

Female Participation and Civil War Relapse

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A large literature demonstrates that civil war is recurrent: States that have already experienced such conflict tend to relapse back into war. How might this ‘conflict trap’ be escaped? We answer this question with a focus on gender. Women tend to exist at the margins of society, and postwar society often perpetuates prewar values. Yet this continuity is not inevitable. We argue that the end of a civil war opens a window of opportunity through which women may increasingly participate in society, economics, and politics. Given women’s preference for peace and aversion to political violence, we expect this increased participation to reduce the risk of relapse to civil war. Large-N analyses support our argument, and in particular suggest that increases in female literacy and parliamentary representation reduce the risk of relapse.

In January 1986, Yoweri Museveni’s National Resistance Movement (NRM) took power in Uganda. Though the NRM promised fundamental change, civil conflict continued. Between 1986 and 2002, the Museveni regime faced no fewer than seven civil wars, and war-related death tolls surpassed the half million mark.¹ Similarly, Congo-Brazzaville experienced three civil wars in the six years following 1993’s disputed elections. By 1999, around 20,000 lives had been lost and as many as 800,000 persons were displaced. The capital city of Brazzaville, and the state’s remaining infrastructure, were in ruins.² Civil war has been a repeat event in other countries, including (for example) Afghanistan, Angola, Indonesia, Iraq, Burundi, Sri Lanka, and Iran.

These examples highlight a general pattern: Civil conflict is recurrent. Recent research has labeled this phenomenon a conflict trap, noting that ‘once a conflict has started a society faces a greatly increased risk of further wars.’³ Consider a state having just exited civil war. The risk of return to civil war is 10 times higher in that state than it was before the war began, and is 2–4 times higher than the risk facing new states. Even if the country successfully maintains post-conflict peace for a decade, the risk of relapse remains at a higher level than before the conflict.⁴

All presented statistical results were generated using Stata 11. An online supplement and replication files are available at DeMeritt’s website (<http://jdemeritt.weebly.com/research.html>).

Why does civil war beget civil war? A growing literature engages this question, and identifies two sets of influences on relapse. First, characteristics of the just-ended war – including its outcome, settlement terms, destructiveness and duration, and the presence of multilateral peacekeepers – affect the likelihood of recurrence.⁵ Second, national attributes – including the political, economic, and social circumstances that led to war in the first place – may be exacerbated by conflict and thus lead to future wars.⁶

We contribute to this literature by investigating a previously unstudied influence on civil war recurrence: female participation in economic, social, and political life. We ask: *What is the effect of female participation on the risk of relapse to civil war?* We begin by noting that women tend to exist at the margins of society.⁷ Civil war entrenches this marginalization, which continues into postwar society.⁸ Importantly, this continuity is not inevitable. We argue that the end of a civil war opens a window of opportunity through which women may increasingly participate in society, economics, and politics. Given women's preference for peace and aversion to political violence,⁹ we expect this increased participation to reduce the risk of relapse to civil war. Large-N analyses support our argument, suggesting in particular that increases in female literacy and parliamentary representation reduce the risk of relapse to civil war and thereby increase the duration of post-conflict peace.

ESCAPING THE CONFLICT TRAP VIA GENDER

Women make up 50 per cent of the global population, but wield considerably less than half the political and economic clout of their male counterparts. They occupy 18 per cent of parliamentary seats and hold 29 per cent of management positions. Fifty-three per cent of adult women are economically active,¹⁰ and they earn 76 per cent of male wages.¹¹

Civil war reinforces and may exacerbate women's marginalization. Female participation in conflict typically involves traditional roles as cooks, wives, and sex slaves.¹² Even when women act as combatants alongside men, they are generally excluded from the disarmament, demobilization, and reintegration (DDR) process that characterizes war's end.¹³ This was evident in Sierra Leone, where 0.4 per cent of female combatants were included in the official DDR process, and in El Salvador, where social stigmas and pressure to return to their traditional roles led most female soldiers to withdraw from the process.¹⁴ Women were also excluded from DDR processes in East Timor and Angola, for example. The experiences of female war participants perpetuate gender stereotypes and have negative physical and psychological ramifications including widespread depression and post-traumatic stress disorder.¹⁵ At best, practices like these keep women at the periphery; at worst, they alienate them further.

Postwar society tends to perpetuate this marginalization. Yet this pattern is not inevitable. With civil war comes a breakdown in status quo traditions, morals, customs, and community. Incorporating women at this critical moment can lead to greater female autonomy, responsibility, and worth.¹⁶ As Zuckerman and Greenburg note, 'post-conflict reconstruction offers opportunities to establish new norms and

rules, engage new leaders, and build new institutions. Each of these processes offers an opportunity to focus on women's rights, and respect them; and to acknowledge and value the contribution of women.¹⁷ Importantly, that contribution includes women's preference for peace and their ability to put that preference into practice.

Existing work associates women with an aversion to violence and an inclination toward peace, and argues that including women in society makes violent conflict less likely. Two theoretical explanations for this relationship have been developed. First, the essentialist argument rests on the claim that human beings have specific inherent and enduring qualities, so that gender identities are based on permanent underlying, primarily biological factors. All women share fixed characteristics, and foremost among these is their natural reproductive role.¹⁸ This leads to an inclination to give life, and not take it. Because of this natural preference for peace, women attempt to prevent societal problems from escalating to conflict, and attempt to de-escalate armed conflicts when they do occur.¹⁹

Second, the constructivist argument attributes female aversion to violence to socially constructed gender roles, in which boys are raised to be warriors and girls are raised to be nurturers. The subordination of women follows naturally from these norms.²⁰ Incorporating women in society reflects changes in gender construction and particularly reflect the relaxation of the norm of men-as-warriors. From this perspective, states that emphasize gender equality and female participation in traditionally male society also tend to adopt more generally peaceful preferences, leading to a reduced likelihood of political violence.²¹ As Melander notes, 'these two explanations are not mutually contradicting on logical grounds, and each may thus account for some part of any relationship between gender equality and peace that is observed.'²² It follows from both the essentialist and constructivist perspectives that as women are increasingly included in society, the risk of political violence declines.

