las funciones de combate ha generado un debate póblico. En la actualidad, solo en una pequeña minoría de países se permite que las mujeres formen parte de las fuerzas de combate terrestre. Dada la relevancia política, es importante analizar las condiciones en las que los ejércitos permiten que las mujeres desempeñen funciones de combate. Mediante el empleo de datos de 1970 a 2016, analizo empíricamente la forma en que diversos aspectos de la participación de las mujeres en instituciones y actividades de índole social, político y económico influyen en la probabilidad de que puedan desempeñar funciones de combate. Los resultados proporcionan pruebas contundentes de que la participación de las mujeres en la política, la sociedad civil y las actividades económicas se asocia con una mayor probabilidad de que dichas políticas de exclusión se eliminen de las funciones de combate. Sin embargo, no encuentro pruebas de una asociación entre las expectativas relativas a

KEYWORDS

Women and the military; gender and conflict; international security; civil-military relations; survival analysis

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los roles familiares de las mujeres y la probabilidad de que ocupen posiciones de combate.

Les femmes ont historiquement été exclues des rôles de combat dans les armées d'État. Cependant, ces dernières années, l'implication croissante des femmes dans des rôles de combat a déclenché un débat public. Actuellement, seule une petite minorité de pays autorisent les femmes dans leurs forces de combat au sol. Dans un souci de pertinence politique, il est important d'examiner les conditions dans lesquelles les armées autoriseront les femmes à endosser des rôles de combat. J'ai utilisé des données datant de 1970 à 2016 pour étudier empiriquement la manière dont divers aspects de la participation des femmes aux activités et institutions sociales, politiques et économiques affectent la probabilité que des rôles de combat leur soient rendus accessibles. Mes conclusions fournissent des preuves solides que la participation des femmes aux activités politiques, économiques et de la société civile est associée à une plus grande probabilité que ces politiques d'exclusion affectant les rôles de combat soient abandonnées. Je ne parviens toutefois pas à trouver des preuves d'une association entre les attentes relatives aux rôles familiaux des femmes et la probabilité que des postes de combat leur soient accessibles.

While women have long been allowed to serve in logistical support roles in many militaries, their integration into combat forces is a much more recent phenomenon (Goldstein 2001). Indeed, only approximately twenty countries have taken steps to open combat roles to women since the trend began almost forty years ago (Cooper and Matthews 2016). Progress in this area has been slow as the norm against women's participation in combat is extremely resilient (Percy 2019). In this article, I seek to explain the factors that have led a small number of countries to violate this strong norm.

There is an extensive, primarily qualitative, literature on a variety of determinants of women's participation in state militaries, including how characteristics of the military, and society as a whole, influence the presence and incorporation of female soldiers. Specifically, scholars have examined the effect of women's status (Holm 1992; Obradovic 2014; Percy 2019; Pindyck 2019; Schneider and Schneider 1991; Segal 1995); external threats and resource constraints (Binkin and Bach 1977; Goldman and Stites 1982; Holm 1992; Pindyck 2019; Stanley and Segal 1988; Treadwell 1954); and technological innovations (Kennedy-Pipe 2000; Obradovic 2014; Pindyck 2019; van Creveld 2000) on women's integration into the armed forces.

Within this literature, there has been a particular focus on women's status and their integration into combat roles. This is because combat roles, more than any other occupation in the military, are often assumed to be masculine domains because of prevailing beliefs that women do not have the physical

capabilities or aggression necessary to fulfill these positions, and that women should not be put in such danger (e.g., Segal 1995). Thus, a variety of dimensions of women's status – including integration into existing political, economic, and social structures – are considered essential elements of countries deviating from norms surrounding the exclusion of women from military combat roles (e.g., Carreiras 2006; Obradovic 2014; Segal 1995).

However, there has been a lack of systematic, quantitative analysis of the relationship between women's status and the lifting of restrictions on military combat roles.[1] Carreiras (2006) and Obradovic (2014) have put forth some of the most systematic efforts to test theories cross-nationally that are related to how normative and organizational factors influence the propensity of state militaries to integrate women.[2] However, as detailed later, the results of these studies are mixed. Furthermore, while these works make a valuable contribution by empirically examining the factors that drive militaries to incorporate women, quantitative tests of these arguments could be improved in several ways. First, both Carreiras and Obradovic examine only NATO member states. While the data on the militaries of these countries tend to be more fine-grained, using exclusively NATO member states limits the amount of variation for many key variables, including for levels of gender egalitarianism and militarized conflict. Second, both authors employ only bivariate correlations for their quantitative tests. While these tests are important first steps, they do not allow us to account for potential confounding variables. Third, neither of these studies employ time-series data, preventing an analysis of how changes in key variables within countries influence the probability that countries will integrate women into their armed forces.[3]

This article seeks to make several contributions by filling these gaps. First, to my knowledge, this is the first quantitative analysis of women in frontline military combat roles with data that varies over time and covers all countries, not just NATO member states, and that controls for a variety of potential confounding factors. Second, this paper seeks to systematically test an array of mechanisms related to women's status. This article quantitatively examines commonly proposed mechanisms in depth, testing the effects of family structures, women's economic integration, and women's participation in politics and civil society. Third and relatedly, this article intends to provide more theoretical clarity to existing literature by examining which mechanisms have

[1]There is a growing body of literature that employs quantitative methods to study women's participation in a variety of kinds of political violence. This includes women's participation in non-state armed groups (Dalton and Asal 2011; Henshaw 2016a, 2016b; Thomas and Bond 2015; Thomas and Wood 2018; Wood and Thomas 2017); female peacekeepers (Karim and Beardsley 2013); and internal security sectors of countries (Huber and Karim 2018).

[2]Obradovic's analysis differs from Carreiras' in that it includes the newer NATO member states in Eastern Europe and that it tests several more correlations.

