Queens

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Do states experience more peace under female leadership? We examine this question in the context of Europe over the fifteenth to twentieth centuries. We use gender of the firstborn and presence of a sister among previous monarchs as instruments for queenly rule. We find that polities led by queens engaged in war more than polities led by kings. While single queens were more likely to be attacked than single kings, married queens were more likely to attack than married kings. These results suggest asymmetries in the division of labor: married queens were more inclined to enlist their spouses in helping them rule, which enabled them ultimately to pursue more aggressive war policies.

I. Introduction

Does female leadership lead to greater peace? On the one hand, it is commonly argued that women are less violent than men and, therefore,

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that states led by women will be less prone to violent conflict than states led by men. For example, men have been held to "plan almost all the world's wars and genocides" (Pinker 2011, 684), and the recent democratic peace among the developed nations has been attributed to rising female leadership in these places (Fukuyama 1998). On the other hand, differences in individual aggression may not determine differences in leader aggression. Female leaders, like any other leader, may ultimately consider how war affects their state as a whole. In this calculus, setting overly conciliatory war policies would weaken their state relative to other states. As a consequence, war policies set by female leaders may not be systematically more conciliatory than war policies set by male leaders.[1]

A state's aggression in the foreign policy arena—and the decision to go to war—is arguably one of the most consequential policy outcomes, and one in which the national leadership plays a critical role. Despite its importance, there is little definitive evidence of whether states vary in their tendency to engage in conflict under female versus male leadership. This stands in contrast to other arenas such as economic development, where a growing body of evidence has documented policy differences arising under female leadership (Chattopadhyay and Duflo 2004; Beaman et al. 2012; Clots-Figueras 2012; Brollo and Troiano 2016). The existing studies that do relate female leadership to external conflict focus exclusively on the modern era (Caprioli 2000; Caprioli and Boyer 2001; Regan and Paskeviciute 2003; Koch and Fulton 2011) and are also difficult to interpret, since women may gain electoral support and come to power disproportionately during periods of peace (Lawless 2004).

In this paper, we examine how female leadership affected war among European states historically, exploiting features of hereditary succession to surmount this identification challenge. We focus on the period between 1480 and 1913 and polities that had at least one female ruler over this time. As with electoral systems, women in hereditary systems may have gained power more during times of peace or when there was no threat of imminent war (Pinker 2011). However, the way in which succession occurred also provides an opportunity to identify the effect of female rule. In these polities, older male children of reigning monarchs were given priority in succession (Monter 2012, 36–37). As a result,

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[1] Some scholars have suggested that female leaders such as Indira Gandhi or Margaret Thatcher, who readily used military force to achieve their policy objectives, may have done so as a form of "male posturing," since they operated in a context where most states were led by men (Jaquette 1999).

queens were less likely to come to power if the previous monarchs had a firstborn child who was male and more likely to come to power if previous monarchs had a sister who could potentially follow as successor. We use these two factors as instruments for queenly rule to determine whether polities led by queens differed in their war participation, relative to polities led by kings.

We seek to examine whether polities led by women are less prone to conflict than polities led by men. This is conceptually distinct from the question of whether women, as individuals, are less violent than men,[2] in part because war policies are set by leaders on the basis of broader strategic considerations beyond personal inclinations toward violence.

To conduct our analysis, we construct a new panel data set that tracks the genealogy and conflict participation of European polities during every year between 1480 to 1913. Our primary sample covers 193 reigns in 18 polities, with queens ruling in 18% of these reigns. We include polity fixed effects, holding constant time-invariant features of a polity that affect conflict, and exploit variation over time in the gender of the ruler. Using the firstborn-male and sister instruments, we find that polities ruled by queens were 39 percentage points more likely to engage in a war in a given year, compared to polities ruled by kings. These estimates are economically important, when compared to mean war participation of 30 percentage points over this period.

An obvious concern with our IV analysis is that the lack of a firstborn male may itself trigger conflicts over succession, regardless of whether a woman comes to power. However, we conduct a number of falsification tests that show that a firstborn son does not affect war participation in the contemporaneous reign or in an auxiliary sample of 18 polities that never had queens over this period. Thus, if there are other ways in which firstborn males affect conflict, they do not manifest themselves under these additional circumstances.

