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The Historical Relationship Between
Female Political Empowerment and
Civil Conflict

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Peace Above the Glass Ceiling: The historical relationship between female political empowerment and civil conflict

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Abstract. This paper investigates whether female political empowerment is conducive to civil peace, drawing on global data on female political empowerment over a 200 year period, from the Varieties of Democracy database. We augment previous research by expanding the temporal scope, looking at a novel inventory of female empowerment measures, attending to reverse-causality and omitted variable issues, and separating between relevant causal mechanisms. We find a strong link between female political empowerment and civil peace, which is particularly pronounced in the 20th century. When studying mechanisms, we find that this relationship is driven both by women's political *participation* and the culture that conduces it. To draw causal inferences, we estimate instrumental variable models and perform causal sensitivity tests. This is the strongest evidence to date that there is a robust link between female political empowerment and civil peace, stemming from both institutional and cultural mechanisms.

Keywords: gender equality, civil war, culture, female empowerment, armed conflict

1 Introduction

It is commonly held that societies that empower women are less prone to civil violence. Notably, the rise of gender-egalitarian attitudes is central to historical accounts of the long-term decline of violence. In narratives such as Pinker’s (2011), a cultural change wherein women’s rights and perspectives are increasingly valued and respected on par with those of men is one of the structural forces propelling societies towards peace.

While the female empowerment-conflict link has received deserved attention from a number of conflict scholars (for an overview, see e.g. Reiter, 2014), finding some support (e.g. Melander, 2005; Schaftenaar, 2017), the “feminization thesis” is not yet on firm footing. We augment existing literature in four ways. First, existing studies are limited in temporal scope – being restricted to the final decades of the 20th century. This means that important historical advances in female empowerment are left out, such as the suffrage expansions in the early and mid 20th century, and extensions in women’s civil liberties in the 19th century. Second, the existing evidence draws on a handful of female empowerment indicators, focusing on socioeconomic empowerment, such as women’s labor force participation or fertility rates (e.g. Schaftenaar, 2017; Caprioli, 2005), or the number of female politicians (e.g. Melander, 2005). While important, these omit crucial aspects of female empowerment, such as women’s civil liberties, participation in civil society or the right to vote. Third, there are few attempts to tackle omitted-variable bias and reverse causality, through appropriate fixed effects models and instrumental variables. Finally, few attempt to gauge the relative contribution of the different mechanisms; the *participation* of women in society and politics, or the *culture* that enables it.

We address these issues, of temporal scope, indicators, causality and mechanisms, by investigating the relationship between female political empowerment and conflict onset in a global analysis spanning 1817-2015. To do this, we draw on female empowerment measures taken from the Varieties of Democracy (V-Dem) dataset (Coppedge, Gerring, Lindberg, Skaaning, Teorell, Altman, Bernhard, Fish, Glynn, Hicken, Knutsen, Krusell, Lührmann, Marquardt, McMann, Mechkova, Olin, Paxton, Pemstein, Pernes, Petrarca, von Romer, Saxer, Seim, Sigman, Staton, Stepanova and Wilson, 2017), which is recently extended back to the early 19th century as part of the Histori-

cal V-DEM project (Knutson et al., 2017). We combine this with historical intrastate conflict onset data from UCDP/PRIO and Correlates of War, which allows us to study the historical relationship between female empowerment and civil war. The fine-grained nature of the V-DEM data allows us to offer a more disaggregated test of the link between female empowerment and civil conflict, through a wide range of female empowerment aspects related to women’s civil liberties, political participation and engagement in civil society.

Drawing on existing work, we outline two main mechanisms relating female empowerment to civil peace. First, the *participation-mechanism* considers women as being more opposed to violence and more sensitive to humanitarian concerns. Due to these dispositions, societies where women influence decision-making through their participation in politics, should be less engaged in civil war. Second, the *norm-mechanism* stipulates that the relationship between female empowerment and civil conflict is not driven by women’s participation in politics per se, but by the particular norms and culture that are prevalent in gender-equal societies. According to the participation-mechanism, women’s participation matters even when we (hypothetically) hold culture constant, while the norm-mechanism attributes effects to norms, irrespective of female participation. In order to adjudicate between these two, we also draw on survey data from the World Values Survey measuring gender-equal norms.

We start by investigating a macro-level index of female political empowerment and its relationship to civil conflict. This uncovers a strong negative link between a country’s degree of female empowerment and civil conflict. This obtains in appropriate fixed-effects specifications, and in instrumental-variable models using different ancient agricultural history factors as instruments. Using causal sensitivity analysis, we also show that the result is unlikely to reflect selection from omitted variables. This set of tests offers the most comprehensive evidence to date that Female Political Empowerment causes peace.

The uncovered relationship is stronger in the 20th century than in the 19th, which we think reflects that women’s political *participation* did not increase markedly before this period. When breaking female political empowerment down into constitutive concepts; women’s civil liberties, women’s civil society participation and women’s political participation, we find a particularly strong

relationship for political *participation*. We think this offers some evidence that including women in positions of power yields the most positive peace dividend. Yet, since high level of female representation in politics and society could again simply be a result of more female-friendly norms – suggesting that it is culture rather than female involvement that is the driving force of peace – we also run models where we control for survey items from World Values Survey capturing gender-equal values (covering the 1981-2015 period). We find that the negative link between female political empowerment and civil conflict holds also when controlling for gender-equal norms. At the same time, gender-equal norms are negatively related to civil conflict when controlling for indicators of female political empowerment. These findings offer new insights about the link between female empowerment and peace, by suggesting that it is driven both by female participation in politics as well as by cultural shifts towards gender equality.

2 State of the art: Gender-equality and armed conflict

In his work on the historical decline of (personal and organized) violence Pinker (2011) points to “feminization” as one of the “better angels” that have led to a decline of violence, particularly in the developed world. This feminization-thesis dovetails with much indirect evidence in favor of the proposition that more gender equal cultures spawn less conflict. Individual-level studies show that men are more likely to support using violence than women (Goldstein, 2001; Bjarnegård, Brounéus and Melander, 2017, 329–330). Others report a link between female gender and more positive attitudes towards peace (than men) (Yablon, 2009; Wilcox, Hewitt and Allsop, 1996), while there are some indications that this is (at least partly) mediated through more gender-equal values and attitudes (among women) (Tessler and Warriner, 1997). Moving from individuals to *organizations* Asal et al. (2013) show that political organizations with gender-inclusive ideologies are less violent (Asal et al., 2013). Furthermore, we observe that sexual violence against women and conflict very often go hand in hand (Cohen and Nordås, 2014).

Do these micro- and meso-level relationships translate into aggregate patterns at the country level? A handful of studies find that more gender-equal states are less belligerent at the international level. For example, Caprioli (2000), who finds that more gender-equal societies are less likely to

engage in disputes (see also Caprioli (2003), Caprioli and Boyer (2001) and Regan and Paskeviciute (2003)).

The relationship between female empowerment and conflict within states is less studied. Some investigate how family-structures that subordinate women relate to political violence. Hudson, Bowen and Nielsen (2015) find that societies with patriarchal clan governance are more prone to political violence (Bowen, Hudson and Nielsen, 2015). There is also some evidence that societies practicing polygyny, a co-factor of misogyny, are less peaceful (Kanazawa, 2009). Gleditsch et al. (2011) suggest that this is due to misogynous cultures rather than polygynous practices.

Melander (2005) investigates whether more gender-equal states are less prone to internal armed conflict. He considers three proxies for gender-equality: 1) whether the leader is female, 2) the percentage of women in parliament, and 3) the female-to-male higher education ratio. He finds that more gender equal societies are less prone to internal conflict.¹ Relatedly, Caprioli (2005) finds that more gender equal societies – measured using fertility rates and women’s share of the labor force - are less likely to experience civil wars (see also Gizelis (2009)). A recent evaluation by Schaftenaar (2017) considers non-violent conflict and violent conflict together in one analysis, and finds that gender equality – measured by equality in education and fertility rates – yields a higher likelihood of nonviolent conflict onset, compared to no conflict or armed conflict.

The studies noted above are pioneering contribution that all suggest a link between female empowerment and peace. Yet, they leave several issues on the table. First, they draw on a limited number of proxies for gender equality, focusing either on female politicians or socio-economic indicators such as women in the labor force or fertility rates. This omits important aspects of female empowerment, such as female mass participation in politics through suffrage or civil society organizations, or the extent to which civil liberties apply to women. Female political empowerment can be broken down into numerous aspects, that do not neatly overlap. For example, in India, there is a high percentage of female members of parliament, but it scores notoriously low on gender equality on other indicators such as civil society participation and female journalists. This calls for exploring a wider range of indicators.

¹For a similar study of human-rights abuses see Melander:2005JPR

A second, and related issue, is the restricted temporal and cross-sectional scope of extant studies. Many countries do not report data on variables such as women in the labor force. This may lead to selection bias, as the analyzed sample skews towards highly developed countries (Cueva Beteta, 2006). Most time-series of countries that do report data are quite short. For example, the data used in Caprioli (2005) and Schaftenaar (2017) start in 1960. This omits several of the great advancements in female empowerment, related to e.g., voting rights and civil liberties. Third, existing studies do not adequately account for threats from omitted variables and reverse causality. None of the mentioned studies focus on country- and year-fixed effects models, meaning that there is a high possibility for omitted variables at the country-level conditioning both gender-equal cultures and conflict, and temporal trends that correlate the global evolution of civil conflict and gender equality. Reverse causality is also a problem, since conflict (and conflict risk) affects female empowerment. Not accounting for these threats could lead to spurious results. Finally, few tests properly distinguish between the two different mechanisms proposed in the literature, to adjudicate whether it is female political *empowerment per se* that reduces violence, or the culture that enables it.

Answering the question of how female empowerment affects conflict also requires a consideration of what causes female empowerment. We will not attempt an exhaustive review of the literature on this question here, but briefly mention some key recent contributions that rely on cross-national evidence (which is crucial in this paper). Some studies emphasize technological change, that enable greater participation of women in the workplace (Albanesi and Olivetti, 2016; Goldin, 2006), while others emphasize more general features of the macro-economy that hold women back such as the structure of the welfare state, countries' position in the international division of labor (Iversen and Rosenbluth, 2006, 2010), or natural resource dependence (Ross, 2008). Others emphasize cultural factors such as religion (Bayanpourtehrani and Sylwester, 2013), or polygyny (McDermott et al., 2018). A recent literature explores the impact of deep-rooted agricultural histories on country-level differences in female empowerment. Alesina, Giuliano and Nunn (2013) argue that early plow use favored a male-breadwinner model of agriculture that led to the subordination of women. Hansen, Jensen and Skovsgaard (2015) find that having a long history of agriculture predicts less female empowerment, since a transition to agriculture increased fertility and thus left women with less

time to other activities than child rearing. These contributions all consider important sources of female empowerment that we need to account for when attempting to estimate its relationship with civil conflict.