[3]However, Pindyck (2019) is currently developing a comprehensive dataset that focuses on women's integration into state militaries, in a variety of dimensions, cross-nationally and over time.

more support than others. Systematic testing allows for clearer adjudication among these explanations.

The results indicate that exclusionary policies have a greater likelihood of being lifted from military combat roles when women are more integrated into political and economic institutions, allowing them to prove their capabilities and advocate for such changes. Specifically, the results show positive and statistically significant associations between female labor force participation, women's political and civil society participation, and the probability that military combat roles are opened to women. These findings are consistent with a number of case-based examples that suggest grassroots movement led by women were at the center of legal and policy changes that resulted in military combat roles becoming opened to women. These findings differ from Carreiras (2006) who does not find a significant correlation between female labor force participation and women's integration in militaries. The results also depart from Obradovic (2014) who does not find a significant correlation between women's participation in government and their inclusion in militaries.

My analysis, however, provides no evidence of a link between societal expectations about women's familial roles (proxied by fertility rates) and the probability that combat roles are opened. Thus, while such rigid roles might discourage large numbers of women from entering the armed forces (Segal 1995), the absence of such expectations does not appear to be sufficient in explaining the implementation of more inclusive policy changes. This suggests that there are importance differences in the types of obstacles women face when trying to join the armed forces and that women's integration into combat roles has occurred when women are in positions to make such changes.

This issue is significant because the opening of ground combat roles is the beginning of the final stage of fully integrating women into the armed forces (Fitriani, Cooper, and Matthews 2016). While women have long served in a variety of roles in state militaries, their full integration into this institution cannot be achieved unless all positions are made available. From a policy standpoint, these exclusionary policies might prevent militaries from functioning as effectively as possible and they serve as a form of employment discrimination against women. Indeed, there is a lack of evidence to support the notion that women undermine the effectiveness of combat units, and thus, excluding them risks cutting off a pool of well qualified recruits (MacKenzie 2012). From an academic standpoint, it is vital to understand how societal factors – such women's status – affect military policy and behavior.

Societal Gender Roles

Many scholars have argued that understanding gender norms is essential for understanding the structure and functionality of militaries (e.g., Elshtain 1987; Elshtain and Tobias 1990; Enloe 1980, 1988, 1990; McKelvey 2007; Simon

2001; Sjoberg 2007). Traditional gender roles in broader society are commonly cited as contributing to the dearth of countries that allow women to serve in combat roles. Indeed, the division of labor in militaries is largely based on existing, gendered divisions of labor (Abrahamsson 1972; Carreiras 2006). Specifically, family structures and women's integration into economic institutions – two interrelated factors – are posited to affect the degree to which women are incorporated into the armed forces.

However, empirical support for related propositions is mixed. Obradovic (2014) finds a positive and statistically significant correlation between female labor force participation – including participation in technical and professional fields more specifically – and women's integration into the armed forces. Carreiras (2006), however, does not find a significant correlation between female labor force participation and the number of women, or the degree of their integration, into militaries.

The empirical record is also mixed for other dimensions of women's status. Carreiras (2006) finds a significant, positive correlation between women's political and economic control (operationalized using the UNDP's Gender Empowerment Measure) and the degree of women's integration in militaries. However, she does not find a significant correlation between the Gender Empowerment Measure and the relative number of women in the armed forces. Obradovic does not find significant correlations between the percentage of women in legislatures, or in ministerial positions, and the inclusiveness of women in militaries. However, Obradovic does find a positive and significant correlation between the presence of autonomous women's movements and the inclusiveness of women in the armed forces. Thus, it is important to more systematically test a variety of previously proposed causal mechanisms in order to better adjudicate among these explanations.

Family Structure and Obligations

Segal (1995) argues that in many cultures, women's roles are linked to the family and that military service is often socially constructed to be diametrically opposed to family roles. This is because some military jobs can have very demanding and irregular hours that can include periods of extended separation from one's home and family. Segal posits that as a consequence of this, the number of family responsibilities, and the age of starting these responsibilities, will be related to the prevalence of women in the military. This means that in countries in which starting a family occurs later in life, and in which men and women share more of the family responsibilities, we should see an increasing number of women in the military.

Even women who have been integrated into the military face significant obstacles related to expectations about family obligations. Carreiras (2006) notes that survey data indicates that one of the biggest challenges faced by

women in the armed services is balancing work and family life. Carreiras further acknowledges that militaries often fail to adequately address the challenges faced by their female members, including not providing adequate paternal leave. While there are still many barriers to entry for women in militaries with non-exclusionary combat positions, family-based obstacles faced by women in less gender egalitarian societies are more likely to be strong enough to prevent these roles from being opened to women. However, if women have more flexibility in family arrangements, then it becomes more difficult for policy makers to exclude them from the military on the premise that they are needed in the domestic sphere.

Integration in Economic Institutions

Segal (1995) examines how labor force characteristics affect the incorporation of women into state militaries. Specifically, Segal expects that as the proportion of women who are employed goes up, so will their representation in the armed forces because of corresponding shortages in the male labor pool and because "women's greater involvement in the workplace brings structural and cultural changes in the society that make military service more compatible with women's roles, thereby making their exclusion less justifiable" (Segal 1995, 767). In most countries that have opened combat roles, women have been integrated into most other sectors of the economy (Percy 2019).

Indeed, if women are present in practically all other sectors of the economy, then it becomes more difficult for policy makers to exclude women from the military because it would be a clearer form of employment discrimination and because they would be excluding a highly skilled and educated segment of the labor force. Anti-discrimination legislation has been used in court cases and legislative debates that have led to the lifting of restrictions on combat roles (Fitriani, Cooper, and Matthews 2016; Segal 1995).