A second concern with the IV strategy is that the presence of a sister among previous monarchs (an aunt, from the standpoint of the current-period monarch) may be correlated with the presence of other siblings (i.e., other aunts and uncles) who may also have fought for the throne. However, we control flexibly for the total number of siblings among previous monarchs to close out this alternative channel. We additionally show that the results are unaffected if we remove wars of succession from the sample.

Since our analysis relies on a relatively small number of queenly reigns, we subject our results to a variety of tests to address potential small-sample bias. We adjust all of our standard errors, using the wild-bootstrap

[2] While this is not the focus of our analysis, there is a large literature around this question, e.g., McDermott et al. (2009) and Schacht, Rauch, and Mulder (2014).

procedure, to address potential consequences on inference. We also demonstrate that the results are insensitive to dropping any one queen or any two queens and to dropping entire polities. Moreover, we show that the results are robust to numerous other controls and specifications, including a dyadic specification and a reign-level specification.

We examine two potential accounts of why female rule may have increased engagement in war. The first account suggests that queens may have been perceived as easy targets of attack. This perception—accurate or not—could have led queens to participate more in wars as a consequence of getting attacked by others.

The second account builds on the importance of state capacity. During this period, states fought wars primarily with the aim of expanding territory and economic power (Mearsheimer 2001; Goertz and Diehl 2002; Copeland 2015). Wars of this nature demanded financing, requiring states to develop a broader fiscal reach and greater state capacity (Tilly 1992; Besley and Persson 2009; Scheve and Stasavage 2010; Stasavage 2011; Karaman and Pamuk 2013; Gennaioli and Voth 2015).

Queenly reigns may have had greater capacity than kingly reigns because of asymmetries in how they utilized their spouses. Queens often enlisted their husbands to help them rule, in ways that kings were less inclined to do with their wives. For example, queens often put their spouses in charge of the military or fiscal reforms. This greater spousal division of labor may have enhanced the capacity of queenly reigns, enabling queens to pursue more aggressive war policies.

To test these accounts, we disaggregate war participation by which side was the aggressor and examine heterogeneous effects based on the monarch's marital status. We find that among married monarchs, queens were more likely than kings to fight as aggressors. Among unmarried monarchs, queens were more likely than kings to fight in wars in which their polity was attacked. These results provide some support for the idea that queens were targeted for attack: unmarried queens, specifically, may have been perceived as weak and attacked by others. But this did not hold true for married queens who instead participated as aggressors. The results are consistent with the idea that the reigns of married queens had greater capacity to carry out war, and asymmetries generated by gender identity norms played a role in shaping this outcome (Monter 2012; Beem and Taylor 2014b; Schaus 2015). In that regard, our results accord with modern-day studies that show that gender identity norms continue to play an important role in shaping societal outcomes today (Bertrand, Kamenica, and Pan 2015).[3]

[3] Bertrand, Kamenica, and Pan (2015) find evidence consistent with the idea that gender identity norms create an aversion to wives earning more than husbands today. Analogously, our results suggest that gender identity norms in Europe historically created asymmetries in

We uncover evidence supporting these two channels, though, of course, other channels could be operating simultaneously. We do consider and present evidence against several specific alternative accounts. Queens may also have fought to signal they were militarily strong—a type of signaling implied by the influential bargaining model of war (Fearon 1995). However, if queens were signaling, there should be larger effects on war aggression earlier in their reigns, when it would have been most valuable to send signals to maximally discourage future attacks. Yet we observe no such differential effect. Another account suggests that it was not the queen but a persuasive male advisor (such as a foreign minister) who was actually responsible for setting war policy in queenly reigns. If this were the case, the gender effect on war should be even larger among monarchs who acceded at a younger age, since these monarchs were more likely to be influenced by advisors. However, we also do not observe this type of differential effect. Thus, we interpret our results as reflecting the direct consequence of the queen herself.

Caution must be taken in extrapolating these effects to other contexts that did not utilize hereditary succession or ever have women who came to power. Under hereditary succession, the pool of women eligible to rule consists of relatives of monarchs. Our instruments select from among this potential pool on the basis of arbitrary factors. However, if there are heterogeneous treatment effects, the IV estimate will be the local average treatment effect (LATE; Imbens and Angrist 1994), and a different pool of eligible women, or a different set of selectors, could lead to different IV estimates.