In the past decade, scholars have sought and found robust empirical support for the claim that including women in society reduces political violence.²³ Through large-N quantitative analyses, female participation has been linked to lower levels of state-perpetrated personal integrity abuse, including extralegal killing, torture, disappearances, and political imprisonment.²⁴ It has been found to reduce the likelihood that a state engages in interstate violence including militarized disputes and war.²⁵ Previous research has also found that female participation correlates negatively with the likelihood of involvement in civil war in the first place.²⁶ And it has been found, when paired with peacekeeping operations, to decrease the likelihood of renewed violence within five years after the civil war's end.²⁷ In sum, scholars from a wide range of disciplines agree and empirical evidence suggests that female participation in society reduces political violence.

This academic insight is mirrored in policy, where international treaties and conventions increasingly encourage female participation. The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW, 1979), the Beijing Platform of Action (1995), and Security Council Resolution 1325 (2000) – all international agreements – promote equal rights and opportunities for women. CEDAW calls for gender equality in legal systems by abolishing existing laws that

discriminate against women and creating new laws and institutions that prohibit and protect women from discrimination. The Beijing Platform of Action focuses on the removal of obstacles that inhibit women's active participation in all spheres of public and private life. Security Council Resolution 1325 focuses primarily on women's inclusion in the peacemaking process. For example, it calls for the participation of women in peace negotiations and agreements, the integration of a gender perspective into peacekeeping missions as well as DDR of former combatants, and the protection of women and girls from gender-based violence.²⁸ States are encouraged to ratify these documents and as a result adopt practices that promote the participation of women throughout society.

Given the above, we submit that civil war's end opens a window of opportunity through which women can participate in social, political, and economic realms. These conflicts may end in negotiated settlement, in victory by government, in victory by rebels, or in cease-fire. They may also end if violence falls below an established threshold necessary to qualify, empirically, as civil war.²⁹ If civil war ends in a negotiated settlement, women may participate in negotiations, and factors related to gender equality may be incorporated into the signed agreement. Yet even when it ends in a victory or a cease-fire, or as a result of reduced violence, civil war erodes the status quo. Old traditions, morals, customs, and community break down, and new ones must be created.³⁰ Every postwar environment requires that new norms and rules be established, and thus every postwar environment offers the opportunity to incorporate women in new and ever more influential ways.

As women are increasingly pulled from the margins and included in societal decision-making, they will increasingly exert the inherent pacific influence expected by essentialists and/or redefine traditional gender roles in a way that privileges nonviolence in the way constructivists anticipate. Including women in post-conflict society, then, may improve the prospects for post-conflict peace and reduce the risk of civil war recurrence. All else equal, we expect that the risk of recurrence will be lessened in post-conflict societies as women increasingly participate on par with men. This relationship should exist in all post-conflict societies, but may be stronger where civil war ended in negotiated settlement than where it ended in any other way. Below, we investigate the cause(s) of female marginalization from the social, political, and economic spheres both during and after civil war. We explain how reversing this trend will lead to a lower risk of civil war renewal and thus a more durable postwar peace. And, we derive our testable hypotheses.

Social Participation

During civil war, individuals within the warring state can be seen as either combatants (who actively participate in violence) or civilians (who do not). The international community has made this distinction in part based on gender: UN resolutions and mandates, for example, exclude adult males from the definition of civilians and instead define the group as consisting of women, children, and the elderly. Carpenter suggests that this distinction follows from gender essentialisms, which impose traditional concepts of women as innocent and vulnerable while men

are seen as perpetrators of violence.³¹ It follows that, during conflict, women may be marginalized as a matter of course.³² This marginalization has consequences; women experience war differently from men, and are subject to negative repercussions to which men are less vulnerable.³³

Although women are often the most marginalized, they create a unique group that crosscuts any other social, political, or economic cleavage. They are likely to be the most war-weary and, as a result, more likely to seek an alternative to continued or renewed violence. Since they are pushed to the periphery and left out of the conversations that led to civil war in the first place, they may be more likely to start a different conversation with former enemies, and thus, more likely to engage each other in a less or nonpartisan space. In other words, existing cleavages may be more flexible (less restrictive) for women. Therefore, when more women are involved in the social process, the national conversation will be more reflective of a break from the past. Women especially have this opportunity when a majority of the male population has been wiped out (e.g., Rwanda); this makes conflict less apt to recur.

For example, women in El Salvador were heavily involved in postwar grassroots social organizations. At war's end, working with national political parties, more than 32 women's organizations created a common platform calling for women's inclusion in development, drastic improvements in working conditions for women in all sectors, programs to prevent violence against women, and improvements in the health care system. More generally, these groups promoted education, outreach and employment; they organized health and hygiene clinics, child cooperatives, literacy programs, and food distribution centers.³⁴ Women came together and participated in these organizations outside of party affiliation and economic standing. They worked together to better their communities and society as a whole through the development of these programs and cooperatives. The logic we offer combined with this evidence suggests the following hypothesis.

Hypothesis 1: Female participation in the social sphere increases the duration of post-civil war peace.

Political Participation

Politically, civil war may have positive short-term consequences for women. On a local level, women's public roles and responsibilities expand during conflict.³⁵ This has led to the formation of women's groups promoting the well-being of vulnerable subsets of society. In Nicaragua, for example, women's organizations were formed to create food distribution networks, medical clinics, and childcare cooperatives.³⁶ If these roles are preserved or maintained once the conflict ends, women will be more politically involved than before. Most of the time, however, women retreat from the public sphere once the conflict ends. Their post-conflict role in politics is often as minimal as – or more minimal than – their level of prewar engagement. Kumar attributes this regression to three forces.³⁷ First, the psychological stress of war creates nostalgia for traditional political realities in which women play only a marginal role in public life. Second, some female political leaders experience war

fatigue, which leads to their exit from politics. Finally, men newly freed from the preoccupation of war seek to reassert their authority and suppress emerging female politicians. While war presents the opportunity for women to find political voice, this effect is often short-lived and is followed by a return to prewar levels of political participation, or worse. If this regression can be prevented, though, a relapse to civil war will be less likely and post-conflict peace will be more likely to endure.