3 Mechanisms linking female empowerment and conflict

Explanations for why gender-equality should dispose for peace usually center on two types of mechanisms. The first relates to how female participation in society may promote peace, and the second to how a gender-equal culture (that also promotes participation) is conducive to peace. While these two aspects may be hard to tease apart empirically, they are different in important ways, as will be discussed below.

3.1 Female participation

First, female participation in decision-making, politics and civil society may be associated with less armed conflict due to women being less condoning of the use of violence than men. This does not rely on the crude notion that women are not involved in violent politics at all. A large literature shows that they do, in various ways (see e.g., McDermott, 2015; Wood and Thomas, 2017; Goldstein, 2001; Alison, 2009). However, while this goes to show that women also engage in violence, there is evidence that they on average are relatively less disposed than men to favor violence (Yablon, 2009; Wilcox, Hewitt and Allsop, 1996; Regan and Paskeviciute, 2003). Women are also found to less often resort to direct interpersonal violence (e.g. Lagerspetz, Björkqvist and Peltonen, 1988). More generally, women are considered to be less willing to engage in power struggles for personal gains or honor and more eager to “minimize power differences, share resources, and treat others equally” (Caprioli and Boyer, 2001). Such attitudes should, on average, translate into a more peaceful approach to political affairs.

Women’s supposed nonviolent dispositions have been traced to evolved “natural” aversions (to violence) (Buss and Shackelford, 1997), as well as to the social construction of gender roles whereby females adopt more peaceable attitudes, while male – or “macho” – gender roles reward violence and violence-promoting behavior. The construction of violent masculine gender norms is described in

the concept of “military masculinities” (Bjarnegård and Melander, 2011). A related argument that also relies on nurture assumptions holds that women are more sensitive to humanitarian concerns due to the fact that they (and children) are usually the worst affected by some consequences of political instability, such as humanitarian crisis, poverty, and sexual violence (Shea and Christian, 2016).

On these accounts, what matters is the *representation of women* such that their natural and/or socially constructed aversions to violence will have a greater impact on policy. For example, democratic societies in which half of the electorate are female, should by implication favor more peaceful tactics for dealing with dissident groups, and thus become less often embroiled in civil wars. Hence, this mechanism implies that a high level of *female participation*, for instance in the parliament, government, the electorate or civil society, will influence the likelihood of political violence.

3.2 Gender-equality norms

Rather than looking to intrinsic (or learned) differences between men and women, the second mechanism pertains to the *norms* of highly gender-equal societies. According to this reasoning, societies where women are subordinate rely on principles of domination, honor and control in the family. These principles are easily transferred from the family into other domains such as behavior towards minorities, political opponents or groups competing for resources, and they may serve as a rationale for the use of political violence. Conversely, in societies where gender equality prevails, the mutual respect and tolerance that characterize family ties creates a culture emphasizing peaceful social relations and decision-making.

This mechanism assumes that “female-friendly” *norms*, among both men and women, are linked to peaceful behavior. Recent studies, such as Bjarnegård, Brounéus and Melander (2017) offer evidence in accordance with this perspective, showing that individuals espousing patriarchal values - both men and women - have more favorable views towards using violence.

One interpretation of this mechanism is that gender-equal norms influence attitudes towards and willingness to use violence. The other interpretation is that concerns for gender equality is one component in a broader culture also embracing attitudes such as anti-violence, tolerance, trust and

democratic decision-making (see, e.g. Inglehart and Welzel, 2006). On the latter account, gender-equal norms do not *explain* willingness to use violence - rather, they are both part of the same normative framework.

According to the norm-argument, the socialization away from traditional masculine cultures makes the average person, also males, less likely to condone violence. When the population as such becomes more violence-averse as a result of more gender-equal norms, it does not matter that *women*, specifically, be represented, simply that those affecting policy - men and women - have become more averse to violence as a means.

3.3 Expectations

Both mechanisms discussed above yield the expectation that societies where women are empowered should be more peaceful. This is the main hypothesis. Although the two mechanisms are clearly distinct as to what the driving force of the link between female empowerment and violence relationship is, they are hard to disentangle empirically. High levels of female participation in politics or civil society, for instance through representation in the state legislature or in local councils, could very well be a product of norms: Societies with a female-friendly culture should have lower informal and cultural barriers for women wanting to enter politics. This makes it more likely that voters will elect female representatives. This is a problem for existing studies arguing that female political *representation* – specifically – is a driving force for peace, as a high level of women in politics could be driven by gender-equal norms. Conversely, female empowerment norms may be influenced by female participation, as experience with women in politics may increase acceptance for female political participation and reduce misogynist attitudes.

We address this issue, by investigating whether formal manifestations of female empowerment such as political participation and women’s civil liberties influence civil conflict when *controlling for female empowerment norms*, and vice versa.

4 Research design

This study focuses on *female political empowerment*, relying on the V-Dem dataset (Coppedge et al., 2011). Female political empowerment is defined Sundström et al. (2015) as “a process of increasing capacity for women, leading to greater choice, agency, and participation in societal decision-making.” (Coppedge, Gerring, Lindberg, Skaaning, Teorell, Altman, Andersson, Bernhard, Fish, Glynn et al., 2017; Sundström et al., 2015). For maximum temporal scope, we draw data from both the contemporary version, spanning 1900-2015 (Coppedge et al. 2017) and the Historical V-Dem dataset (Knutsen et al., 2017), covering 1789-1900. These two datasets comprise a range of concrete items and higher-level indices relating to female political empowerment. As our benchmark, we consider the *Female Political Empowerment* (FPE) index, embedded in contemporary V-dem and presented in Sundström et al. (2015).

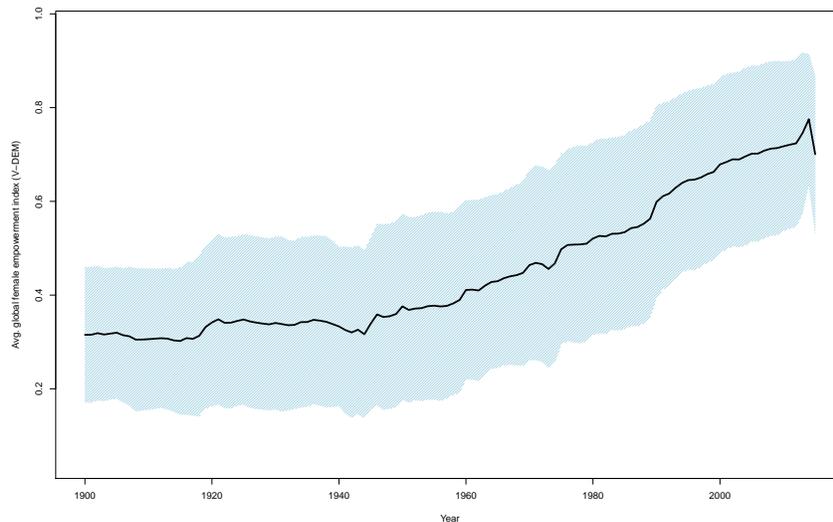
The FPE index in the original V-DEM dataset averages the scores of three sub-indices. The first building block; the *women’s civil liberties index*, is formed by taking the point estimate from a Bayesian factor analysis model including three concrete items; *freedom of domestic movement for women*, *freedom from forced labor for women*, *women’s right to private property* and *access to justice*.² The second component is the *women’s civil society participation index*. This is a latent factor variable estimated on the following items; *freedom of discussion for women*, *women’s civil society organization (CSO) participation*, and *share of female journalists*. The final component is the women’s political participation, which averages the indicators of *share of female legislators*, and *political power distributed by gender*. For more detailed description, see Coppedge et al. (2017).

The FPE index as constructed in the original V-DEM dataset is not included in the Historical V-Dem (HV-Dem) dataset. This reflects the exclusion of the sub-index women’s political participation in HV-Dem. To construct a measure that spans 1789-2015, we create our own historical FPE index, by averaging the *Women’s civil society participation* index and the *Women’s civil liberties* index, both of which are included in Historical V-DEM. When we run analyses for the entire 1789-2015 period, we will use this Historical FPE index, but resort to the original FPE index when we restrict the sample to the 1900-2015 period.

²The details of the latent trait model are described in Pemstein et al. (2018).

The evolution of female political empowerment as captured by the historical and contemporary versions of the FPE index is presented in figures 1 and 2, showing the average score on the FPE index globally (1900-2015), as well as the Historical FPE index (1789-1900). The figures shows a steadily increasing trend towards greater female political empowerment. The measure in Figure 1 includes political participation, which might explain the stark increases after WWII.

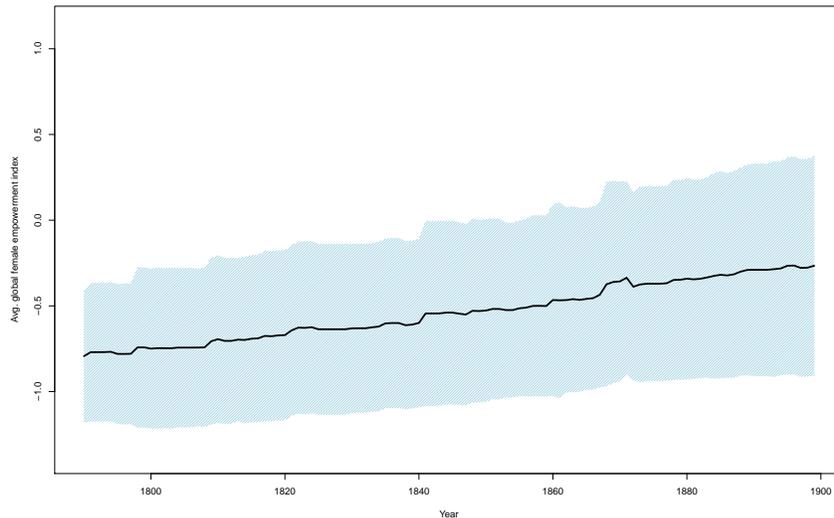
Figure 1: Global average of the V-DEM Female Political Empowerment index (1900-2015)



The confidence bands reflect the yearly global standard deviation

As our key outcome, we look at *civil conflict onset*, using two different sources. For the period 1946-2015, we rely on the UCDP/PRIO database (Gleditsch et al., 2002), the 2016 version (Melander, Pettersson and Themnér, 2016). Here, we opt for the most inclusive civil conflict category, using the 25 battle death threshold. Since we also want to study the pre-WWII period, we extend our civil conflict variable back in time using the Correlates of War data on intrastate wars (Sarkees and Wayman, 2010), covering the 1817-2007 period. This applies a different battle-death threshold (of 1000 deaths) than UCDP/PRIO, but we think this is less problematic than it appears: Since the UCDP/PRIO coding procedure is very conservative (ie. it needs verification from several independent sources for each battle-death), and the Correlates of War data is not as conservative, we believe these two sources are less discrepant they appear. We combine these two sources into a

Figure 2: Global average of the Historical V-DEM Female Political Empowerment index (1789-1900)



The confidence bands reflect the yearly global standard deviation

conflict variable spanning the period 1817-2015, registering COW conflicts until 1945, and UCDP conflicts after 1945. To assuage fears that our results are driven by the construction of this conflict variable, we analyze the different periods covered by COW and UCDP separately in additional tests.