Stereotypes about Ability to Serve in Combat Roles

Women's integration into the labor force has also been posited to be a vital factor for women proving they are capable of serving in combat roles. The stereotype that women are unfit for fighting has been a major barrier to women entering combat roles. Segal (1995) argues that public perceptions of women's ability to serve in the military are not based on objective fact, but on cultural beliefs. Even as public beliefs about gender have changed over time, many individuals are still opposed to women's participation in the armed forces, particularly in combat roles (Torres-Reyna and Shapiro 2002; Young and Nauta 2013). Individuals affiliated with the military tend to have more unfavorable opinions about women serving in the military than citizens do (Matthews, Ender, Laurence, and Rohall 2009).

Young and Nauta (2013) examine the role that sexism plays in explaining the differences in attitudes between military and nonmilitary affiliated individuals about women's participation in combat roles. They find that multiple forms of sexism drive this relationship, suggesting that differences in support for women's integration into combat roles is centered on the tendency among military affiliated individuals to hold more traditional gender beliefs than other individuals.

Carreiras (2006) argues that there is no other area in which the connection between biology and social behavior is more emphasized or exploited than in debates over women in the military. She notes that commonly perceived differences in physical capabilities and the propensity for aggression are used to justify the notion that only men are fit for combat. There is also a stigma against putting women in danger by allowing them in combat roles (DeGroot 2001). Some observers also believe allowing women in combat positions will undermine unit cohesion and the overall morale of militaries (MacKenzie 2015). Additionally, the socialization process in militaries frequently emphasizes masculine norms as being part of soldiers' identities, whereas negative images of women (e.g., referring to recruits as "girls" during basic training) are used to refer to weaknesses of members (Carreiras 2006; Macdonald 1987). Thus, women are often portrayed as being incapable of serving in combat roles.

However, women's military roles have expanded with the integration of women into other social institutions (Carreiras 2006; Segal 1995). Highly skilled, well educated, women with high social standing have been able to join non-state armed groups, and rise through the ranks, more easily because of greater support and respect from a larger percentage of the population (Thomas and Wood 2018).[4] Thus, as women's skills and presence become more visible and accepted in the workforce, so should their integration in the armed forces.

The cultural acceptance of women's integration in a variety of institutions is crucial for the implementation of more inclusive military policies. In societies where women are less integrated into economic institutions, a larger segment of the public is likely to oppose the integration of women into the armed forces, and thus, policy makers will be less likely to open combat roles to women in order to avoid popular backlash. Similarly, populations that are more accepting of women holding a variety of roles are also likely able to pressure their governments to allow women into military combat roles. Thus, democratic societies (which tend to have higher levels of women's status) are likely more conducive to the implementation of such policies. Indeed, of all the

[4]There are many parallels between women's participation in non-state armed groups and state militaries, however, there are also key differences. While upwards of 40% of rebel groups employ women in combat roles (Wood et al. 2017), only a handful of state militaries do. Part of the discrepancy in these recruitment patterns might be driven by differences in external threats. State failure is relatively rare, especially in recent history. However, most rebel groups face near constant threat of demise, and thus, are likely more willing to expand their recruitment pool.

countries identified by Fitriani, Cooper, and Matthews (2016) that have opened combat roles, only North Korea and Eritrea are non-democracies.

While policy makers, the general public, and individuals affiliated with the military might hold rigid beliefs about the appropriateness of women's involvement in militaries, I still expect that these individuals will adhere less to these norms in more gender egalitarian societies. Bian, Leslie, and Cimpian (2017) find that by the age of 6, girls are less likely to associate members of their own gender with intellectual brilliance than boys are. While socialization in the military is a very gendered process (e.g., Sasson-Levy 2003), and while individuals associated with the military tend to be less accepting of women in combat roles (e.g., Matthews et al. 2009; Young and Nauta 2013), individuals are still socialized to conform to certain gender roles by a young age.

Thus, individuals across different societies are likely to come into the military with different sets of beliefs based on how their families, communities, and societies socialize them from an early age. As a result, both military leaders and civilian policy makers should be more likely to eschew traditional gender norms and open military combat roles to women in more gender egalitarian societies. Indeed, if individuals are socialized from a young age to accept women's presence in a variety of institutions, including the labor force, then they should generally be more accepting of the idea that women are also capable of serving in combat roles.

Political and Social Influence

Women's influence on policy making, both through participation in elected office and civil society organizations, has been vital in lifting exclusionary policies on combat roles. I address these forms of participation below.

Political Participation

Buznytska (2019) examines how women's political empowerment affects the decision by countries to contribute female soldiers to United Nations (UN) peacekeeping operations. She develops a theory connecting women's participation in politics to the prevalence of the provision of female peacekeepers. I borrow her arguments to explain how women's political participation might increase the probability that countries open combat roles to women.

As noted by Buznytska, Dovi (2007) argues that women must be represented in the legislature in order for women's interests to be represented. Doyi posits that in addition to women's issues receiving more attention in theses contexts, this representation increases women's confidence in government as well as in other areas of the labor market. Buznytska cites research that shows a politician's gender is particularly relevant for their support of new policies, gender quotas, and women's issues (Wängnerud 2009). Similarly, she notes

that scholars have found that female legislatures do more to prioritize legislation about women's issues (Buznytska 2019; Celis et al. 2014; Childs and Krook 2009).

Buznytska uses this as a jumping off point to argue that countries with higher representation of women in government will be more likely to contribute female peacekeepers because women in these countries are in a better position to advocate for equal opportunity for women. Similarly, I expect that when women are represented in the political processes of countries, they will be more likely to advocate for the full integration of women into the military to promote equal opportunity for women.