International pressure encourages post-conflict states to elect a minimum number of women to parliament using a quota system. While actions such as these are often seen as symbolic and a mere presence absent any real power may be all women are granted initially, the inclusion of women can begin to change ideas about women in politics. Referred to as a 'fast track' to equal representation,³⁸ quotas may initiate a shift in the status quo. In the best situations, women are elected in greater numbers than mandated and are able to have a real impact on society. Increased participation of women in politics has been attributed to quotas in Uganda and India.³⁹ Similarly, women's movements around the world have shown that when women band together and find ways to participate, they are empowered and often pursue common goals. The nonviolent Women of Liberia Mass Action for Peace movement, for example, was integral in bringing Charles Taylor and Liberian rebel groups to the negotiation table.⁴⁰ In El Salvador in 1997, women won 33 per cent (9/27) of the FMLN's legislative seats and 14 per cent (4/28) of the ARENA's.⁴¹ These women passed critical legislation to empower women and better society as a whole. These observations suggest that when women participate in politics, post-conflict peace is more likely to be maintained and, therefore, war less likely to return. Thus, we expect the following.

Hypothesis 2: Female participation in the political sphere increases the duration of post-civil war peace.

Economic Participation

As in politics, civil war offers women short-term opportunities to participate in the domestic economy. As men leave home to engage in combat or look for work in urban areas, women become the sole source of income for the family and take on jobs in industries and occupations previously dominated by men.⁴² However, once conflict ends, women's economic participation often returns to the margins. Once again, if and when this trend is reversed, we expect longer periods of postwar peace to follow.

Post-conflict, women are usually expected to return to their traditional roles as wives and mothers. Those who do continue to work find their options restricted to services, unskilled, or unofficial work, as men return to skilled employment.⁴³ The post-conflict environment is also one of transition, and economics in transition typically facilitate gender discrimination.⁴⁴ Structural adjustment policies (SAPs), in particular, are an element of post-conflict reconstruction that establish and institutionalize economic gender disparities.⁴⁵ SAPs tend to limit public expenditures on health and education and to curtail civil service and formal sector

jobs available to women. Women's property rights and access to credit may also be limited, further deepening the divide between female and male economic participation. Although civil war offers women a brief moment of economic participation, the postwar environment often finds them further marginalized than they were at war's start.

Although, these factors are limiting, conditions that favor women's participation do exist. In some cases, when the war ends women outnumber men, and have little choice but to become the primary supporters of their families. Following the genocide in Rwanda, for example, women made up 70 per cent of the population.⁴⁶ In El Salvador many of the men who survived the war migrated into urban areas, temporarily or permanently leave their wives.⁴⁷ Circumstances like these make the female's earnings the sole source of income for the family.⁴⁸ Microfinance is another manner by which women have been able to successfully secure economic independence post-conflict, as seen (for example) in Ghana⁴⁹ and Angola.⁵⁰ Using survey data from several Mediterranean countries, Corsi *et al.* suggest 'that financial empowerment is more effective than programmes designed to fight gender discrimination directly.'⁵¹ Post-conflict, NGOs often focus on the promotion of these microcredit programs, as well as vocational training, civic education, health services, trauma counseling, and HIV/AIDS awareness.⁵² This combats the limited and unequal access to education and employment most often available to women and girls – an underlying impediment to economic growth, as it prevents reductions in fertility rates, child mortality rates, and malnutrition.⁵³

When women are educated, they participate in the labor force in greater numbers, which reduces population growth and dependency ratios, while also increasing economic independence. These factors increase the overall prospects for society, therefore also decreasing the risk of relapse and increasing the expected duration of peace following civil war. Thus, we present our third and final hypothesis.

Hypothesis 3: Female participation in the economic sphere increases the duration of post-civil war peace.

RESEARCH DESIGN

Operationalization and Measurement

Dependent Variable. Our dependent variable is peace duration (i.e., the absence of recurrent conflict), measured in years, following the end of a civil war. We submit that peace begins once all civil wars in a state have ended, and persists until new civil war onset occurs. To identify the start and end dates of these 'peace spells,' we use civil war data provided by Sambanis and extended through 2003.⁵⁴ Civil war is defined as an organized armed conflict taking place within the territory of a recognized state with a population of at least 500,000, involving the government and at least one dissident movement with political and military organization.⁵⁵ These

data are particularly useful here, because they provide detailed criteria by which to determine the start and end dates of civil wars: War begins in the first year that the conflict causes at least 500–1,000 battle-deaths, and organized armed violence is sustained throughout the duration of the conflict. Civil war ends if a three-year interval produces fewer than 500 battle-deaths, a signed peace treaty produces at least six months of peace (i.e., the absence of fighting), or a decisive victory by dissidents produces a new state. Our duration variable covers the period from 1980 to 2003.

Key Independent Variables: Measuring Participation. Theoretically, we expect that including women in social, political, and economic realms will reduce the risk of relapse to civil war. Yet, these types of inclusion are related and reinforcing; political inclusion begets economic, social inclusion begets political, and so on. Caprioli confronts the same situation, and notes that

In theory, each measure of gender equality captures a different aspect of equality – social, political, or economic. In practice, however, the three measures are highly correlated, for social, political, and economic access are interdependent...As a result, each gender equality variable does not represent a discrete measure of social, political, or economic equality but represents a combination of all three, with each measure having a different emphasis.⁵⁶

Caprioli's approach strikes us as reasonable, and we follow her lead by using three measures of female inclusion. Each is influenced by inclusion in the social, political, and economic spheres of society, but each clearly emphasizes one type of inclusion over the others. First, we focus on social inclusion using a ratio of female-to-male literacy rates. With literacy come self-sufficiency, self-esteem, and self-expression; these lead to increased civic and social participation. The data come from the United Nations Educational, Scientific and Cultural Organization (UNESCO), which defines literacy as the ability to read and write, with understanding, a simple statement related to one's daily life. We begin with UNESCO's measures of the percentage of literate females and males in a state, and create a ratio by dividing the former by the latter.⁵⁷ The variable ranges from 0.165 to 1.005; higher values capture an increasingly literate female population, relative to the literate male population.