Our baseline models investigate conflict onset specifically, and censor all conflict years that are not years of conflict onset. We estimate a standard civil-conflict onset logit model, that accounts for temporal dependence using linear, cubed and squared peace-year terms. In addition to this, we add controls to our baseline model using extant studies of the origins of female empowerment to guide our choice of confounders. To capture technological change, and general income level, we include log of GDP p.c., and log of population. We also include democracy and democracy squared (measured using the Polyarchy index from V-Dem) to account for the fact that female empowerment could reflect the general level of democracy. To capture the global diffusion of female empowerment norms, as well as the waxing and waning of civil conflict over time, we include year-fixed effects. These capture global secular trends in female empowerment and civil conflict. Since many of the theories of the origins of gender equality highlight deep-rooted cultural and historical factors, we

also include country-fixed effects. These will pick up factors such as agricultural history and culture. In additional tests we include other confounders to investigate sensitivity.

5 Results

First, we probe whether there is a general link between female empowerment and conflict from 1817 until today, and in which time-periods this is most evident. The first two columns of table 1 consider the association between the (historical) FPE index and the log odds of conflict onset.

Table 1: Logit models of conflict onset

	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(1.7)	(1.8)	(1.9)
	Outcome: Conflict onset $t + 1$ (COW and UCDP)								
Time period:	1817-2013			1900-2013			1946-2013		
FPE	-0.956*** (-3.46)	-1.177** (-2.76)	-1.493*** (-3.99)	-0.855 (-1.38)	-1.774*** (-4.27)	-2.707*** (-4.06)	-2.865** (-2.71)	-2.690*** (-3.79)	-2.730* (-2.37)
GDP p.c.			-0.403*** (-4.28)	-1.019*** (-6.22)	-0.474*** (-4.94)	-0.238* (-2.13)	-0.916*** (-4.23)	-0.198 (-1.79)	-0.624** (-2.60)
L(population)			0.402*** (7.61)	0.326 (1.76)	0.388*** (6.78)	0.360*** (7.51)	0.386 (1.39)	0.330*** (6.76)	0.226 (0.69)
Democracy			6.553*** (4.69)	7.424*** (5.50)	7.519*** (6.25)	6.402*** (4.36)	8.590*** (5.10)	6.038*** (3.52)	9.367*** (4.66)
Democracy ²			-7.193*** (-4.50)	-8.178*** (-5.59)	-8.318*** (-6.16)	-7.111*** (-4.40)	-8.843*** (-4.75)	-6.314*** (-3.31)	-9.599*** (-4.33)
Peaceyears	-0.0906*** (-10.13)	-0.0589*** (-5.98)	-0.0635*** (-7.37)	-0.0316** (-2.93)	-0.0539*** (-5.86)	-0.0581*** (-5.57)	-0.0358** (-2.71)	-0.0596*** (-5.51)	-0.0202 (-1.33)
Peaceyears ²	0.00106*** (8.00)	0.000799*** (4.56)	0.000753*** (5.40)	0.000469* (2.47)	0.000654*** (4.57)	0.000712*** (4.27)	0.000630** (2.71)	0.000702*** (4.29)	0.000388 (1.41)
Peaceyears ³	-0.0000338*** (-6.49)	-0.0000227** (-2.90)	-0.0000233*** (-4.15)	-0.0000119 (-1.42)	-0.0000193*** (-3.33)	-0.0000231*** (-3.39)	-0.0000199 (-1.96)	-0.0000217*** (-3.40)	-0.0000107 (-0.89)
N	16566	16334	12988	12780	13216	9438	7352	7882	4592
Countries	182	180	173	171	182	173	107	169	77
Country-FE		✓		✓			✓		✓
Country-RE					✓				
Region-FE	✓		✓	✓		✓		✓	
Year-FE	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Z statistics in parentheses. Standard errors are clustered on countries. Intercept omitted from table. Years of conflict incidence that are not years of onset are censored.

Column 1.1 displays a parsimonious model with only peace-year terms, year- and region-fixed effects. This model includes the most observations by far ($N=16566$), which is the “effective N ” without observations in years with no conflict onset. In this model, the FPE coefficient is in the expected direction ($\beta = -0.956$) and precisely estimated ($Z\text{-score} = -3.46$). This indicates that countries with higher levels of female political empowerment have lower conflict risk *ceteris paribus*. Column 1.2 introduces country-fixed effects, and is much more demanding, as it drops all time-invariant information that is country-specific. In this model, FPE is similar and negative ($\beta = -1.177$), while slightly less precise ($Z\text{-score} = -2.76$). This indicates that most of the correlation between female empowerment (when using the historical measure) and conflict is attributable to between-country variation.

However, important societal developments such as income growth, and democracy, can affect both the evolution of FPE and conflict. Column 1.3 enters GDP, population and the democracy terms into the baseline model as covariates (with no country-fixed effects). In this model, the sample is somewhat reduced (due to missing values for the covariates), to 12988. Yet, the coefficient is negative and similar to the coefficient in model 1.1 ($\beta = -1.493$, $Z\text{-score} = -3.99$). Model 1.4 includes country-fixed effects. In this model, the coefficient is greatly reduced when contrasting with column 1.3, and is no longer statistically significant. Model 1.5 includes country-random intercepts, yielding a negative and precisely estimated coefficient. This patterns suggests that the relationship between the historical measure of FPE and conflict risk is mostly due to stable between-country differences, when considering the entire 1817-2015 period and using the *historical* FPE index (with no participation component).

One reason why the estimates weaken with country-fixed effects, while retained in e.g., random intercept models, could be little variation over time. This will be especially true in the 1817-1900 period, where there were few reforms that altered the empowerment of women (such as women’s right to vote), and also when using a measure that does not include participation. To see if results differ for the contemporary female empowerment index which covers the period from 1900 onward and includes political participation, we run similar analyzes as in 1.1-1.4 using the contemporary FPE index and studying the 1900-2015 period. We expect to find stronger relationships for this pe-

riod, in particular because this is when female political participation took off, initially in European countries and then spreading to other parts of the globe. We also expect the inclusion of female political participation to strengthen the FPE-conflict link. Columns 1.6-1.7 consider the association between conflict risk and the FPE index after 1900. These models display a quite strong negative link between FPE and conflict onset, also strongly evident in the conservative model including both year- and country fixed effects (1.7).

Finally, we look at only the 1946-2015 period. We zoom in on this period since most of our additional controls in further robustness tests are restricted to it, and because it is covered by the UCDP measure of conflict, which is arguably considered a gold standard. These models (1.8-1.9) show a strong link between FPE and conflict risk.

Is the FPE-conflict link of substantive importance? A simulation of model 1.3 indicates that when holding all other variables at their mean, and increasing a country's FPE index from its minimum to maximum value, annual conflict risk drops from roughly 30% to around 5%. This means that conflict risk is almost *five times higher* in maximally patriarchal countries than in highly gender-egalitarian countries, when other factors (such as GDP) are held at their mean values. This relationship is displayed in figure 3, which shows simulated probabilities of conflict onset, as FPE moves from its minimum to its maximum value, with covariates held at means.

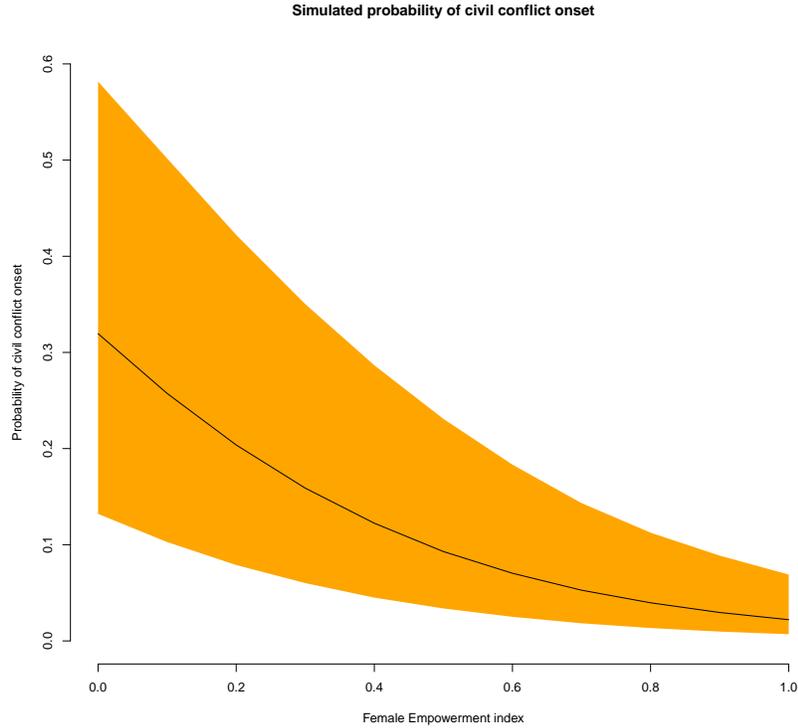
Table 2 dis-aggregates the different sub-components of the FPE index. It distinguishes between the three sub-indices; *female civil liberties* (column 2.1), *female civil society participation* (column 2.2), and *female political participation* (column 2.3). Column 2.4 includes all three in the same model. If the results in table 1 indicate that *political participation*, specifically, matters a lot, then this is further corroborated by the results in table 2. It shows that *female political participation* is most strongly linked to the outcome of civil conflict risk, and especially so when we control for the other two dimensions. It is negative and precisely estimated when entered in isolation, and similarly so when entered along with the two other indicators of FPE. While this provides some suggestion that political participation is primary, it is also quite hard to interpret the effect of participation when controlling for e.g., civil liberties or civil society participation. These factors are causally intertwined, and an increase in one will often lead to, or result from, an increase in another.

Table 2: Logit models of conflict onset looking at sub-components of the female empowerment index, 1900-2015

	(2.1)	(2.2)	(2.3)	(2.4)
Time period:	(1900-2015)			
	Outcome: Conflict onset $t + 1$ (UCDP/COW)			
Female civil liberties	-0.897*			-0.703
	(-2.32)			(-1.41)
Female civil society participation		-1.323**		-0.786
		(-3.13)		(-1.46)
Female political participation			-1.573***	-1.289**
			(-3.54)	(-2.79)
Democracy	6.000***	6.154***	4.777***	6.571***
	(4.35)	(4.50)	(3.67)	(4.29)
Democracy ²	-6.916***	-6.997***	-5.960***	-7.064***
	(-4.33)	(-4.38)	(-3.85)	(-4.33)
GDP p.c.	-0.440***	-0.432***	-0.338**	-0.287**
	(-4.92)	(-4.87)	(-3.21)	(-2.65)
L(population)	0.389***	0.405***	0.387***	0.373***
	(6.93)	(6.99)	(7.16)	(7.00)
Peaceyears	-0.0803***	-0.0795***	-0.0758***	-0.0738***
	(-8.24)	(-8.39)	(-6.32)	(-6.37)
Peaceyears ²	0.000976***	0.000965***	0.000967***	0.000925***
	(6.12)	(6.20)	(4.86)	(4.82)
Peaceyears ³	-0.00000314***	-0.00000309***	-0.00000329***	-0.00000308***
	(-4.76)	(-4.82)	(-3.93)	(-3.79)
N	12748	12762	9297	9288
Region-FE	✓	✓	✓	✓
Year-FE	✓	✓	✓	✓

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Z statistics in parentheses. Country-clustered SE's. Intercept omitted from table.