In broad terms, we see our results providing evidence for the idea that leaders matter, including in shaping policy outcomes. Within this area, some studies have used assassination attempts to demonstrate that leadership is consequential (Jones and Olken 2005), while other studies have demonstrated the importance of particular types of leader identity, along dimensions such as caste (Pande 2003) and gender (Chattopadhyay and Duflo 2004). Our paper builds on this work by demonstrating how the gender identity of leaders can be consequential for high-stakes outcomes such as interstate war, given how gender operates in political structures. To date, studies of gender and war have focused on the modern period and have found different effects associated with female executives versus female legislators. Koch and Fulton (2011) find that among democracies over 1970–2000, having a female executive is associated with higher defense spending and greater external conflict. In contrast, having a higher fraction of female legislators is associated with lower defense spending

women occupying leadership positions, e.g., in the context of the military or as a spouse to a reigning king.

and less external conflict (Caprioli 2000; Caprioli and Boyer 2001; Regan and Paskeviciute 2003; Koch and Fulton 2011). Studies also suggest that female voters are less likely to support the use of force internationally (Shapiro and Mahajan 1986; Conover and Sapiro 1993; Jelen, Thomas, and Wilcox 1994; Wilcox, Hewitt, and Allsop 1996; Eichenberg 2003) and that greater gender equity and female leadership lead to lower rates of internal conflict (Caprioli 2000; Melander 2005; Fearon 2010). These results may partly reflect greater voter willingness to elect female leaders during times of peace. Owing to this concern, we exploit a plausibly exogenous source of variation in female rule under hereditary succession. By implementing this approach and focusing our analysis on war over the fifteenth to twentieth centuries, we also take an identification-based approach to analyzing history (Nunn 2009).

We also view our work as closely related to microeconomic studies of how female political leadership affects public policies today. Several such studies demonstrate the consequences of women leaders operating in local political structures, such as village councils. These papers have shown the effect of female officials on spending patterns (Breuning 2001; Chattopadhyay and Duflo 2004), education (Beaman et al. 2012; Clots-Figueras 2012), and corruption (Brollo and Troiano 2016). Another set of related studies has also shown that female corporate leadership influences firm outcomes (Ahern and Dittmar 2012; Matsa and Miller 2013; Bertrand et al. 2017).

Our results link to findings emerging from the literature on gender competitiveness. Here a number of papers examining modern-day experimental settings suggest that women choose to compete less than men when competing over cash (see Croson and Gneezy 2009; Niederle and Vesterlund 2011), leaving potential monetary gains on the table (Niederle and Vesterlund 2007). Other studies suggest that women may also moderate certain behavior that could be interpreted as aggressive in order to signal suitability in marriage (Bursztyn, Fujiwara, and Pallais 2017). While there may be limited comparability between the modern and historical contexts, we think that our results present an interesting contrast to these effects. We find that queens, on average, participated more as aggressors in conflict and even more so after being partnered with a spouse. We also find that queens gained greater territory in the course of their reigns, which is broadly consistent with the idea that a more aggressive stance facilitated gains that would otherwise have been left on the table. An implication of our finding is that female leaders may well be willing to compete when the stakes are high, as in matters of war. This accords with recent findings that women compete as much as men when incentives switch from monetary to child benefiting (Cassar, Wordofa, and Zhang 2016). Taken together, these results suggest that female competition can be highly aggressive, given the right goals.

Our paper additionally relates to the literature examining how female socialization affects male behavior. These studies have shown how mothers influence their sons' labor market outcomes (Fernández, Fogli, and Olivetti 2004)[4] and that having a daughter or a sister affects male legislative voting (Washington 2008), party identity (Healy and Malhotra 2013), and judicial decision-making (Glynn and Sen 2015). The combined effect of ethnicity and female socialization has also been found to influence decision-making, for example, in Ottoman decisions to fight Europeans (Iyigun 2013).

We build on the findings of several recent papers that have documented important characteristics of European monarchies. For example, reigns became longer with the spread of feudalism and parliamentarianism (Blaydes and Chaney 2013), hereditary succession promoted economic growth under weak executive constraints (Besley and Reynal-Querol 2017),[5] and succession through primogeniture increased monarch survival (Kokkonen and Sundell 2014) during a period when regicides also declined (Eisner 2011). Consequently, we examine related outcomes such as reign length and regicide in our analysis.[6]