Past studies have used other measures of women's social participation and equality.⁵⁸ Caprioli captures social equality using fertility rates.⁵⁹ As she notes, 'fertility rate captures multiple aspects of the complex matrix of discrimination and inequality,' including employment and economic standing as well as education and social standing.⁶⁰ This works well for Caprioli, who includes only one measure of gender equality at a time in her models. Differently, we seek to model social, political, and economic inclusion using distinct variables in a single specification, and therefore require a variable more explicitly focused on purely social inclusion. Thus, we look elsewhere to operationalize this concept.

Gizelis uses a female-to-male life expectancy ratio.⁶¹ Our sample consists only of states emerging from civil wars, which by definition involve high levels of

battle-deaths. Since men are disproportionately represented in combat, they are also likely to be disproportionately represented in death tolls. Therefore, male life expectancy in the period following civil war should be systematically lower than corresponding female life expectancy not by virtue of women's exclusion from social life, but by virtue of the recently ended civil war. Put simply, we believe that gender-specific life expectancy is systematically biased in our sample in a way that threatens our ability to conduct hypothesis tests, and is therefore an inappropriate independent variable for this study.

Finally, Melander uses a ratio of female-to-male higher education attainment.⁶² This measure, he argues, 'ought to reflect roughly to what extent traditional gender roles that prescribe the subordination of women have been replaced by more equal gender roles throughout a society.'⁶³ In other words, he assumes that highly educated women should participate in society, and thereby affect its prospects for postwar peace, at higher rates than the less educated among them. We agree with this logic, but submit that lower levels of education may yield similar benefits. In particular, we believe that women who can read and write should participate at higher levels than the illiterate. This distinction has important implications from a policy perspective: Literacy is a necessary precondition for higher education. If it has a positive impact on postwar peace, then investing resources in literacy should pay dividends both directly (by reducing the risk of civil war relapse) and indirectly (by increasing female higher education).

Our remaining gender inclusion variables follow convention. Like Caprioli and Melander, we emphasize political inclusion by recording the percentage of all parliamentary seats held by women. These data are drawn from Paxton, Green and Hughes⁶⁴ and described in Paxton, Hughes and Green.⁶⁵ And like Caprioli, we capture primarily economic inclusion by measuring the percentage of the adult labor force made up of women. The data are drawn from the World Bank's World Development Indicators.⁶⁶

Other Independent Variables. Of course, female participation is only one possible influence on the risk of return to civil war. Existing work on civil war recurrence identifies two additional categories of influence. First, characteristics of the civil war affect the quality and amount of information combatants have about each other, help solve the commitment problems associated with laying down arms, and influence dissidents' incentives to renew fighting. For these reasons, violence is particularly likely to renew given a negotiated settlement rather than decisive military victory.⁶⁷ Civil war is also increasingly likely to recur as the war's duration increases.⁶⁸ The absence of a multinational peacekeeping force increases the likelihood of conflict recurrence as well.⁶⁹ We measure negotiated settlement (including settlements and truces) using data from Doyle and Sambanis⁷⁰ and Sambanis,⁷¹ war duration (in years) using data from Sambanis,⁷² and the presence/absence of United Nations peacekeepers using data from Mason *et al.*⁷³ Each variable was updated through 2003.

The second set of influences identified by extant work is a set of national attributes. These political, economic, and social factors lead to war in the first place,

and may then be exacerbated by that conflict. National attributes found to impact civil war recurrence include economic development, regime type, and ethnic fractionalization.⁷⁴ We measure development with the natural log of GDP per capita (GDPpc), using data from the World Development Indicators.⁷⁵ We measure regime type using the Polity IV project’s democracy-autocracy index, which is a 21-point scale ranging from -10 to 10 with higher values capturing increasingly democratic states.⁷⁶ We measure ethnic fractionalization using the ethnolinguistic fractionalization index developed by Fearon and Laitin.⁷⁷ To account for the possibilities that regime type and ethnic fractionalization have nonlinear (i.e., inverted U-shaped) influences on civil war relapse, and following Mason *et al.*, we square these variables and include the squared terms as additional regressors in our model. **Table 1** presents in-sample descriptive statistics for all independent variables described above.

Model Specification

We test our hypotheses using a Cox proportional hazards (PH) estimator. The model assesses the hazard (or risk) of civil war relapse in a given year while accounting for the duration of postwar peace as well as our independent variables. The hazard rate for each unit *i* is:

$$h(t|X_i) = h_0(t)e^{X_i\beta},$$

where $h_0(t)$ is the unspecified baseline hazard function and X_i are covariates for *i*. We prefer this semiparametric specification to more restrictive parametric alternatives (e.g., Weibull), because it does not impose an a priori assumption that the risk of recurrence over time follows any specific functional form. Instead, as shown above, the Cox estimator leaves this duration dependency unparameterized and estimates the relationship between our dependent variable (the risk of civil war relapse) and covariates of interest (female participation variables).⁷⁸

TABLE 1
DESCRIPTIVE STATISTICS

Variable	Range	Mean	Median	SD
Female/male literacy ratio	0.165–1.005	0.791	0.883	0.202
Percentage of women in parliament	0–48.9	9.687	7.2	8.379
Percentage of women in labor force	5.048–55.108	36.610	40.921	9.710
Settlement	0, 1	0.315	0	0.465
War duration	1–36	6.382	4	6.544
UN peacekeepers	0, 1	0.128	0	0.334
Ln(GDPpc)	5.407–10.164	7.804	7.848	0.985
Infant mortality rate	5.2–148.5	60.250	50.6	39.439
Democracy	-10 to 10	-0.367	-2	7.041
Democracy ²	0–100	49.662	49	28.839
Ethnic fractionalization	0.004–1	0.469	0.479	0.258
Ethnic fractionalization ²	0.000016–1	0.286	0.229	0.254

Another advantage the Cox model offers over available alternatives is its ability to handle ‘tied’ data. By default, the model assumes that no more than one observation fails at each point in time. In this case, multiple units i may fail at some time t . That is, multiple states may experience civil war relapse in the same year. To estimate the parameters of the Cox model with tied data, we approximate (rather than calculate) the partial likelihood function. We do this using the Efron method, which accounts for changes in the risk set based on the sequencing of tied events. We use the Efron method rather than the more common Breslow method, because it is more accurate and robust to changes in the number of failure times relative to the size of the risk group.⁷⁹

To account for within-unit heteroskedasticity, robust standard errors are clustered by country. We also consider the possibility that the peace following a second, third, or fourth civil war (for example) is more frail than the peace following the initial war. To account for this, we stratify our results by the number of past civil wars associated with each observation. The model then estimates a different baseline hazard for each stratum, while restricting the coefficients to be the same across strata.