Figure 3: Simulated probability of conflict onset as FPE index increases



Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Z statistics in parentheses. Country-clustered SE's. Intercept omitted from table. Y

In sum, tables 1 and 2 paint an interesting picture: FPE seems strongly and negatively linked to conflict onset, at least in the 20th century. We also find some evidence that this is particularly due to political participation, which did not significantly increase until expansions of female suffrage in the 20th century.

While the stronger results for participation provide some guidance, the results so far do not clearly indicate whether the identified link between female empowerment and armed conflict is due to women being *more involved in political institutions*, or whether it rather reflects the *culture and prevailing norms in societies where women participate in politics*. To investigate this, we draw on indicators of “gender-equal” norms from the World Values Survey (World Values Survey, 2014) (WVS). Specifically, we use two items asking respondents whether they agree with: 1) “When jobs are scarce, men should have more right to a job than women”, 2) “On the whole, men make better political leaders than women do”. These two survey items are combined into one indicator

– Female Empowerment Values. Positive values represent more gender-equal responses. One important challenge with the data from World Values Survey is the large number of missing values, particularly in the time-series. WVS currently only contains 6 survey rounds, spanning the 1980-2015 period, which means that countries have a maximum of 5 observations over time, and many have considerably less. To avoid sample-selection bias emerging from listwise deletion we conduct multiple imputation using Amelia II Honaker, King and Blackwell (2011). This has proven fruitful for the WVS data in particular (Dahlum and Knutsen, 2017). The imputation accounts for the time-series cross-sectional structure of the data, and produces a total of 5 different datasets. In the following, we present estimations based on the average values across the 5 imputed datasets. Since our imputation is limited by the start- and end-points of the WVS, the time series of each imputed dataset is 1980-2015.

In table 3, the combined indicator of Female Empowerment Values is added to models investigating the link between the aggregate FPE index and civil war. In models 3.1-3.2, we replicate models 1.7 and 1.8, now using the imputed dataset (with the restricted post-1980 sample). The results still indicate a negative association between FPE and civil conflict, also when including country fixed effects (although the Z-score is significantly weakened). When controlling for gender-equal values in models 3.3 and 3.4, the coefficient estimates for FPE decreases substantially in size. This is consistent with the notion that a female-friendly culture promotes women’s political empowerment, while also reducing the risk of civil conflict. But, interestingly, there is still some evidence that the female empowerment index is negatively related to civil conflict. The coefficient is still negative and significant in the model with region-FE’s. To be sure, the Z-score is reduced in model 3.4, which includes country FE’s and control for values, but the coefficient and standard errors remain stable enough that we suspect to find a negative and more precisely estimated coefficient in a longer time-series. This indicates that, while a substantial share of the relationship between FPE and civil conflict is related to societal norms, there is also some evidence of an independent link running from women’s participation in politics to peace. Meanwhile, the coefficient estimate for gender-equal norms is negative and statistically significant at conventional levels in both models 3 and 4, suggesting that such norms are strongly conducive to peace when controlling for indicators

of female political participation.

Table 3: Logit models of conflict onset, 1981-2015

	(3.1)	(3.2)	(3.3)	(3.4)
Time period	(1980-2015)			
	Outcome: Conflict onset $t + 1$ (UCDP)			
Female empowerment values			-2.417**	-2.308**
			(-2.66)	(-2.84)
FPE	-3.649***	-4.067*	-2.419*	-2.782
	(-3.79)	(-2.07)	(-2.24)	(-1.38)
L(population)	0.287***	0.420*	0.270***	0.426*
	(3.71)	(1.97)	(3.48)	(2.00)
GDP p.c.	-0.130	-0.455	-0.0160	-0.355
	(-0.62)	(-1.25)	(-0.08)	(-0.97)
Democracy	7.164**	1.318	7.408**	1.757
	(2.64)	(1.25)	(2.75)	(1.64)
Democracy ²	-6.923*	-6.123*	-6.727*	-5.727
	(-2.27)	(-2.10)	(-2.21)	(-1.71)
Peaceyears	-0.183***	0.0651	-0.192***	0.0666
	(-3.46)	(1.07)	(-3.59)	(1.09)
Peaceyears ²	0.00603*	-0.00548	0.00643**	-0.00557
	(2.55)	(-1.86)	(2.70)	(-1.90)
Peaceyears ³	-0.0000579*	0.000105**	-0.0000616*	0.000107**
	(-2.06)	(2.70)	(-2.19)	(2.77)
N	2938	1839	2938	1839
Country-FE		✓		✓
Region-FE	✓		✓	
Year-FE	✓	✓	✓	✓

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Z statistics in parentheses. Standard errors are clustered on countries. Intercept omitted from table. Years of conflict incidence that are not years of onset are censored.

5.1 Reverse causality and omitted variables

While the associations uncovered above are quite strong and consistent with expectations, they could potentially reflect different forms of bias. Crucially, it is often claimed that it is *conflict* – latent or manifest – that conduces female empowerment, and not the other way around. The most popular version of this argument holds that civil conflicts create opportunities for female empowerment during and after the war has ended. Two key mechanisms have been proposed. First, wars open up new spaces for women to partake in the economy and society more generally, as men are disproportionately involved in fighting. The increased participation of women lingers on after the conflict, leading to greater female empowerment post-conflict (Tripp, 2015). Second, women are often active in peace movements, and are either informally or formally involved in peace negotiations.

This spills over into a higher level of women’s inclusion in post-war politics. Women’s rights issues are consequently often included in post-war constitutions, promoting female empowerment agendas. In line with these arguments, studies indicate that female political empowerment increases after conflict, with a particular emphasis on Africa (see e.g., Hughes and Tripp, 2015; Hughes, 2009).

Could this relationship bias our results? Since we control for time since the last conflict, this is less of a concern. However, relationships can be much more subtle. For example, if the female empowerment trend starts *during* a conflictual period, but right before it reaches the battle death threshold, then it is really the conflict that is driving Female Empowerment and not vice versa. To investigate this, we run models regressing conflict onset on *future* changes in the FPE index (5, 8 and 10 years). If there is a pre-treatment trend whereby conflict is the driver of empowerment, we should see that future female empowerment is linked to current conflict. These models can be seen in table A1 in the appendix. We find no indication that future changes in the FPE index are associated with (current) conflict onset. To probe whether female empowerment increases after a conflict ends, which is interesting in and of itself, and would support the findings by, Hughes and Tripp (e.g., 2015) (see also Hughes, 2009), we regress the FPE index on indicators registering the time since a conflict has ended (we use 2, 5 and 10 year lags). In contrast to the literature suggesting a positive relationship between a recent conflict occurrence and female empowerment, we find (shown in table A2 in the appendix) the opposite: Having had a conflict that ended in the recent past is associated with *decreases* in female empowerment. This relationship holds when we measure a conflict ending in the past 3, 5 and 10 years.

An additional threat to our result is the potential for one or more omitted variables that condition both female political empowerment and conflict risk. A clear example of this would be if women’s involvement in peace movements to pre-empt conflicts increases female empowerment more generally, while at the same time being a response to latent conflict risk. Another example would be if female political empowerment resulted from changes in popular attitudes in a more liberal direction that could also spur aversion to political violence. It could also be that a culture of political violence drives female political empowerment: In conflict-prone societies, attributes associated with proficiency in violence will be valued more (for example by voters) and this could

create a more male-dominated politics.

One way to get around this thorny problem is to attempt Instrumental Variables (IV) analysis, to endogenize the female empowerment index. We pursue this, drawing on the findings of Alesina, Giuliano and Nunn (2013) that historical plow use - when conditioning on other historical features - predicts contemporary female subordination. We adopt Alesina, Giuliano and Nunn (2013)'s data structure, and consider the mean of the female empowerment index as our main predictor, and the mean of our conflict variable as our main outcome (over the 1900-2015 period). We then produce a first-stage by regressing FPE on our baseline covariates (taking their means over the whole period), the plow variable, and the baseline historical covariates from Alesina and Guliano, in a sample of 160 countries. In this analysis, the plow instrument shows the expected relationship to female empowerment, but we do not gain enough statistical power in the first stage to convincingly estimate the effect of female empowerment in the second stage ($F=3.34$). We note that the coefficient in the second stage is negative (as expected) but lacks statistical power. From this baseline, we try to strengthen our instrument by including another proxy for historical agriculture, highlighted by Hansen, Jensen and Skovsgaard (2015), namely the suitability for agriculture, taken from Alesina and Guliano. This does improve our first-stage somewhat ($F=6.72$) and increases the T-value for the second stage coefficient (-1.95). We go on to use two additional instruments, namely whether the ancestral culture of the given country - as defined and operationalized in Alesina and Guliano - practiced matrilineal or patrilineal post-marital rules, which is also proposed as a determinant of female empowerment (Alesina, Giuliano and Nunn, 2013). These instruments do not improve the first stage, while the coefficient remains similar to model 3.

One problem with the setup above is the democracy variable (Polyarchy from V-DEM), which is constructed partly based on women's political participation (e.g., female suffrage etc.). This means that the first stage will instrument for FPE net of democracy and thus many of the crucial components of women's political empowerment. On the other hand, not controlling for Polyarchy risks a violation of the exclusion restriction, since the instruments can influence civil war through the excluded democracy index. To gauge how the inclusion of Polyarchy affects our 2SLS results, we run the 2SLS models without democracy, in model 5. This significantly improves the first stage

Table 4: 2SLS models of conflict history, 1900-2015

	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)
Model: % 2SLS					
Outcome: % of years in conflict					
FPE	-1.500 (-1.14)	-1.284* (-2.29)	-0.995* (-2.21)	-0.980* (-2.34)	-0.613** (-2.63)
Alesina and Guliano controls					
Agricultural suitability	0.027 (0.19)				
Large animals	0.062 (0.53)	0.073 (0.69)	0.090 (0.90)	0.091 (0.90)	0.043 (0.41)
Tropical climate	-0.040 (-0.36)	-0.023 (-0.38)	0.007 (0.14)	0.009 (0.17)	-0.004 (-0.08)
Economic complexity	0.006 (0.36)	0.004 (0.33)	0.001 (0.10)	0.001 (0.09)	0.007 (0.55)
Political hierarchies	0.028 (1.11)	0.025 (1.19)	0.018 (0.92)	0.018 (0.92)	0.004 (0.26)
Additional controls					
Democracy	0.808 (1.15)	0.700* (2.00)	0.540+ (1.91)	0.532* (2.03)	
L(population)	0.046** (3.28)	0.048** (4.97)	0.050** (5.37)	0.050** (5.51)	0.057** (6.11)
L(GDP pc)	-0.043* (-2.18)	-0.043* (-2.28)	-0.038* (-2.26)	-0.038* (-2.22)	0.002 (0.07)
Instrument	Plow	Plow,agriculture	plow,agriculture matrilocality	plow,agriculture matrilocality,patrilocality	plow,agriculture
First-stage F value	3.34	6.72	4.71	3.83	19.27
N	166	166	166	166	166

Notes: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. T statistics in parentheses. Intercept omitted from table. The outcome registers the share of years with civil conflict in a country throughout the period 1900-2015.