Indeed, gender equality legislation has been important in lifting combat restrictions, with Canada being an early example of this (Fitriani, Cooper, and Matthews 2016). Winslow and Dunn (2002) argue that pressure from political and civilian actors led to such changes in Canada. This included anti-sex discrimination legislation, such as the Canadian Human Rights Act (1978) and Section 15 of the Charter of Human Rights and Freedoms, as well as the Human Rights Tribunal's 1989 ruling that women were to be fully integrated into the Canadian military. Winslow and Dunn note that these rulings were eventually able to takedown the argument that restrictions on combat roles were occupational requirements that did not violate anti-discrimination legislation.

There is evidence that women are more supportive of lifting gender-based combat restrictions than men. Zeigler and Gunderson (2005) surveyed 530 cadets from US Army, Navy, and Air Force Reserve Officer Training Corps (ROTC) programs. They found that about forty-seven percent of male respondents believed that direct combat roles should be closed to women, while only approximately twenty-three percent of female cadets felt the same, a difference that a Chi-square test revealed to be statistically significant. While individuals affiliated with the military are not necessarily representative of the population as a whole, the stark differences in beliefs revealed by this survey do suggest that there might be differences in the preferences for lifting combat restrictions between men and women in broader society. Indeed, in Israel, female politicians were essential in promoting equality in the Israeli Defense Force (Levy 2011).

Opening combat roles to women has been seen as a vital part of increasing women's rights (Kennedy-Pipe 2000), further supporting the notion that many female political leaders will be supportive of such measures. Military service is often viewed as a sign of honor and status, as well as being an important part of some national identities (e.g., Kwon 2000). Snyder (2003), for example, argues that in the United States, the ideal citizen is often defined

[5]Even when militaries have opened combat roles to women in the past – such as the Soviet Union during World War II – women's status often did not improve following the conflict (DeGroot 2001; Enloe 1980; Moore 1991; Segal 1995; Seitz, Lobao, and Treadway 1993). However, I still expect that military leaders and policy makers will be more resistant to the possibility of expanding the roles of women in less gender egalitarian societies.

as being a soldier or veteran, and thus, women can never achieve equal rights if they are not allowed to be fully incorporated into the military.[5]

Civil Society Participation

Buznytska (2019) extends her argument by discussing the importance of women's participation in civil society organizations (CSOs) for the integration of women into security forces. Buznytska cites evidence that participation in civil society organizations is important for women being able to voice their grievances and fight oppression (Chaney 2016). Furthermore, she notes that women's civil society organizations can help facilitate political and social changes related to gender (Htun and Laurel Weldon 2012). Thus, similar to the presence of women in government, women's participation in civil society organizations can directly lead to policy reforms.

Feminist organizations in Canada, for instance, played an essential role in pushing back against organizations that tried to stop the Canadian government's decision to open combat roles to women (Associated Press, February 9, Canada ahead of U.S. in allowing women in combat Associated Press). In the United States, women have also engaged extensively in similar political processes, including Colleen Farrell (Marine Captain) and MJ Hegar (Distinguished Flying Cross recipient), who challenged the ban on women in combat roles as part of an ACLU law suit (Cordell 2018). Pressure from women's groups also helped expand the role of women in the Israeli Defense Force (Zeigler and Gunderson 2005). While the political establishment in Norway was initially hesitant to expand the roles of women in the military, after feminist campaigning in the 1970s, it eventually opened all military roles to women in 1985 (Blondin 2016).

Women's political and civil society participation have also gone hand-in-hand in further integrating women into the military. Women have also brought law suits against the Israeli Navy and Air Force to the Israeli Supreme Court (Robbins and Ben-Eliezer. 2000). Levy (2011) argues that a key moment came in 1995 when Alice Miller took her rejection from the pilot's training program to the High Court of Justice, leading to these roles in the program being opened to women. Levy notes that Miller's law suit led women's organizations and women in the Knesset to take up the cause for the first time. This led to the amendment of the Security State Law in 2000 that sought to guarantee equality throughout the Israeli Defense Force. While not every single role was made available, some combat roles became open to women shortly thereafter (Levy 2011).

The evidence of a link between women's political empowerment and integration in other areas of the security sector, however, is mixed. Buznytska (2019) does not find an association between female representation in the legislature or women's CSO participation, and a country's contribution of

female peacekeepers. However, using the CIRI Human Rights Dataset's measure of women's political rights, Crawford, Lebovic, and Macdonald (2015) do find a positive and statistically significant association between women's political empowerment and the contribution of female peacekeepers by countries.

Testable Implications

A variety of aspects of women's status appear to influence the extent to which women are incorporated into the armed forces of countries. Women's participation in the economy, politics, and civil society allows them to exhibit that they are capable of serving in these roles and places women in positions where they can advocate for such changes. Additionally, when women have fewer social pressures to remain in the domestic sphere, they have more opportunity to enter and advance through the ranks of the military. Despite these strong theoretical expectations, there is mixed empirical support for the notion that higher levels of women's status are associated with greater levels of women's integration in state militaries (Carreiras 2006; Obradovic 2014). However, this article seeks to apply more systematic testing to this argument. Specifically, I test the hypothesis that:

H1: As women's status improves, so will the probability of military combat roles being opened to women.

Research Design

To test the hypothesis, I conduct an analysis of all countries from the Correlates of War (COW) state list from 1970–2016. Extending data from Toronto (2014), I drop all observations that either do not have a standing military or are missing for this variable.[6] These observations are not relevant as these countries have no militaries in which combat roles can be opened. I choose 1970 as the starting year because most Western countries began allowing women to serve as active duty personnel in all branches of the armed forces in the 1970s (Carreiras 2006). The unit of analysis for this study is the country-year.

Though there are varying definitions of what constitutes a "combat role," I use the one laid out in Fitriani, Cooper, and Matthews (2016) comprehensive report on the varying levels of women's integration in militaries across the world. The authors identify 20 countries that allow women into ground close combat (GCC) roles by 2016.[7] These roles include "serving as snipers, on special operations and engaging in hand-to-hand combat roles" (Fitriani,

[6]Doing so drops just under 900 observations, leaving a sample of 6,881 country-year observations.
[7]The list of countries identified by Fitriani, Cooper, and Matthews is displayed in Appendix Table 1 and the summary statistics for all variables in Appendix Table 2.