A final challenge is that the Cox model’s ability to produce unbiased and efficient coefficient estimates, and thus our ability to draw statistical and substantive inference, relies on the PH assumption. To be met, the assumption requires ‘that the effects of covariates are constant over time; the effect of an independent variable is to shift the hazard rate by a factor of proportionality, and the size of that factor remains the same irrespective of when it occurs.’⁸⁰ We test for nonproportionality in all reported models using Schoenfeld residuals. The test, which we conduct for each of our covariates and for each model as a whole, determines whether residuals exhibit a random pattern over time (in which case the PH assumption is met) or are systematic (in which case the PH assumption is violated).⁸¹ Results are reported in our online appendix, and show that the PH assumption is met by each covariate and by each of our global models.

RESULTS

As shown in [Table 2](#), our estimation sample covers 72 separate peace spells over 58 states between 1980 and 2003. It includes 28 peace failures, and a total of 656 peace-years. Eleven states in the sample experienced multiple failures. Rwanda, for example, had three civil wars. During the two peace spells there that ended in relapse, the average female-to-male literacy ratio was 0.58. Women held an average 12.5 per cent of parliamentary seats, and the adult labor force was on average 52.5 per cent female. During the peace spell that lasted to the end of our study, female participation improved along all three dimensions: the average female-to-male literacy ratio was 0.85, women held an average 20.6 per cent of parliamentary seats, and the adult labor force was on average 53.0 per cent female. Did this increased female participation contribute to the lasting postwar peace? Does this pattern generalize over space and time? We designed our large-N study to speak to these questions.

TABLE 2
LIST OF PEACE SPELLS IN ESTIMATION SAMPLE

Algeria, 1980–1992	Guatemala, 1995–	Russia, 1980–1994
Angola, 1991–1992	Guinea-Bissau, 2000–	Russia, 1997–1999
Angola, 1995–1997	Haiti, 1996–2003	Rwanda, 1981–1990
Angola, 2003–	India, 1980–1984	Rwanda, 1993–1994
Argentina, 1983–	Iran, 1985–	Rwanda, 1995–
Azerbaijan, 1995–2002	Iraq, 1997–	Senegal, 2000–2002
Bangladesh, 1998–	Israel, 1998–2000	Sierra Leone, 1996
Bolivia, 1982–	Jordan, 1984–	Sierra Leone, 2002–
Bosnia and Herzegovina, 2000–	Kenya, 1980–1991	South Africa, 1995–
Burundi, 1982–1987	Kenya, 1994–	Sri Lanka, 1980–1983
Cambodia, 1992–	Lebanon, 1992–	Sudan, 1980–1983
Central African Rep., 1998–2002	Liberia, 1997–1999	Sudan, 2002–
Chad, 1998–	Mali, 1996–	Syria, 1983–
China, 1980–	Moldova, 2000–	Tajikistan, 2000–
Costa Rica, 1980–	Morocco, 1992–	Thailand, 1983–2002
Croatia, 1996–	Mozambique, 1993–	Thailand, 2003
Cuba, 1991–	Namibia, 1990–	Turkey, 2000–
Cyprus, 1982–	Nicaragua, 1991–	Uganda, 1980–1981
Dominican Republic, 1980–	Nigeria, 1992–	Uganda, 1989–1990
Egypt, 1998–	Pakistan, 1980–1994	Uganda, 1993–1995
El Salvador, 1993–	Pakistan, 2002–	Yemen, 1991–1994
Ethiopia, 1994–	Papua New Guinea, 1999–	Yemen, 1995–
Georgia, 1995–2002	Paraguay, 1980–	Zimbabwe, 1980–1982
Greece, 1980–	Peru, 1997–	Zimbabwe, 1988–

Note: The data begin in 1980, and are right-censored at 2003; peace spells without end dates continued beyond this point in time.

Table 3 presents the results of our event history analysis.⁸² We report two estimations: a restricted model including only our female participation variables, and a fully specified model including those gender variables and the controls discussed above.⁸³ For each independent variable in each model, we present the estimated coefficient as well as the associated hazard ratio. Hazard ratios are simply exponentiated coefficients that capture the expected factor or percentage change in the baseline hazard associated with a one-unit increase in a covariate.⁸⁴ In this case, they capture the expected change in the risk of civil war relapse resulting from a one-unit increase in each independent variable. A hazard ratio less than one indicates that the variable lowers the risk of relapse to civil war (and thereby lengthens the duration of peace), while a hazard ratio greater than one indicates that the variable raises the risk of relapse (and thereby shortens the duration of peace).

The results in Table 3 support the argument (H1) that female social participation reduces the risk of civil war relapse. The coefficient on literacy is negative and statistically significant in both specifications, and the hazard rate of 0.044 in the fully specified model suggests that a one-unit increase in the female-to-male literacy ratio makes relapse 95.6 per cent less likely. Results also support the expectation (H2) that female political participation makes relapse less likely. The coefficient on parliamentary representation is negative and statistically significant in both models,

TABLE 3
STRATIFIED COX REGRESSION OF PEACE DURATION AFTER CIVIL WAR

Variable	Restricted model			Fully specified model		
	β	Hazard ratio	r.s.e.	β	Hazard ratio	r.s.e.
Female/male literacy ratio	- 2.349**	0.095	1.114	- 3.122**	0.044	1.668
Percentage of women in parliament	- 0.077**	0.926	0.037	- 0.118**	0.888	0.052
Percentage of women in labor force	0.067***	1.069	0.019	0.071***	1.074	0.026
Settlement				1.382***	3.985	0.592
War duration				- 0.077*	0.926	0.052
UN peacekeepers				- 1.224*	0.294	0.876
Ln(GDPpc)				0.203	1.225	0.505
Democracy				- 0.031	0.969	0.044
Democracy ²				0.017	1.017	0.015
Ethnic fractionalization				- 10.394**	0.00003	5.412
Ethnic fractionalization ²				11.185**	72010.96	5.715
<i>n</i>	656			579		
Wald χ^2	16.06***			27.13***		
Log pseudo-likelihood	- 46.4805			- 33.4692		

Note: Robust standard errors are clustered on same-country observations, and are based on the exponentiated coefficients.

*** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$ (one-tailed tests).

and the fully specified model reports a hazard rate of 0.888. This suggests that a one-unit increase in the percentage of seats held by women yields an 11.2 per cent decrease in the risk of return to civil war.

Results do not support the argument (H3) that female economic participation improves the prospects for post-conflict peace. Instead, the coefficient on women's presence in the labor force is positive and statistically significant in both models. The fully specified model reports a hazard rate of 1.074 for this covariate, suggesting that a one-unit increase in the percentage of women in the labor force actually increases the risk of civil war relapse by 7.4 per cent. Why might this be the case?

Above, we argued that civil war offers women short-term opportunities to participate in the labor force. When war ends, women are economically marginalized for several reasons: men resume their previously held jobs and oust women from their temporary employment, SAPs institutionalize gender discrimination, and women's property rights and access to credit are limited.⁸⁵ But what if women do not uniformly leave the workforce? Job opportunities are zero-sum, and men may return home to find their jobs held by women unwilling or unable to surrender their employment. This leaves the men unemployed, and that poor economic condition favors civil war. As Fearon and Laitin argue, 'recruiting young men to the life of a guerrilla is easier when the economic alternatives are worse.'⁸⁶ As women are increasingly present in the workforce, then, men's

individual-level economic conditions decline and the likelihood that they return to life as combatants increases. The likelihood of civil war relapse rises as a result.

The policy implication of this finding is provocative: One way to reduce the risk of civil war relapse is to ensure male employment upon return from the battlefield. This may be done through the creation of new jobs, or it may be done by removing women from their temporary places in the workforce. In the economic realm, it appears that female exclusion – through its ability to minimize male unemployment – may improve the prospects for an enduring postwar peace. Later, we investigate the substantive implications of this result.

Turning to our control variables, the effect of settlement is positive and significant. This suggests, as expected, that wars ending in settlements or truces are at greater risk of relapse than wars ending in decisive military victory. We find limited support for the anticipated effects of war duration, UN peacekeepers, and regime type. Each variable is in the expected direction, though none attains statistical significance. The coefficient on economic development is positive, which is counter to our expectation, but the result is statistically insignificant in its effect on the risk of recurrent civil war. The estimated effect of ethnic fractionalization is negative and significant, suggesting that increasingly fractionalized societies are decreasingly likely to relapse to civil war; however, the positive and significant squared term reveals that this relationship is nonlinear. Instead, it follows a U-shaped curve such that highly homogenous societies are more likely to relapse than somewhat fractionalized states, but not as likely as the highly heterogeneous. This finding inverts extant results, which find an inverted U-shaped relationship between ethnic fractionalization and the risk of return to civil war.⁸⁷ Juxtaposed, our result and Mason *et al.*'s present an interesting empirical puzzle that is beyond the scope of the present study, but provides a promising avenue for future investigation. In general, our results align with those in previous work and increase our confidence in the validity and reliability of our models.

Impacts across Types of Conflict Termination

The analysis above examines the effects of female participation on the risk of civil war relapse in all postwar states, regardless of the method of conflict termination. Theoretically, we expect this relationship to be stronger where civil war ended in negotiated settlement than where it ended in any other way. The analysis in [Table 4](#) tests that expectation. These models differ from the fully specified results in [Table 3](#) only in that they are disaggregated by conflict termination: Model 1 (in columns 2 through 4) includes peace spells that began with negotiated settlement, while Model 2 (in columns 5 through 7) includes peace spells that began with rebel or government victory, cease-fire, or a reduction in violence below the empirical threshold necessary to qualify as civil war.

The results strongly support our expectation. When a civil war ends in negotiated settlement, a one-unit increase in the female-to-male literacy ratio makes civil war relapse 98.6 per cent less likely. A one-unit increase in the percentage of parliamentary seats held by women yields a 36 per cent decrease in the risk of return

TABLE 4
ESTIMATED EFFECTS ACROSS TYPES OF CONFLICT TERMINATION

Variable	Negotiated settlement			Victory, cease-fire, or reduction in violence		
	β	Hazard ratio	r.s.e.	β	Hazard ratio	r.s.e.
Female/male literacy ratio	- 4.281**	0.014	2.584	- 14.425***	5.44e ⁻⁷	4.991
Percentage of women in parliament	- 0.447**	0.640	0.245	- 0.060	0.942	0.130
Percentage of women in labor force	0.416***	1.516	0.168	0.072*	1.075	0.054
War duration	- 0.072	0.901	0.076			
UN peacekeepers	- 2.180**	0.113	1.001	- 1.062		
Ln(GDPpc)	0.728	2.070	0.780			
Democracy	- 0.127*	0.881	0.099	0.153	1.165	0.147
Democracy ²	0.030**	1.031	0.014	- 0.004	0.996	0.027
Ethnic fractionalization	14.148*	13948	9.133	6.682***	798.083	2.672
Ethnic fractionalization ²	- 0.190	0.0001	8.364			
<i>n</i>		235		344		
Wald χ^2		39.27***		12.54**		
Log pseudo-likelihood		- 13.249		- 5.500		

Note: Estimates from a stratified Cox regression of peace duration after civil war. Robust standard errors are clustered on same-country observations, and are based on the exponentiated coefficients. The control variables were highly collinear in Model 2, with the following consequences: war duration, ln(GDPpc), and ethnic fractionalization squared were dropped; the UN peacekeepers variable was retained in the model, but STATA could not calculate its standard error.

*** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$ (one-tailed tests).

to civil war. And a one-unit increase in the percentage of women in the labor force increases the risk of relapse by 51.6 per cent. All three results are statistically significant.