($F=19$), which is highly expected since the variance in female empowerment should be greater when it is not purged of the covariance with democracy. It also greatly strengthens the precision of the second stage coefficient, which is still negatively signed (to $T=-2.63$). This indicates an effect of the FPE index when we do not condition on democracy, although it can not be ruled out that this is driven by democracy.

The exclusion restriction embedded in these 2SLS models is that agriculture and plow use does not impact civil conflict through other channels than female empowerment, when we condition on the covariates. A significant threat to this arises when considering the impact of early agricultural history on state-formation and subsequent state capacity. It is widely held that states with agricultural “head starts” developed states earlier, leading to subsequently higher level of wealth and state capacity in the contemporary era (Bockstette, Chanda and Putterman, 2002; Putterman, 2008).

However, we do control for a range of factors that should correlate strongly with this historical process, such as presence of historical states (political hierarchies), and present-day GDP. While we think these can assuage concerns regarding the exclusion restrictions, this is not a definitive safeguard. In summary, while far from conclusive evidence, we think these IV results, with all the above discussed caveats, strengthen a causal interpretation of the FPE-conflict relationship, and provide some additional layers of evidence that we can attribute an effect of female empowerment on civil conflict.

As noted above, the IV analysis is no panacea. To further address endogeneity issues, we therefore proceed to evaluate how sensitive our results are to selection on observables, using this assessment as a guide to (potential) selection from the unobservables (Altonji, Elder and Taber, 2005; Blackwell, 2013). This starts from the premise of proportional selection, namely that the bias stemming from included covariates can inform us about the threat from omitted variables. This assumption is particularly warranted when the covariates are *selected for their ability to predict conflict* (and their strong relationship to female political empowerment). The bias generated by these selected controls, when they are left out, should inform us about the bias stemming from other unmeasured factors. To do this, we first estimate a restricted model, R , that only includes the FPE index, and register the coefficient β_R . Subsequently, we estimate models using different control sets, C , and register the coefficients β_C . Then we calculate the selection from observables: $\frac{\beta_C}{\beta_C - \beta_R}$. The result, often referred to as AET-stats (after Altonji, Elder and Taber (2005)), tells us how much bigger the estimated (controlled) coefficient is than the selection bias stemming from observable covariates.

Table 5 presents AET stats from different control sets. The first set includes the baseline controls. The second set adds several democracy-indices from the V-Dem dataset. These are included to tap various democracy concepts (such as liberal democracy, and egalitarian democracy) that are correlated with the FPE index but are not exhausted by controlling for electoral democracy. If their omission greatly biases the FPE result, then we would expect the coefficient to be pulled towards zero when they are included. The second set of controls include several demographic variables that could bias the link between FPE and conflict, specifically fertility rates, infant mortality

Table 5: Selection from observables as a guide to the unobservables

Controls in the full set	$\frac{\beta_C}{\beta_C - \beta_R}$	Sign of bias from observables
Baseline controls	-2.85	positive
Baseline + Egalitarian-, deliberative-, participatory- and liberal democracy indices	-2	positive
Baseline + Fertility rate, infant mortality, urbanization	-2.85	positive
Baseline + Growth, education, income inequality	-2.18	positive
Baseline + All controls	-2	positive

and urbanization. The next set includes additional economic variables that could potentially be omitted confounders: Economic growth, education levels, and income inequality, while the final set includes all controls. All variables are taken from the V-Dem dataset.

As table 4 shows, the AET stats for all control sets range from about 2 to 2.8. This suggests that the selection-from-unobservables must be at least double that of selection from observables to make the estimate zero. While this performance is only moderately strong (compare with e.g. Nunn, 2008), another fact makes us increasingly confident in the robustness of our result to selection-from-unobservables: namely, that all the observable controls (when excluded) pull the coefficient towards zero, inducing a bias that pulls in the direction of a null-finding. Hence, when we include controls that are highly plausible confounders (relating to institutional characteristics, socio-economic development and demographics) the coefficient becomes more strongly negative. This suggests that the relationship is probably stronger than what our models currently indicate: If we had continued to add covariates, assuming they behave similarly to our included confounders, our expectation is that the relationship would become more strongly negative.

In addition to these tests, we perform a range of additional robustness tests, included in the appendix, such as e.g., running Generalized Additive Models to evaluate the functional form of the relationship, changing the estimator, using different lag-lengths etc.. In brief, all of these tests retain the negative relationship between FPE and conflict risk. Crucially, we also evaluate how much the FPE index improves the performance of our baseline model when it comes to predicting civil conflict (Ward, Greenhill and Bakke, 2010, see e.g.,). We perform both in- and out-of-sample evaluations of this question, finding that female political empowerment substantially improves predictive performance, both in- and out-of-sample (see appendix, A9).

6 Conclusion

Female political empowerment has greatly increased over the course of the 20th century. This paper offers the first comprehensive global test with data from two centuries probing the relationship between female political empowerment and conflict. Drawing on two versions of the female empowerment index from V-DEM and Historical V-DEM, we offer a much more thorough test of this relationship than extant literature, with better temporal coverage, the ability to deal with time trends and country-specific omitted factors as well the potential to assess what mechanisms are at play. We also estimate instrumental-variable models, and conduct causal sensitivity tests to gauge the threat to a causal interpretation of this finding. These empirical tests yield solid evidence that societies where women are highly empowered are less likely to experience civil conflict. Exploring the 1817-2015 period, we find that this relationship is strongest in the 20th century, and particularly so post WWII. We believe this is due to the fact that female political participation increased most markedly in this period. Consistent with this, we find that the political participation component of the FPE index is the one that is most strongly linked to conflict.

Another important insight gained from our empirical investigation is that the uncovered relationship seems due to both female empowerment in the form of women's participation in politics *and* due to female-friendly norms reducing willingness to use violence. Indeed, this paper is the first to systematically document that gender-equal values are associated with less civil conflict, and that this holds even when controlling for formal civil liberties and women's political representation. Our findings also inform the general civil war literature by suggesting an important "cultural" correlate of war – the extent to which societies tolerate and respect women. The findings suggest that the benefits of bringing women into politics and civil society reach far beyond goals of gender equality, through a negative effect on political violence.

References

Albanesi, Stefania and Claudia Olivetti. 2016. "Gender Roles and Medical Progress." *Journal of Political Economy* 124(3):650–695.

- Alesina, Alberto, Paola Giuliano and Nathan Nunn. 2013. "On the Origins of Gender Roles: Women and the Plough*." *The Quarterly Journal of Economics* 128(2):469–530.
- Alison, Miranda. 2009. *Women and political violence: Female combatants in ethno-national conflict*. Routledge.
- Altonji, Joseph G, Todd E Elder and Christopher R Taber. 2005. "Selection on observed and unobserved variables: Assessing the effectiveness of Catholic schools." *Journal of political Economy* 113(1):151–184.
- Asal, Victor, Richard Legault, Ora Szekely and Jonathan Wilkenfeld. 2013. "Gender ideologies and forms of contentious mobilization in the Middle East." *Journal of Peace Research* 50(3):305–318.
- Bayanpourtehrani, Ghazal and Kevin Sylwester. 2013. "Female Labour Force Participation and Religion: A Cross-Country Analysis." *Bulletin of Economic Research* 65(2):107–133.
- Bjarnegård, Elin and Erik Melander. 2011. "Disentangling gender, peace and democratization: The negative effects of militarized masculinity." *Journal of Gender Studies* 20(2):139–154.
- Bjarnegård, Elin, Karen Brounéus and Erik Melander. 2017. "Honor and political violence: Micro-level findings from a survey in Thailand." *Journal of Peace Research* 54(6):748–761.
- Blackwell, Matthew. 2013. "A Selection Bias Approach to Sensitivity Analysis for Causal Effects." *Political Analysis* pp. 1–14.
- Bockstette, Valerie, Areendam Chanda and Louis Putterman. 2002. "States and Markets: The Advantage of an Early Start." *Journal of Economic Growth* 7(4):347–369.
- Bowen, Donna Lee, Valerie M Hudson and Perpetua Lynne Nielsen. 2015. "State Fragility and Structural Gender Inequality in Family Law: An Empirical Investigation." *Laws* 4(4):654–672.
- Buss, David M and Todd K Shackelford. 1997. "Human aggression in evolutionary psychological perspective." *Clinical psychology review* 17(6):605–619.
- Caprioli, Mary. 2000. "Gendered Conflict." *Journal of Peace Research* 37:51–68.

- Caprioli, Mary. 2003. "Gender equality and state aggression: The impact of domestic gender equality on state first use of force." *International Interactions* 29(3):195–214.
- Caprioli, Mary. 2005. "Primed for violence: The role of gender inequality in predicting internal conflict." *International Studies Quarterly* 49(2):161–178.
- Caprioli, Mary and Mark A Boyer. 2001. "Gender, Violence, and International Crisis." *Journal of Conflict Resolution* 45:503 —518.
- Cohen, Dara Kay and Ragnhild Nordås. 2014. "Sexual violence in armed conflict Introducing the SVAC dataset, 1989–2009." *Journal of Peace Research* 51(3):418–428.
- Coppedge, Michael, John Gerring, David Altman, Michael Bernhard, Steven Fish, Allen Hicken, Matthew Kroenig, Staffan I. Lindberg, Kelly McMann, Pamela Paxton, Holli A. Semetko, Svend-Erik Skaaning, Jeffrey Staton and Jan Teorell. 2011. "Conceptualizing and Measuring Democracy: A New Approach." *Perspectives on Politics* 9(02):247–267.
- Coppedge, Michael, John Gerring, Staffan I Lindberg, Svend-Erik Skaaning, Jan Teorell, David Altman, Frida Andersson, Michael Bernhard, M Steven Fish, Adam Glynn et al. 2017. "V-Dem Codebook V7."
- Coppedge, Michael, John Gerring, Staffan I. Lindberg, Svend-Erik Skaaning, Jan Teorell, David Altman, Michael Bernhard, Steven Fish, Adam Glynn, Allen Hicken, Carl Henrik Knutsen, Joshua Krusell, Anna Lührmann, Kyle L. Marquardt, Kelly McMann, Valeriya Mechkova, Moa Olin, Pamela Paxton, Daniel Pemstein, Josefine Pernes, Constanza Sanhueza Petrarca, Johannes von Romer, Laura Saxer, Brigitte Seim, Rachel Sigman, Jeffrey Staton, Natalia Stepanova and Steven Wilson. 2017. "Varieties of Democracy, Dataset v7."
- Cueva Beteta, Hanny. 2006. "What is missing in measures of women's empowerment?" *Journal of human development* 7(2):221–241.
- Dahlum, Sirianne and Carl Henrik Knutsen. 2017. "Democracy by demand? Reinvestigating the effect of self-expression values on political regime type." *British Journal of Political Science* 47(2):437–461.