Cooper, and Matthews 2016, 17). This is the best source for the analysis because it provides the most up-to-date and comprehensive resource on the availability of combat roles to women.[8]

A binary indicator of whether combat roles are open to women obviously does not capture the variation in the number and proportion of women in state militaries. Legally making these roles available to women does not mean that militaries actively pursue the recruitment of women for combat roles nor does it mean that a large number of women serve in these roles. Fitriani, Cooper, and Matthews' measure captures *the end of legal restrictions* on the full integration of women into militaries, not the number of women who have entered combat positions. Thus, the results are more directly indicative of countries that have taken legal steps to fully integrate women into militaries, rather than of which countries integrate the most women.

However, there is still a significant difference between countries that open combat roles to women and those that do not. Opening these roles can be costly because of strong norms that exist in most countries against letting women into them. Fitriani, Cooper, and Matthews (2016) argue that opening GCC roles to women is the last step in a four-stage process of women's integration into militaries. According to the Fitriani, Cooper, and Matthews (2016), these stages represent the order in which women's roles tend to be expanded in state militaries. The first stage is combat-service support (e.g., health services and logistics), the second is combat support (e.g., intelligence and engineering), and the third is operational service which stops short of direct involvement in killing. While numerous countries have women integrated in combat-service support positions, few have taken steps to open GCC roles. Thus, I am examining which countries have made legal efforts to allow for the full incorporation of women into militaries and which have not.

Dependent Variable

The dependent variable is the number of years, since 1970, that a country has kept military combat roles closed to women. Thus, the "failure" variable indicates when a given country opened GCC roles to women. To test the hypothesis, I employ survival analysis, which is an effective tool for overcoming issues related to traditional regression models, including accounting for time-varying covariates and right-censoring in event history datasets (Box-Steffensmeier and Jones 2004). Additionally, survival analysis is useful for determining what conditions cause some units to undergo a major (political) change but not others (Box-Steffensmeier et al. 2004). Of the countries in the

[8]Fitriani, Cooper, and Matthews identify the first year in which legal action began in countries to open combat roles to women. The authors also provide alternative dates for some countries (though many remain the same), based on when GCC roles were fully opened to women. The core results remain the same when these alternative dates are used.

data, only nineteen have experienced the "failure event," with the rest never opening GCC roles to women.[9]

I employ semiparametric Cox proportional hazard models. These models are more appropriate than parametric event history models because I am testing the relationship between a set of variables and the probability of a subject failing (Box-Steffensmeier et al. 2004). Cox models are flexible, and unlike other types of survival models, do not assume a specific functional form (Cox 1972). Thus, given that I do not have a specific expectation for the distribution of the time until combat roles are opened to women, I employ Cox models. From a theoretical standpoint, Cox models have been discussed in terms of their usefulness in examining differences in policy adoption among US states (Jones and Branton 2005). In the same way, Cox models can be used to analyze when countries are more likely to adopt inclusive military policies relative to other countries.

The data capture a shift in the military policies of countries. They do not capture changes over time in the number or proportion of women in combat roles. Additionally, within the timeframe of the data, no country closes combat roles to women after opening them. Thus, for countries in the data that lift combat restrictions, there is no longer variation in their behavior after the year that they make these changes. As a result, the more meaningful change in the data is shifting from having combat restrictions to removing them, rather than if they continue to exist. Survival analysis is thus an effective tool for understanding why exclusionary combat policies remain in place in some countries over time while not in others.

Independent Variables

Women's status is complex and multi-faceted and it is often unclear which of the many existing measures of women's status provide the best theoretical fit for empirical tests (Karim and Hill 2018). Thus, it is important to assess the robustness of the findings across a variety of (theoretically relevant) measures of women's status. I attempt to test all of the mechanisms discussed earlier in the paper by employing a diversity of variables.

To test the mechanism related to gendered divisions of labor and expectations about family roles, data from the World Bank on countries' fertility rates are used. Fertility rates are commonly employed to measure the presence of traditional gender roles and divisions of labor. Higher fertility rates often indicate the societal expectation that a woman's primary duty should be to her family. To measure women's integration into economic institutions and visibility in the work force, I use data on the percent of a country's labor force that is female, which is also taken from the World Bank. Female labor force

[9]North Korea does not enter the data because it opened combat roles to women in the 1950s, and thus, experienced the "failure" event before the start year of the analysis. However, it is included in the logistic regression models (see robustness checks).

participation makes women more visible in society, which can help fight the stereotype that women are unfit for combat.

The Varieties of Democracy (V-Dem) dataset provides measures that are useful for testing the effects of women's political and civil society participation. First, V-Dem's measure of women's political participation (v2x_genpp) is used to capture the effect of women's political involvement on their integration into the armed forces. This is an index measure that takes the average of indicators capturing women's representation in the lower-house of legislatures as well as the overall distribution of political power by gender (Sundström et al. 2017). Thus, a variety of aspects of women's political participation are captured.

Similarly, V-Dem has an index measure of women's civil society participation (v2x_gencs) that includes women's participation in civil society organizations, freedom of discussion for women, and the prevalence of female journalists (Lindberg 2016). While this does not capture the presence of the influence of women's-based civil society groups specifically, it still measures the presence of women in civil society as a whole.