When a civil war ends in a method other than negotiated settlement, a one-unit increase in the female-to-male literacy ratio reduces the risk of civil war relapse by 0.0000004 per cent. A one-unit increase in women’s presence in parliament yields a 5.8 per cent decrease in the risk of return to civil war. And a one-unit increase in the percentage of women in the labor force increases the risk of relapse by 7.5 per cent. The results on literacy and labor are statistically significant, while the estimated effect of women’s parliamentary representation falls short of significance at any conventional level. As our theory predicts, the effects of female participation on the risk of recurrent civil war are consistent across types of conflict termination, but they are stronger when conflict ends in negotiated settlement than when it ends in victory, in cease-fire, or via a reduction in violence.

Effects on the Cumulative Hazard of Civil War Relapse

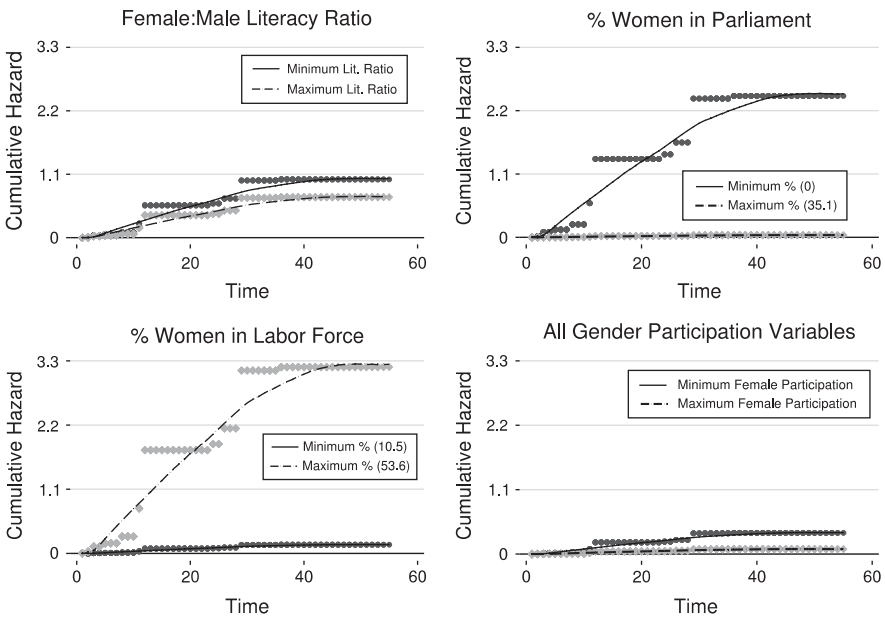
In describing the Cox PH model above, we note that the model estimates the hazard of relapse on the basis of an unspecified baseline hazard and the values of our specified covariates: $h(t|X_i) = h_0(t)e^{X_i\beta}$. One consequence of this technique is that

we calculate the cumulative hazard for the i th individual in our data. In other words, we can determine how the risk of return to civil war changes on the basis of particular values of and changes in our key covariates of interest.⁸⁸ To do this, we set the values of our independent variables to substantively meaningful levels, and determine how the hazard rate responds to changes in those set values. Specifically, we set all other right-side variables to their median levels and vary our female participation variables from their in-sample minimums to their in-sample maximums.

Results are presented in Figure 1. The figure has four panels. In each, the x -axis captures the time since civil war's end and the y -axis captures the cumulative or integrated hazard of civil war relapse. Two curves appear on each graph; the solid curve shows the effects of minimum female participation on the risk of relapse, while the dashed curve shows the effects of maximum participation. The plotted points are predicted hazards, while the superimposed lines are loess smoothers used to more clearly present the plotted relationships.

Moving from left to right and top to bottom, the first panel shows the effect of increased female (relative to male) literacy. The slopes of the two lines are comparable, but the solid line is always above the dashed line; this suggests that the risk of relapse is always greater when women are minimally literate than when they are maximally literate. Put simply, female literacy improves the prospects for

FIGURE 1
ESTIMATED EFFECTS OF FEMALE PARTICIPATION ON THE CUMULATIVE HAZARD OF CIVIL WAR RELAPSE



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postwar peace. The second panel in [Figure 1](#) shows the effects of increasing female presence in the national legislature. In this case, the slope of the dashed line is close to zero while the solid line has a positive and fairly steep incline. With no women in the legislature, the risk of relapse clearly increases over time. When 35 per cent of the legislature is female, this relationship virtually disappears, and the risk of relapse is near zero.

The third panel presents the effects of women in the labor force. As in the second panel, there is a clear difference in the slopes of the plotted lines. Unlike the pacifying effect of female legislators, however, the effect of increasing numbers of female workers is to exacerbate the risk of recurrent civil war. When only 1 in 10 workers in a state is female, the risk of relapse is low and increases very slightly over time. Increasing female representation to 54 per cent of the work force has a dramatic and dangerous impact, increasing the risk of relapse overall and increasing it more as time passes.

Thus far, we have found that female social and political participation improves the prospects for post-conflict peace while female economic participation makes civil war relapse more likely. Given these divergent results, it seems reasonable to investigate the effects of overall investment in female participation. What is the effect of simultaneous increases in female social, political, and economic participation? The fourth panel speaks to this question, showing the effects on the integrated hazard of min–max changes in all three measures of gender inclusion. It shows that the dangerous impact of women in the labor force weakens, but does not overwhelm, the more desirable effects of social and political inclusion. At minimum levels of female participation, the risk of civil war relapse rises slightly over time; maximum participation on all three dimensions lowers that risk overall and weakens its growth over time, so that relapse is always less likely when female inclusion is at a maximum than when it is at a minimum. Taken together, these results support our theoretical argument that female inclusion in society reduces the risk of civil war relapse and improves the durability of post-conflict peace.