- Gizelis, Theodora-Ismene. 2009. "Gender empowerment and United Nations peacebuilding." *Journal of Peace Research* 46(4):505–523.
- Gleditsch, Kristian Skrede, Julian Wucherpfennig, Simon Hug and Karina Garnes Reigstad. 2011. "Polygyny or Misogyny? reexamining the first law of intergroup conflict." *The Journal of Politics* 73(1):265–270.
- Gleditsch, Nils Petter, Peter Wallensteen, Mikael Eriksson, Margareta Sollenberg and Håvard Strand. 2002. "Armed Conflict 1946–2001: A New Dataset." *Journal of Peace Research* 39(5):615–637.
- Goldin, Claudia. 2006. "The quiet revolution that transformed women's employment, education, and family." *American economic review* 96(2):1–21.
- Goldstein, Joshua S. 2001. *War and Gender*. Cambridge: Cambridge University Press.
- Hansen, Casper Worm, Peter Sandholt Jensen and Christian Volmar Skovsgaard. 2015. "Modern gender roles and agricultural history: the Neolithic inheritance." *Journal of Economic Growth* 20(4):365–404.
- Honaker, James, Gary King and Michael Blackwell. 2011. "Amelia II: A Program for Missing Data." *Journal of Statistical Software* 45:1–47.
- Hudson, Valerie M, Donna Lee Bowen and Perpetua Lynne Nielsen. 2015. "Clan Governance and State Stability: The Relationship between Female Subordination and Political Order." *American Political Science Review* 109(03):535–555.
- Hughes, Melanie M. 2009. "Armed Conflict, International Linkages, and Women's Parliamentary Representation in Developing Nations." *Social Problems* 56(1):174.
- Hughes, Melanie M and Aili Mari Tripp. 2015. "Civil War and Trajectories of Change in Women's Political Representation in Africa, 1985–2010." *Social Forces* 93(4):1513–1540.
- Inglehart, Ronald and Christian Welzel. 2006. *Modernization, Cultural Change and Democracy –The Human Development Sequence*. Cambridge: Cambridge University Press.

- Iversen, Torben and Frances McCall Rosenbluth. 2010. *Women, work, and politics: The political economy of gender inequality*. Yale University Press.
- Iversen, Torben and Frances Rosenbluth. 2006. "The political economy of gender: Explaining cross-national variation in the gender division of labor and the gender voting gap." *American Journal of Political Science* 50(1):1–19.
- Kanazawa, Satoshi. 2009. "Evolutionary psychological foundations of civil wars." *The Journal of Politics* 71(1):25–34.
- Knutsen, Carl Henrik, Jan Teorell, Agnes Cornell, John Gerring, Haakon Gjerlw, Svend-Erik Skaaning, Tore Wig, Daniel Ziblatt, Kyle Marquardt, Dan Pemstein and Brigitte Seim. 2017. "Introducing the Historical Varieties of Democracy Dataset: Patterns and Determinants of Democratization in the Long 19th Century." University of Oslo.
- Lagerspetz, Kirsti MJ, Kaj Björkqvist and Tarja Peltonen. 1988. "Is indirect aggression typical of females? Gender differences in aggressiveness in 11-to 12-year-old children." *Aggressive behavior* 14(6):403–414.
- McDermott, Rose. 2015. "Sex and Death: Gender Differences in Aggression and Motivations for Violence." *International Organization* 69(3):753–775.
- McDermott, Rose, Kristen Renwick Monroe, BJ Wray, Robert Jervis and Valerie Hudson. 2018. *The Evils of Polygyny: Evidence of Its Harm to Women, Men, and Society*. Cornell University Press.
- Melander, Erik. 2005. "Gender Equality and Intrastate Armed Conflict." *International Studies Quarterly* 49(4):593–743.
- Melander, Erik, Therése Pettersson and Lotta Themnér. 2016. "Organized violence, 1989–2015." *Journal of Peace Research* 53(5):727–742.
- Nunn, Nathan. 2008. "The Long-term Effects of Africa's Slave Trades." *The Quarterly Journal of Economics* 123(1):139–176.

- Pemstein, Daniel, Kyle L Marquardt, Eitan Tzelgov, Yi-ting Wang, Joshua Krusell and Farhad Miri. 2018. "The V-Dem measurement model: latent variable analysis for cross-national and cross-temporal expert-coded data?".
- Pinker, Steven. 2011. *The Better Angels of Our Nature. Why Violence has Declined*. New York, NY: Viking.
- Putterman, Louis. 2008. "Agriculture, diffusion and development: Ripple effects of the neolithic revolution." *Economica* 75(300):729–748.
- Regan, Patrick M and Aida Paskeviciute. 2003. "Women's access to politics and peaceful states." *Journal of Peace Research* 40(3):287–302.
- Reiter, Dan. 2014. "The Positivist Study of Gender and International Relations." *Journal of Conflict Resolution* p. 0022002714560351.
- Ross, Michael L. 2008. "Oil, Islam, and women." *American political science review* 102(1):107–123.
- Sarkees, Meredith Reid and Frank Wayman. 2010. *Resort to War: 1816 – 2007*. New York: CQ Press.
- Schaftenaar, Susanne. 2017. "How (wo)men rebel: Exploring the effect of gender equality on nonviolent and armed conflict onset." *Journal of Peace Research* 54(6):762–776.
- Shea, Patrick E and Charlotte Christian. 2016. "The Impact of Women Legislators on Humanitarian Military Interventions." *Journal of Conflict Resolution* p. 0022002716631105.
- Sundström, Aksel, Pamela Paxton, Yi-ting Wang and Staffan I Lindberg. 2015. "Women's Political Empowerment: A New Global Index, 1900-2012".
- Tessler, Mark and Ina Warriner. 1997. "Gender, feminism, and attitudes toward international conflict: Exploring relationships with survey data from the Middle East." *World Politics* 49(02):250–281.
- Tripp, Aili Mari. 2015. "Women and power in post-conflict Africa".

- Ward, Michael D., Brian D. Greenhill and Kristin M. Bakke. 2010. "The perils of policy by p-value: Predicting civil conflicts." *Journal of Peace Research* 47(4):363–375.
- Wilcox, Clyde, Lara Hewitt and Dee Allsop. 1996. "The gender gap in attitudes toward the Gulf War: A cross-national perspective." *Journal of Peace Research* 33(1):67–82.
- Wood, Reed M and Jakana L Thomas. 2017. "Women on the frontline: Rebel group ideology and womens participation in violent rebellion." *Journal of Peace Research* 54(1):31–46.
- World Values Survey. 2014. "World Values Survey Wave 6 2010-2014 OFFICIAL AGGREGATE v.20141107." World Values Survey Association. Aggregate File Producer: Asep/JDS, Madrid SPAIN.
URL: *www.worldvaluessurvey.org*
- Yablon, Yaacob Boaz. 2009. "Gender differences in the consistency of attitudes towards peace." *Women's Studies International Forum* 32(4):305 – 310.

A Appendix

This appendix includes the following. Section A.1 displays summary statistics for the key variables included in the empirical analyses. Section A.2 analyses whether future female empowerment affects current conflict, which would indicate a pre-trend in the relationship between female empowerment and conflict that would yield bias. It also looks at the relationship between the end of a conflict (2, 5 and 10 years ago) affects future levels of FPE, which is assumed in the arguments claiming that historical conflict increases female empowerment. Section A.3 investigates the sensitivity of the baseline results to different lag-lengths, while section A.4 investigates the relationship between the disaggregated individual female empowerment items that make up the FPE index, from V-DEM, and conflict. Section A.5 probes sensitivity to different functional form assumptions (than the logit models) by running OLS, while section A.6 estimates Generalized Additive Models, to probe whether the relationship between FPE and conflict displays non-linearities. Section A.7 shows the models used in the causal sensitivity analysis, while section A.8 shows the first-stage models for the IV analysis. Finally, section A.9 performs a predictive evaluation of the improvements in (in- and out-of-sample performance) of the FPE index.

A.1 Summary statistics

Table A.1: Descriptives for variables in the baseline TSCS models

	(1)				
	count	mean	sd	min	max
FPE	14080	.50184	.2400019	.0360516	.968036
Historical FPE	25653	-.0044776	.3710141	-.5614409	1
Conflict onset	25253	.0158397	.1248576	0	1
Womens civil liberties	25346	.4281817	.2944714	.0008733	.9845681
Womens civil society participation	25091	.3640379	.2735255	.0125522	.9714019
Womens political participation	14109	.4546333	.2972993	.0369743	.9999575
Democracy	24168	.2638206	.2615567	.0080664	.9534524
Female legislators	12782	7.721595	9.981451	0	63.8
Female journalists	18159	19.53367	14.26258	0	70.375
Freedom of movement	25667	-.1841115	1.460462	-4.643585	3.204577
Freedom from forced labor	25514	-.0671767	1.587775	-3.938172	3.019982
Womens CSO participation	25048	-.4560889	1.492281	-3.55229	3.266965
Womens property rights	25517	-.1581533	1.476474	-3.719711	2.973385
Womens access to justice	25506	-.17182	1.478007	-3.717892	3.865908
Freedom of discussion	25667	-.3206236	1.50504	-3.559445	3.576789
Power distributed by gender	25468	-.7867669	1.378916	-2.84582	3.844923
GDP p.c.	20575	7.614497	1.060956	4.652566	11.36099
L(population)	20575	8.465405	1.624161	3.332772	14.04084

A.2 Pre-trends and effects of conflict on female empowerment

Table A.2 shows the estimated coefficient for *future* FPE and conflict onset, where we lead the FPE variable with 2-, 5- and 10 years. If this produces significant results, this could indicate that there is a common trend in the two variables that does not reflect a causal relationship between FPE and conflict. This is done in models A1-A3. These show no relationship between leaded levels of FPE and conflict onset.

The second set of models, A4-A6, study whether having had a recently ended conflict increases Female Empowerment, as some studies claim (e.g., Hughes and Tripp, 2015; Hughes, 2009). These models, regressing FPE on conflict that ended 2-, 5- and 10 years ago, indicate no such positive relationship.