Control Variables

I control for a variety of potential confounding variables. First, it is important to account for the level of threat faced by a country. Both the number of women and the extent of their roles in militaries often increases when countries are at war or face a serious threat of conflict (Binkin and Bach 1977; Holm 1992; Quester 1977; Segal 1995). Empirically, however, threat can be difficult to measure. The Militarized Interstate Dispute (MID) dataset (Palmer et al. 2015) is frequently used to measure international conflict. However, the range of events captured by the MID dataset is very diverse, and includes many short and low intensity events (Jones, Bremer, and Singer 1996). Interstate wars better capture the intense conflicts that scholars believe further the integration of women, however, these wars have been very rare in recent decades (Sarkees and Wayman 2010), making it a difficult variable to use for this analysis.

Instead, I use the peace data created by Diehl, Goertz, and Gallegos (2019). Specifically, the authors created an ordinal measure of the level of peace within country-dyads that ranges from having a security community (e.g., high levels of policy integration and harmonization) to having a severe rivalry. Diehl, Goertz, and Gallegos note that severe rivalries occur when states view each other as enemies and competitors. These relationships often involve unresolved disputes that can escalate to intense violence, and these countries plan their foreign policy around the expectation of having negative interactions with these rivals for the foreseeable future. A binary indicator of

whether a country was involved in a severe rivalry in a given year is employed.[10]

Technologically sophisticated militaries are more likely to incorporate women (Kennedy-Pipe 2000). As modern military operations become less dependent on hand-to-hand combat, countries will be more willing to incorporate women into their ranks because the lack of physical combat is seen as being less of a violation of gender norms (van Creveld 2000). Specifically, I include a logged measure of a country's military expenditures as a percentage of its GDP. This measure comes from the World Bank's Development Indicators.

Regime type also matters because women's status is highly associated with general levels of democracy and openness. Specifically, the models include the Polity IV measure of regime type (Marshall, Gurr, and Jaggers 2019). The level of economic development in a country likely has a positive association with women's rights, along with the ability of countries to fight wars. Thus, I control for the logged per capita GDP of the country, which is also obtained from the World Bank. Finally, a binary indicator of whether a country is a NATO member state in a given year is included. NATO leadership has pushed member states to pursue more gender-balanced military forces in the 21st century (e.g., see Bigio's 2016 contribution for the Council on Foreign Relations) and NATO member states tend to have higher levels of women's status, relative to much of the world.

Results

The results of the analysis are displayed in Table 1.[11] The standard errors are clustered by country to account for potential heteroskedasticity and autocorrelation in the error term. As the results show, both women's political (Model 1) and civil society participation (Model 2) have positive and statistically significant associations with the opening of GCC roles to women. These findings provide evidence for the argument that women are more likely to be fully integrated into the military when they have the resources, such as political power and leverage from civil society organizations, to advocate for such reforms.

However, the findings are less straightforward when it comes to the societal division of gender roles. As expected, the fertility rate in a country has a negative association with restrictions being lifted from combat roles, but the relationship fails to achieve statistical significance. Female labor force

[10] An additional advantage of the peace data is that it is collected through 2015, with information on the rivalries that extend into 2016, meaning it is available for the entire time period of this analysis. The MID data, however, is available only through 2010.

[11] Note that coefficients are reported rather than hazard ratios.

Table 1. Women's status and opening combat roles, cox proportional hazards models.

	(1)	(2)	(3)	(4)
Time Until Combat Restrictions Lifted				
Women's Political Participation	13.83***			
	(4.873)			
Women's Civil Society Participation		5.293*		
		(3.136)		
Fertility Rate			−0.0218	
			(0.322)	
Female Labor Force Participation				0.553***
				(0.178)
Severe Threat	−0.971	−1.765**	−1.786**	−3.401***
	(0.711)	(0.696)	(0.715)	(0.817)
Military Spending (Logged)	2.474***	2.337***	2.349***	5.512***
	(0.743)	(0.591)	(0.591)	(0.919)
Polity	0.0731	0.0814	0.204***	0.281**
	(0.0896)	(0.0763)	(0.0776)	(0.132)
Per Capita GDP (Logged)	0.557*	0.802**	0.822**	1.395***
	(0.294)	(0.367)	(0.404)	(0.420)
NATO Membership	0.785	0.909**	0.729	0.0108
	(0.492)	(0.439)	(0.485)	(0.799)
Observations	4,911	4,972	4,974	3,226

Coefficients Reported
Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

participation, on the other hand, has a positive and statistically significant association with the probability that GCC roles are opened to women. These findings provide evidence for the notion that the increased visibility of women in the workforce helps fight the perception that women are incapable of certain tasks and that the more deeply women are integrated into the economy, the more difficult it is to justify their exclusion from any occupation, including military combat positions.

The null finding for fertility rates could be the result of a couple different factors. First, fertility rates are an imperfect measure of women's status. Second, more flexible family roles for women may not be sufficient to lead to the opening of combat roles. This is not to say that household gender roles do not influence women's presence in militaries. While family pressures might prohibit a large number of women from entering the military, more flexible family roles are not sufficient to bring about legal changes that allow for women to serve in any military role.

To further highlight the impact of these various dimensions of women's status, Kaplan-Meier survival curves are presented in Figures 1– 2 for countries with high levels of women's political and civil society participation. They compare countries in the highest quartile of these measures of women's status to the lower three quartiles. While the top quartile is a high bar for comparison, only countries above the median value of these dimensions have ever opened GCC roles to women, necessitating