CONCLUSION

Feminist literature argues that civil war marginalizes women in social, political, and economic ways. It also argues that women, by their nature and/or their effects on societal norms, reduce state tendencies toward violence. A quantitative literature supports this second claim, finding empirical evidence that female participation reduces the likelihood and severity of interstate war, human rights abuse, and civil war. We take these claims together, and find an explanation for the ‘conflict trap’: civil war entrenches those who make war less likely (i.e., women) in the outskirts of society. The resultant (male-dominated) environment leads to more war, which further entrenches women at the margins. We also find a straightforward means of breaking this vicious cycle: a concentrated effort to prevent or undo female marginalization. An empirical analysis of female participation and post-civil-conflict peace supports this expectation, showing that including women in social

society (through literacy) and political society (through legislative representation) reduces the risk of civil war relapse. Including women in the national economy (through participation in the labor force) has the opposite effect, but across-the-board investment in female inclusion again improves the prospects for postwar peace. Our analysis includes a representative sample of states, but covers a relatively short time period from 1980 to 2003. Our insights may only apply during these 24 years; readers should be aware of this possible limitation.

We believe that this work has some straightforward and important policy implications: investing in female inclusion improves the durability of post-conflict peace. Therefore, states and third parties wishing to lengthen peace spells during post-conflict reconstruction may do so by adopting and encouraging policies that bring women into society. For example, they may invest in education, teaching girls and women to read and write with comprehension. They may also develop electoral rules that encourage female legislators (e.g., electoral quotas). On the other hand, investing in purely economic participation (e.g., by encouraging women to enter and remain in the labor force) may have the undesirable consequence of increasing the risk of civil war relapse. While targeted inclusion in purely social and political spheres is most effective, an overall policy of female participation in society can also yield desirable results.

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67. Fortna (note 5); Caroline A. Hartzell, 'Explaining the Stability of Negotiated Settlements to Intrastate Wars', *Journal of Conflict Resolution* 43/1 (1999) pp.3-22; Caroline Hartzell and Matthew Hoddie, 'Institutionalizing Peace: Power Sharing and Post-Civil War Conflict Management', *American Journal of Political Science* 47/2 (2003) pp.318-32; Hartzell and Hoddie (note 5); Hartzell, Hoddie and Rothchild (note 5); Roy Licklider, 'The Consequences of Negotiated Settlements in Civil Wars, 1945-1993', *American Political Science Review* 89/3 (1995) pp.681-90; Mason *et al.* (note 5); T. David Mason, Joseph P. Weingarten and Patrick J. Fett, 'Win, Lose, or Draw: Predicting the Outcome of Civil Wars', *Political Research Quarterly* 52/2 (1999) pp.239-68; Michael J. Quinn, T. David Mason and Mehmet Gurses, 'Sustaining the Peace: Determinants of Civil War Recurrence', *International Interactions* 33/2 (2007) pp.167-93.
68. Doyle and Sambanis (note 5); Fortna (note 5); Hartzell and Hoddie (note 5); Mason *et al.* (note 5); Walter (note 3).
69. Doyle and Sambanis (note 5); Michael W. Doyle and Nicholas Sambanis, 'International Peacebuilding: A Theoretical and Quantitative Analysis', *American Political Science Review* 94/4 (2000) pp.779-801; Fortna (note 5); Mason *et al.* (note 5).
70. Doyle and Sambanis, 'International Peacebuilding' (note 69).
71. Sambanis (note 54).
72. Sambanis (note 54).
73. Mason *et al.* (note 5) generate their peacekeeping variable using information and notes from the UN's DPKO website; Doyle and Sambanis, 'International Peacebuilding' (note 69); Fortna (note 5); Sambanis (note 54). We use the time-varying measure, which equals one in each peace-year in which peacekeeping forces are present and zero otherwise.
74. Collier (note 3); Elbadawi and Sambanis (note 6); Mason *et al.* (note 5); Walter (note 3).
75. Other studies have captured this concept with infant mortality rate (e.g., Mason *et al.*, note 5; Walter, note 3). While a reasonable indicator of development, infant mortality rate has the disadvantage of correlating highly with our key independent variables, and particularly with our measure of the female/male literacy ratio ($\rho = -0.71$). This multicollinearity threatens our ability to draw meaning from either of the collinear variables independent of the other (Damodar N. Gujarati, *Basic Econometrics*, 4th edition (New York: McGraw-Hill 2003); Jeffrey Wooldridge, *Introductory Econometrics: A Modern Approach* (Stamford, CT: Cengage Learning 2002), and thus we prefer the natural log of GDPpc. In our online supplement, we present correlations among all our independent variables. We also demonstrate that our results are robust to replacing $\ln(\text{GDPpc})$ with infant mortality rates.
76. Monty G. Marshall and Keith Jagers, 'Polity IV Data Set Users Manual', online at <<http://www.cidcm.umd.edu/inscr/polity/>>, accessed May 2013.
77. James D. Fearon and David D. Laitin, 'Ethnicity, Insurgency, and Civil War', *American Political Science Review* 97/1 (2003) pp.75-90.
78. Janet M. Box-Steffensmeier and Bradford S. Jones, *Event History Modeling: A Guide for Social Scientists* (Cambridge: Cambridge UP 2004); Janet M. Box-Steffensmeier, Dan Reiter and Christopher Zorn, 'Nonproportional Hazards and Event History Analysis in International Relations', *Journal of Conflict Resolution* 47/1 (2003) pp.33-53.
79. Box-Steffensmeier and Jones (note 78); Box-Steffensmeier, Reiter and Zorn (note 78).
80. Janet M. Box-Steffensmeier and Christopher Zorn, 'Duration Models and Proportional Hazards in Political Science', *American Journal of Political Science* 45 (2001) pp.972-98, p.973.

81. Box-Steffensmeier and Jones (note 78).
82. In our online supplement, we consider potential selection effects and their consequences for our analysis.
83. Some variables are available for limited subsets of our sample. The fully specified model is estimated on a sample of 579 peace-years, including 66 peace spells and 21 failures.
84. See, for example, Box-Steffensmeier and Jones (note 78); Box-Steffensmeier and Zorn (note 80).
85. Elson (note 45); Karam (note 8); Kumar (note 8); Mason (note 13); Nakaya (note 45); Zuckerman (note 45).
86. Fearon and Laitin (note 77) p.80.
87. Mason *et al.* (note 5).
88. *Ibid.*