Table A.2: Pre-trends and effects of conflict on female empowerment

	(1)	(2)	(3)	(4)	(5)	(6)
	Logit	Logit	Logit	OLS	OLS	OLS
	Outcome: Conflict onset $t + 1$			Outcome: FPE $t + 1$		
FPE $_{t+5}$	-1.550 (-1.31)					
FPE $_{t+8}$		-0.267 (-0.23)				
FPE $_{t+10}$			-0.651 (-0.57)			
Conflict ended $_{t-10}$				-0.0104*** (-3.49)		
Conflict ended $_{t-5}$					-0.0140*** (-4.74)	
Conflict ended $_{t-3}$						-0.0121*** (-3.63)
GDP p.c.	-0.939** (-3.09)	-0.793* (-2.52)	-1.234*** (-3.73)	-0.00202 (-0.77)	-0.00178 (-0.68)	-0.00194 (-0.74)
L(population)	-0.115 (-1.33)	-0.208* (-2.35)	-0.231* (-2.56)	-0.000931 (-1.29)	-0.000939 (-1.31)	-0.00100 (-1.40)
Democracy	6.749*** (3.65)	6.611*** (3.48)	6.986*** (3.70)	0.225*** (13.34)	0.225*** (13.34)	0.224*** (13.30)
Democracy ²	-7.247*** (-3.51)	-7.408*** (-3.55)	-7.874*** (-3.75)	0.132*** (7.63)	0.132*** (7.64)	0.132*** (7.66)
Peaceyears	-0.0258 (-1.67)	-0.0310* (-2.00)	-0.0339* (-2.20)	-0.000298* (-2.02)	-0.000257* (-2.03)	-0.000114 (-0.97)
Peaceyears ²	0.000479 (1.80)	0.000559* (2.09)	0.000647* (2.41)	0.00000252 (1.43)	0.00000222 (1.38)	0.000000773 (0.50)
Peaceyears ³	-0.00000159 (-1.40)	-0.00000190 (-1.65)	-0.00000228* (-1.98)	-9.75e-09 (-1.68)	-9.08e-09 (-1.68)	-4.90e-09 (-0.93)
N	5046	4999	4929	7533	7533	7533
country-FE	Y	Y	Y	Y	Y	Y
year-FE	Y	Y	Y	Y	Y	Y

t statistics (OLS) and Z scores (logit) in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A.3 Different lag lengths

Table A.3 estimates the baseline models with different lag-lengths, looking at lags of 2, 5 and 10 years, respectively. This table indicates a strong negative relationship, irrespective of the lag-length chosen.

Table A.3: Varying the lag-lengths

	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)
	Outcome: Civil conflict onset $t + 1$ (COW and UCDP)					
Period:	1817-2013			1900-2013		
Lag length (years):	2	5	10	2	3	10
FPE	-1.515*** (-4.26)	-1.544*** (-3.97)	-1.489*** (-3.65)	-3.024*** (-3.21)	-2.577*** (-3.16)	-2.823*** (-2.82)
GDP p.c.	-0.365*** (-3.77)	-0.408*** (-3.76)	-0.450*** (-3.88)	-0.203 (-1.82)	-0.257* (-2.03)	-0.279 (-1.93)
L(population)	0.419*** (7.48)	0.442*** (7.09)	0.436*** (6.51)	0.402*** (7.23)	0.426*** (6.81)	0.404*** (5.68)
Democracy	6.780*** (4.32)	6.566*** (4.18)	5.628*** (3.55)	7.489*** (5.07)	6.343*** (3.98)	6.999*** (3.92)
Democracy ²	-7.629*** (-4.10)	-7.639*** (-4.13)	-6.822*** (-3.89)	-8.438*** (-5.12)	-7.689*** (-4.27)	-8.569*** (-4.29)
Peaceyears	-0.0594*** (-6.43)	-0.0411*** (-4.68)	-0.0206 (-1.75)	-0.0513*** (-4.65)	-0.0313** (-2.91)	-0.00351 (-0.28)
Peaceyears ²	0.000732*** (4.88)	0.000537*** (3.96)	0.000275 (1.58)	0.000674*** (3.64)	0.000455** (2.75)	0.0000857 (0.48)
Peaceyears ³	-0.00000235*** (-3.84)	-0.00000174** (-3.25)	-0.000000858 (-1.28)	-0.00000232** (-2.95)	-0.00000161* (-2.45)	-0.000000321 (-0.46)
N	12334	11662	11030	8864	8230	7618
Region-FE	✓	✓	✓	✓	✓	✓
Year-FE	✓	✓	✓	✓	✓	✓

Z scores in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A.4 Analysis of female empowerment subcomponents

Table A.4 analyses the relationship between conflict onset and the different sub-components/survey items, that make up the three indices (political participation, civil liberties and civil society participation) that, in turn, aggregate to the FPE index. In the women civil liberties component, these are *freedom of movement*, *freedom from slavery*, *property rights* and *access to justice*. In the women political participation category, these are *freedom of discussion*, *participation in civil society organizations* and *female journalists*. In the women's political participation category, we find *female legislators* and *power distributed by gender*. Table A.4 shows that all have negatively signed coefficients when entered as regressors. This is to be expected, since the items are such that positive values indicate more female empowerment. Not all are significantly related to conflict risk, however: Only female journalists, womens civil society organization participation, access to justice, and power distributed by gender have significant coefficients.

Table A.4: Analysis of the different sub-components/items of the sub-indices

	(A1)	(A2)	(A3)	(A4)	(A5)	(A6)	(A7)	(A8)	(A9)
	Outcome: UCDP/COW conflict onset $t+1$								
Female legislators	-0.0204 (-1.71)								
Female journalists		-0.0289** (-3.16)							
Freedom of movement			-0.117 (-1.81)						
Freedom from forced labor				-0.0875 (-1.22)					
Womens CSO participation					-0.136* (-2.02)				
Womens property rights						-0.0566 (-0.89)			
Womens access to justice							-0.187* (-2.35)		
Freedom of discussion								-0.148 (-1.72)	
Power distributed by gender									-0.271*** (-3.63)
GDP p.c.	-0.282** (-2.69)	-0.300** (-3.20)	-0.454*** (-5.03)	-0.462*** (-5.20)	-0.447*** (-5.05)	-0.451*** (-4.98)	-0.471*** (-5.23)	-0.466*** (-5.14)	-0.466*** (-5.25)
L(population)	0.357*** (6.09)	0.382*** (6.65)	0.392*** (6.96)	0.387*** (6.73)	0.404*** (6.99)	0.396*** (6.90)	0.391*** (6.85)	0.391*** (6.73)	0.411*** (7.36)
Democracy	4.464** (2.87)	5.941*** (4.72)	5.628*** (4.07)	5.397*** (4.11)	5.541*** (4.17)	5.111*** (3.79)	6.045*** (4.43)	6.017*** (4.03)	5.337*** (4.19)
Democracy ²	-6.347*** (-3.60)	-7.541*** (-4.89)	-6.848*** (-4.27)	-6.771*** (-4.34)	-6.805*** (-4.32)	-6.462*** (-4.07)	-6.886*** (-4.27)	-6.859*** (-4.29)	-6.230*** (-3.93)
Peaceyears	-0.0804*** (-6.21)	-0.0739*** (-6.55)	-0.0814*** (-8.32)	-0.0819*** (-8.36)	-0.0809*** (-8.38)	-0.0816*** (-8.27)	-0.0802*** (-8.11)	-0.0804*** (-8.16)	-0.0813*** (-8.23)
Peaceyears ²	0.00102*** (4.75)	0.000918*** (5.14)	0.000991*** (6.18)	0.00100*** (6.29)	0.000988*** (6.26)	0.001000*** (6.18)	0.000976*** (6.09)	0.000981*** (6.05)	0.00101*** (6.23)
Peaceyears ³	-0.00000346*** (-3.80)	-0.00000301*** (-4.14)	-0.00000320*** (-4.84)	-0.00000326*** (-4.98)	-0.00000319*** (-4.93)	-0.00000324*** (-4.88)	-0.00000313*** (-4.74)	-0.00000318*** (-4.75)	-0.00000334*** (-4.99)
N	8344	10634	12786	12786	12750	12786	12728	12786	12786
Region-FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year-FE	✓	✓	✓	✓	✓	✓	✓	✓	✓

Z scores in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A.5 OLS models

Table A.5 replicates the baseline models with OLS instead of logit estimation. This entails that each model is considered to be a Linear Probability Model. These are less reliant on functional form assumptions than the logit model, but have other issues relating to heteroscedasticity and nonsensical point estimates. At any rate, the baseline result is robust and retained in these OLS Models.

Table A.5: OLS models

	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(1.7)	(1.8)
	Outcome: Civil conflict onset $t + 1$ (COW and UCDP)							
Period:	1817-2013				1900-2013			
					UCDP			
					1946-2013			
FPE	-0.0192*** (-3.62)	-0.0265*** (-4.18)	-0.0270** (-3.22)	-0.0224* (-2.02)	-0.0739*** (-4.22)	-0.0787*** (-3.35)	-0.0809*** (-3.94)	-0.0917** (-3.23)
GDP p.c.			-0.00758*** (-4.11)	-0.0141*** (-5.91)	-0.00619* (-2.33)	-0.0192*** (-4.27)	-0.00580 (-1.94)	-0.0186** (-3.23)
L(population)			0.00678*** (6.17)	0.00375 (1.35)	0.00767*** (5.54)	0.00532 (0.96)	0.00814*** (4.82)	0.00380 (0.54)
Democracy			0.121*** (4.49)	0.166*** (6.75)	0.132*** (3.69)	0.197*** (5.55)	0.126** (2.88)	0.230*** (4.93)
Democracy ²			-0.119*** (-4.69)	-0.172*** (-7.12)	-0.121*** (-3.64)	-0.190*** (-5.16)	-0.101* (-2.38)	-0.222*** (-4.59)
Peaceyears	-0.00180*** (-7.65)	-0.00121*** (-9.44)	-0.00164*** (-6.97)	-0.00100*** (-6.06)	-0.00159*** (-6.09)	-0.000776*** (-3.35)	-0.00189*** (-5.89)	-0.000681* (-2.24)
Peaceyears ²	0.0000194*** (7.39)	0.0000142*** (8.33)	0.0000180*** (6.67)	0.0000127*** (5.75)	0.0000175*** (5.82)	0.0000119*** (3.91)	0.0000203*** (5.65)	0.0000116** (2.95)
Peaceyears ³	-5.84e-08*** (-7.29)	-4.42e-08*** (-7.44)	-5.20e-08*** (-6.11)	-3.57e-08*** (-4.54)	-5.09e-08*** (-5.31)	-3.38e-08** (-3.27)	-5.76e-08*** (-5.16)	-3.23e-08* (-2.45)
N	22909	24161	17384	17838	11252	11252	8601	8601
Country-FE		✓		✓		✓		✓
Region-FE	✓		✓		✓		✓	
Year-FE	✓	✓	✓	✓	✓	✓	✓	✓

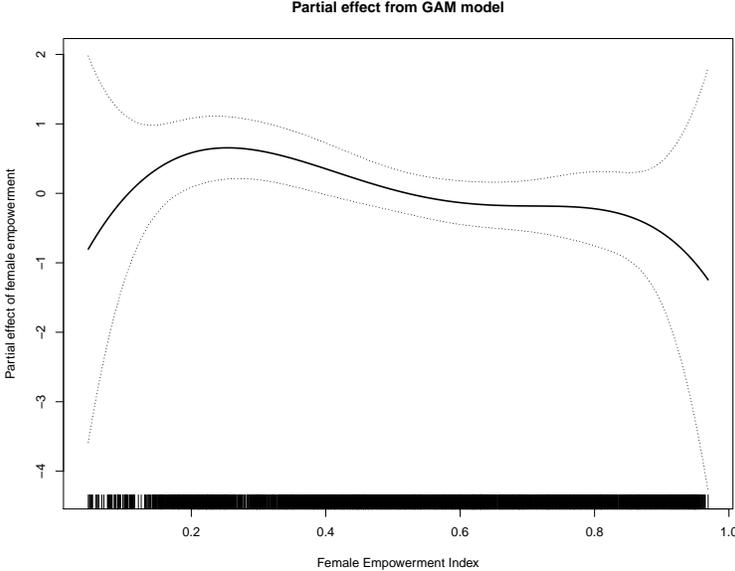
t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A.6 Generalized additive model

Finally, we investigate potential non-linearities in the FPE-conflict relationships. We do this by estimating a non-parametric Generalized Additive Model, with 5 degrees of freedom. If the FPE index is non-linearly related to conflict risk, this model would yield a different partial effect of FPE on conflict for different levels of the FPE index. As can be seen in figure A.1 below, the GAM model uncovers no strong non-linearities in the relationship.