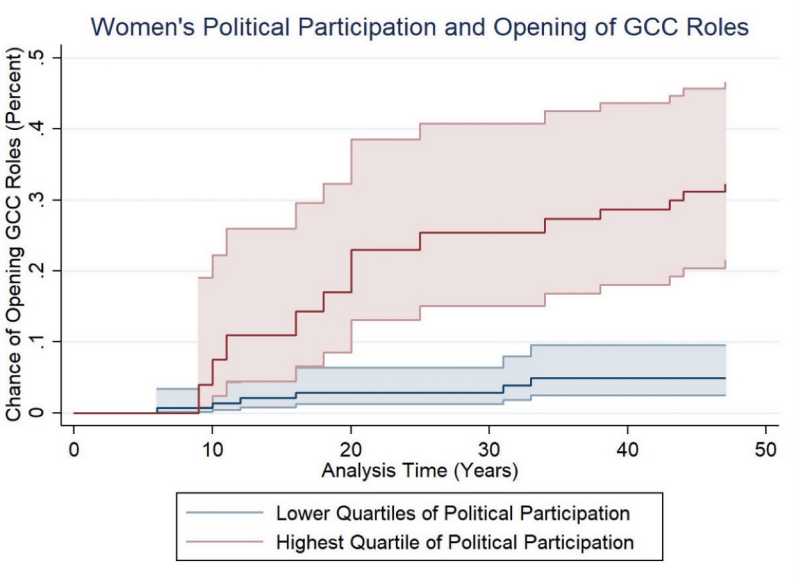

Figure 1. Women's political participation and survival of gender segregated GCC roles.

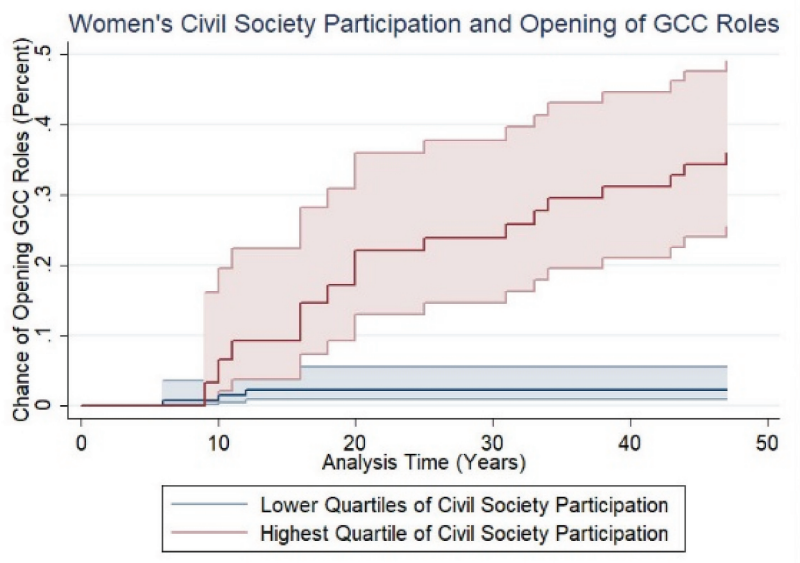

Figure 2. Women's civil society participation and survival of gender segregated GCC roles.

a high cutoff for comparison. These curves show that the probability of combat roles opening is much higher for the most egalitarian countries, and extremely low for others. However, an important qualifier is that the

probability of observing a "failure" event is still very low across all measures, as evidenced by the *reduced scale* of the y-axis. This is unsurprising given that the vast majority of countries have not allowed women into these positions.[12]

The control variables also produce interesting results. In three of the four models, a country experiencing a severe rivalry has a negative and statistically significant association with the probability that GCC roles are opened to women. This provides direct evidence against the proposition that countries will be more likely to allow women in combat roles when they face significant external threats. The finding is likely a byproduct of the fact that countries with higher levels of women's status are less likely to engage in and escalate conflicts (e.g., Caprioli 2000; Caprioli and Boyer 2001). Thus, higher levels of women's status increase the probability of combat roles being opened to women but decrease the probability that countries engage in conflict.

Across all models, military spending as a percentage of a country's GDP has a positive and statistically significant association with the dependent variable. This lends support to the notion that countries with technologically sophisticated militaries are more likely to integrate women because soldiers in these forces tend to face less direct danger than those who are part of militaries that engage in conventional warfare. Thus, the nature of women's integration into militaries somewhat changes over time as the roles of soldiers change. However, women's status still appears to play an important role even when controlling for the capabilities of militaries.

Economic development also has a positive and significant relationship with the dependent variable in all four models. This is likely a function of higher capacity states having higher capacity militaries – which are more likely to integrate women – and because women's status tends to be higher in more economically developed countries. While the polity2 measure of regime type is positive in all four models, it achieves statistical significance in only two of them. Finally, the association between a country being a NATO member state and it opening GCC roles to women is positive across all models, but only statistically significant in one. This might be the result of NATO members being more democratic, wealthier, and having higher women's status than many other countries, all of which are already captured.

[12]The characteristics of countries that open combat roles appear to be fairly consistent over time. The mean values of the main independent variables for countries that opened combat roles to women at first appear to be noticeably lower before 2000, suggesting that early movers had a lower threshold of gender equality. However, when Eritrea (opened GCC roles in 1998) is taken out, the mean values are much closer. For instance, before 2000 (with the exception of Eritrea) the mean level of women's political participation for these states was 0.954 and the average fertility rate was 1.758. Post-2000, these averages were 0.963 and 1.764 respectively. The greatest difference is in women's civil society participation (0.833 vs. 0.915). This difference is likely explained by the increase in general gender-equality legislation (Fitriani, Cooper, and Matthews 2016), which is often supported by women's civil society organizations.

Robustness Checks

A battery of alternative tests are conducted to assess the robustness of the findings. The results are available in an online appendix. I begin by employing a variety of alternative measures of women's status. Specifically, the CIRI Human Rights Dataset's measures of women's political, social and economic rights (Cingranelli, Richards, and Clay 2014) are employed. All three measures have a positive and statistically significant association with the probability of GCC roles being opened to women (Appendix Table 3). Next, to account for potential outliers, models are included in which observations in Israel and Eritrea are dropped respectively. Dropping these countries from the analysis does not alter the core results (Appendix Tables 4 and 5).

There is also a potential threat of endogeneity. To address this empirically, I rerun the analysis, lagging every independent variable by one year. Doing so does not change the results; women's participation in politics, civil society, and the labor force are still positive and statistically significant, while fertility rates are not. The results are displayed in Appendix Table 6. From a theoretical standpoint, it is conceivable that countries use military reforms to try to achieve broader societal reforms. For instance, while there are still racial disparities in burdens and access to resources in the US military, it has still be ahead of many other segments of US society in desegregation and promoting diversity (Burk and Espinoza 2012). However, in the case of women's integration, legislative efforts to fight discrimination against women in all sectors of the economy typically precede efforts by the military to open combat roles to women (Fitriani, Cooper, and Matthews 2016). Individuals associated with the military also tend to be more resistant to allowing women in combat roles than are civilians (Matthews et al. 2009). Thus, societal changes to women's status often precede changes to women's roles in the armed forces.

Another commonly cited cause of women's integration into the armed forces is the increase in the number of professional militaries. As militaries increasingly abolish conscription, scholars expect that militaries will turn to women to compensate for the corresponding shortage of recruits (e.g., Carreiras 1999, 2002, 2006, 2012; Obradovic 2014; Segal 1995). The Military Recruitment Data Set (Toronto 2014) contains data on the use of conscription by militaries. Specifically, this dataset includes a binary indicator measuring whether a state military primarily recruits on a voluntary basis (one) or through conscription (zero) in a given year. However, this variable is only available through 2008, and is thus not included in the main analysis. Given the importance of conscription in the literature, however, I include it in the main set of models as a robustness check.

The results for women's political and labor force participation remain the same, however, civil society participation is no longer statistically significant (Appendix Table 7). Interestingly, relying on voluntary recruitment has a negative association with the dependent variable in all four models, and achieves statistical significance in three of them. This runs contrary to the expectation in the literature that all-volunteer forces will be more likely to recruit women in order to compensate for corresponding labor shortages.[13]

As a further check, I employ logistic regression analysis to ensure that the results are not driven by modeling choice (Appendix Table 8). The dependent variable in these models is a binary indicator of whether the opening of GCC roles to women has been introduced. Once again, women's political, civil society, and labor force participation maintain positive and statistically significant associations with the dependent variable. However, the association between fertility rates and the probability of a country opening these roles to women is positive and statistically significant, which is the opposite of the expected direction of the coefficient. This further highlights the instability of the findings related to fertility rates.

For a final robustness check, the main analysis is rerun using a more restrictive measure of ground combat roles that is also provided by Fitriani, Cooper, and Matthews (2016). In the main analysis, I use the authors' coding of the years in which countries began to introduce women into ground combat roles. However, Fitriani, Cooper, and Matthews also provide dates of when these countries opened all ground combat roles to women. While this is the same year for many countries, it is different for others, necessitating the use of the alternative list of dates to assess the robustness of the findings. The findings hold with the alternative set of dates (Appendix Table 9).

It is also important to consider the effect of women serving in other military roles. Unfortunately, cross-national data does not yet exist that would allow for me to systematically evaluate the effect of women's status on their integration into other types of military roles. However, available evidence would suggest that the bar for gender equality is not as high for other positions as it is for combat roles. Fitriani, Cooper, and Matthews (2016) do not systematically gather data on the second highest stage of integration (operational service), but they do give several examples of countries that have reached this step including, Pakistan, China, Singapore, South Korea, South Africa, Turkey and the United Arab Emirates. Many of these states have lower levels of women's status than the countries that have opened combat roles to women.

Additionally, Percy (2019) argues that the norm against allowing women into military combat roles is extremely robust, and the decades of challenges to the

[13]Of the 16 countries that opened combat roles to women prior to 2008 (when conscription data ends), only 2 (Canada and New Zealand), relied on voluntary recruitment. This is likely the result of some countries using conscription and women in response to existential threats (e.g., Israel and Eritrea), while others conscript men and women as part of an effort to promote gender equality (e.g., Sweden). However, as countries increasingly abolish conscription, the role of this variable will likely diminish.

norm have not been enough to change it. Percy notes that most of the countries that have opened combat roles to women are among the most gender egalitarian in the world. Finally, it is important to reiterate the rarity of this phenomenon. Most countries with high levels of women's status, external threats, and/or military technological sophistication still have not lifted bans on combat roles. However, women's status still matters in explaining why some countries have made such changes.

Discussion and Conclusion

Understanding when military combat roles are opened to women has both significant academic and policy implications. From an academic standpoint, it is essential to understand how normative factors affect the behavior and decision-making of organizations, including militaries. From a policy standpoint, sex-based restrictions on combat roles both threaten the effectiveness of military units and serve as a form of employment discrimination. I find strong support for the central hypothesis that countries with higher levels of women's status are more likely to open military combat roles to women.

However, there is important nuance to these findings. While women's integration into political and economic institutions has a strong influence of the probability that GCC roles are opened to women, family obligations have less of a clear impact. This suggests that while high levels of some factors make it difficult for women to join the armed forces, lower levels of the same factors are not sufficient to bring about policy change. For instance, a large number of women will be unlikely to join the military in a society in which the expectation is that their primary duty is to raise a family. However, it is not sufficient for these expectations to be less rigid in order for combat restrictions to be lifted.

Instead, it appears that GCC roles – which represent the highest level of integration into the military – will be more likely opened to women when they are in positions that they can enact change in and prove their capabilities through. Grassroots efforts led by women in a variety of countries including, Israel, Norway, Canada, and the United States were instrumental in opening military combat roles to women. As noted in the theory section, women's movements have successfully gone through judicial and legislative branches of governments to achieve such changes, and women who serve in parliament have also played an important role. This paper presents robust empirical support that these combat roles will be more likely to be opened when women are active in politics and civil society, and when they constitute a larger portion of the labor force. As combat restrictions continue to potentially hinder the effectiveness and inclusivity of military forces, it is important for us to understand the conditions that make opening military combat roles to women more likely.

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