Figure A.1: Term plot from a Generalized Additive Model with 5 degrees of freedom



A.7 Models for the causal sensitivity tests

Table A.6: Models used in the causal sensitivity tests

	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)
	Outcome: Civil conflict onset $t + 1$ (UCDP)					
Period:	1946-2013					
FPE	-0.0656** (-3.11)	-0.101*** (-3.74)	-0.130*** (-3.46)	-0.0954*** (-3.69)	-0.112*** (-3.98)	-0.135*** (-3.76)
GDP p.c.		-0.0165* (-2.05)	-0.0181* (-2.26)	-0.00655 (-0.77)	-0.00775 (-0.91)	0.000379 (0.05)
L(population)		0.00599* (2.09)	0.00622* (2.13)	0.00559 (1.78)	0.00622* (2.04)	0.00634 (1.85)
Democracy		0.196 (1.93)	0.263* (2.42)	0.171 (1.65)	0.257* (2.49)	0.275* (2.50)
Democracy ²		-0.126 (-1.24)	-0.209 (-1.24)	-0.105 (-1.01)	-0.178 (-1.79)	-0.254 (-1.56)
Peaceyears	-0.00216*** (-4.28)	-0.00191*** (-3.75)	-0.00180*** (-3.63)	-0.00194*** (-3.67)	-0.00193*** (-3.72)	-0.00187*** (-3.53)
Peaceyears ²	0.0000224*** (4.01)	0.0000194** (3.32)	0.0000182** (3.16)	0.0000199*** (3.37)	0.0000197** (3.18)	0.0000194** (3.10)
Peaceyears ³	-6.43e-08*** (-3.68)	-5.31e-08** (-2.81)	-4.91e-08** (-2.65)	-5.52e-08** (-2.96)	-5.35e-08** (-2.64)	-5.36e-08** (-2.68)
Egalitarian dem.			0.205 (1.80)			0.197 (1.79)
liberal dem.			-0.216 (-1.91)			-0.189 (-1.71)
Participatory dem.			-0.0161 (-0.25)			-0.0102 (-0.16)
Deliberative dem.			0.0993 (1.43)			0.112 (1.62)
Infant mortality				-0.000644 (-1.87)		-0.000779* (-2.20)
Fertility rates				0.00330 (0.66)		0.00599 (1.21)
Female life exp.				-0.00381 (-1.95)		-0.00390* (-2.14)
Education					-0.00534 (-1.72)	-0.00506 (-1.31)
Urbanization					-0.000848 (-0.03)	-0.00720 (-0.26)
Inequality					-0.00125* (-2.37)	-0.00117* (-2.16)
N	3417	3417	3417	3417	3417	3417
Region-FE	✓	✓	✓	✓	✓	✓
Year-FE	✓	✓	✓	✓	✓	✓

Z scores in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A.8 First stages for the 2SLS models

Table A.7: First stage estimates for the 2SLS models

	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)
First-stage for the 2SLS models					
Outcome: FPE index					
Plow	-0.0435 (-1.83)	-0.0435 (-1.83)	-0.0367 (-1.52)	-0.0345 (-1.42)	-0.104*** (-3.83)
Agriculture	0.0905** (3.03)	0.0905** (3.03)	0.0966** (3.08)	0.0987** (3.11)	0.150*** (4.44)
Matrilocal			0.158 (1.29)	0.182 (1.44)	
Patrilocal				0.0215 (1.10)	
Large animals	-0.0459 (-0.82)	-0.0459 (-0.82)	-0.0511 (-0.92)	-0.0475 (-0.85)	-0.121 (-1.35)
Tropical climate	-0.0980*** (-4.51)	-0.0980*** (-4.51)	-0.0998*** (-4.64)	-0.0968*** (-4.36)	-0.169*** (-5.22)
Economic complexity	0.0100 (1.67)	0.0100 (1.67)	0.00873 (1.47)	0.00950 (1.58)	0.0235** (2.87)
Political hierarchies	0.0253* (2.10)	0.0253* (2.10)	0.0288* (2.50)	0.0286* (2.46)	0.0266 (1.92)
Democracy	0.487*** (11.37)	0.487*** (11.37)	0.483*** (11.35)	0.481*** (11.09)	
L(population)	-0.00533 (-1.03)	-0.00533 (-1.03)	-0.00640 (-1.26)	-0.00571 (-1.10)	0.00278 (0.42)
GDP p.c.	0.00107 (0.10)	0.00107 (0.10)	0.00154 (0.15)	0.00441 (0.41)	0.0605*** (3.91)
Instrument	Plow	Plow,agriculture	plow,agriculture matrilocality	plow,agriculture matrilocality,patrilocality	plow,agriculture
First-stage F value	3.34	6.72	4.71	3.83	19.27
N	166	166	166	166	166

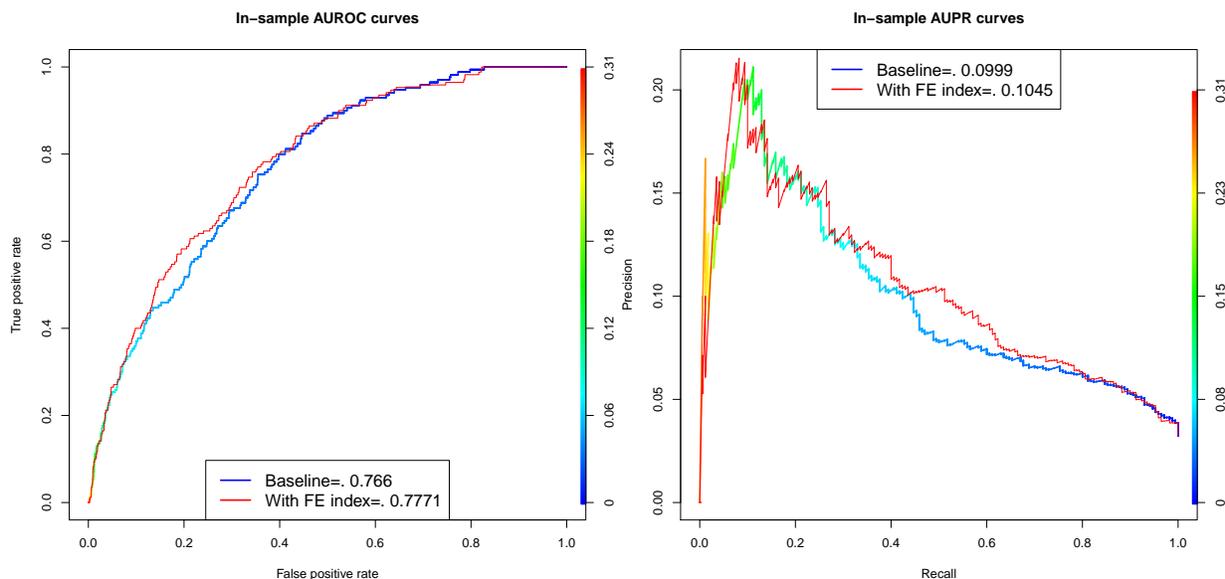
t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A.9 Predictive evaluation

While female political empowerment seems significantly associated with conflict-risk, we also want to gauge whether it improves our ability to predict civil conflict (see e.g. Ward, Greenhill and Bakke, 2010). To evaluate this we first investigate whether the FPE index improves in-sample model performance using Receiver Operating Characteristics (ROC) and Precision-recall curves. The ROC graphs the sensitivity (the true positive rate) over specificity (the rate of false positives) for all probability cutoffs classifying an observation as a conflict (1) or not (0). The more area under the roc curve (AUC) the better the model is at predicting conflict (a random predictor has an AUC of .5, while a perfect predictor yields an AUC of 1). The precision-recall curve is similar

Figure A.2: In-sample AUROC and AUPR for models with and without the FPE index



to the ROC curve, but is more informative of the model’s ability to predict conflicts (rather than peace). This is an important additional evaluation tool when faced with imbalanced data (ie. peace observations dominate). The PR curve plots precision (the true positive rate as a share of all observations predicted as positives) over the true positive rate, or “recall”. The more area under the PR-curve, the better the model is at correctly predicting the conflicts that are in the data.

Figure A.2 shows ROC- and Precision-recall curves for the baseline model without the FPE index (multi-colored line) and the same model including the FPE index (red line). If the FPE index improves in-sample model performance, the red line should mark more area under the curve (yielding a higher AUC) than the red line. Looking at figure A.2 we see that this is indeed the case. A model with FPE included increases the AUROC from .766 to .771 which is a non-trivial improvement when compared to other predictors of civil war (see e.g., Ward, Greenhill and Bakke, 2010), and the AUPR from .099 to .104. This tells us that a model including FPE as a predictor is better at classifying conflicts from peace observations in-sample.

While in-sample performance is vital, an even more crucial test is the performance of the FPE variable out of sample. This tells us whether the FPE-civil conflict link is a robust generalizable

pattern that can travel outside of the estimation sample. To evaluate this, we perform k-fold cross-validation. This partitions the data into 4 subsets, each representing 1/4th of the data, before estimating the model on 3/4th of the subsets and deriving predictions for the hold-out set. This is iterated until each set has been used as a test set. To reduce sensitivity to the data partitioning, we perform this test 1000 times. For each prediction run, we calculate the Area Under the ROC curve, giving us an indication of the predictive performance of the model out-of-sample. We then compare the median AUROC (and AUPR) for models without the female empowerment measure with the median AUROC (and AUPR) for models that include the female empowerment measure.

After 1000 cross-validation runs, we find that the out-of-sample performance is in fact improved when you include FPE as a predictor. The median out-of-sample AUROC is .722 when the model includes the baseline controls but excludes the FPE index, while it rises to .737 when the FPE index is included. Furthermore, the out-of-sample AUPR is also improved, rising from .085 to .088 when we include FPE. The results from the 1000 cross-validation runs are visualized in the appendix. In short, information on female political empowerment in a country improves our ability to predict whether that country will experience a conflict onset or not, also outside of the data used for estimation.