Our findings also contribute to the literature examining determinants of conflict historically, where there has been relatively little work. A notable exception is Iyigun, Nunn, and Qian (2017), which shows how conflict responded to climate change over 1400–1900, given its effects on agricultural production. In contrast, a larger literature has demonstrated the long-run economic and political legacy of conflict. A number of influential papers have advanced war as a key factor leading to state development (Tilly 1992; Besley and Persson 2009; Scheve and Stasavage 2010; Gennaioli and Voth 2015) and have demonstrated how modern-day political and economic development reflects historical conflict and military competition between states (Dincecco and Prado 2012; Voigtländer and Voth 2013a, 2013b). Within this literature, Acharya and Lee (2019) shows that a larger number of male heirs during the Middle Ages led to positive long-run effects on income per capita over 2007–09.[7] Our goal in this

[4] Fernández, Fogli, and Olivetti (2004) use variation in World War II as a shock to women's labor force participation to demonstrate that wives of men whose mothers worked are also more likely to work. Abramitzky, Delavande, and Vasconcelos (2011) also use variation stemming from World War I mortality to demonstrate how the scarcity of men can improve their position in the marriage market. This paper highlights the influence of past war on marriage-related outcomes, while our findings suggest the role of marriage in influencing war-related outcomes.

[5] Abramson and Boix (2012) document another channel for European growth, showing that industrialization took place in territories with strong protoindustrial centers, regardless of executive constraints.

[6] We are able to examine regicides because Eisner (2011) generously shared his data with us.

[7] Acharya and Lee (2019) suggest that the effect on long-run income is related to the effect of male heirs on internal civil conflicts. They show that over 1000–1500 AD, the

paper is to examine conflict incidence historically and assess whether gender played a role in shaping the conflict trajectory of European polities.

In the remainder of the paper, we discuss mechanisms through which female leadership can influence war, describe our data, outline the empirical strategy, present the results, and conclude.

II. Mechanisms

A. Gender and Perceived Weakness

One account of how female rule influenced war participation focuses on other leaders' perceptions that women were weak and incapable of leading their countries to war. While male monarchs were typically also military commanders, this role remained taboo for female monarchs in Europe during the period we study (Monter 2012, 49). In fact, the legitimacy of female rule was often questioned on the very grounds that women could not lead their armies into battle. For example, when Mary Tudor became queen of England in 1553, many strongly opposed the succession of a woman. The Protestant reformer John Knox then declared that women were incapable of effective rule for "nature . . . doth paint them forth to be weak, frail, impatient, feeble, and foolish" (cited in Jansen 2002, 1).

These perceptions may have led other leaders to view queens as easy targets of attack. King Frederick II of Prussia, for example, declared that "no woman should ever be allowed to govern anything" and believed that it would be easy to seize Austrian territory when it came under the rule of Queen Maria Theresa in 1745. A month after Maria Theresa acceded, Frederick invaded (Beales 2014, 132). Accounts of perceived weakness such as this one suggest that queens may have participated more in wars in which they were attacked by other rulers.

B. Gender and Reign Capacity

A second account of female rule and war participation builds on the importance of state capacity in warfare. Over the sixteenth to twentieth

number of male heirs in previous reigns affects coups and civil wars. Three points are useful in understanding our results together. First, our IV strategy uses the presence of a firstborn male, not the number of male heirs. The gender of the firstborn is more plausibly more exogenous to conflict because it is determined by nature, while the number of male heirs could reflect efforts by monarchs to secure a son—a trait that itself could be correlated with aggression. Second, our sample begins when their sample ends, and it is possible that succession may have been more contentious and may have given rise to more internal conflicts during the pre-1500 period, if succession laws were less detailed during that time. Finally, we find that the effects of queens on war are driven by the effects on wars between states, not civil wars within states. Thus, the two results reflect distinct sources of variation and find effects on distinct outcomes measured over different time periods.

centuries, European wars were frequent and increasingly required extensive financing and military management.[8]

Army sizes grew with new forms of fortification and gunpowder technology (Roberts 1955; White 1962; Bean 1973; Hoffman 2011).[9] Armies also became permanent, with professional soldiers who needed to be trained on an ongoing basis.[10] Overseeing larger, permanent armies required greater oversight and military management. The associated expenses also required more revenue and a larger fiscal infrastructure to collect it. Both enhanced the need for state capacity.

Queenly reigns may have had greater capacity and been better positioned to fill these management needs because queens often utilized their spouses to help them rule. Queens frequently put their male spouses in charge of official state matters and in positions of power, which kings were less inclined to do with their female spouses. This asymmetry reflected prevailing gender norms, as it was more acceptable for male spouses to hold these positions than it was for female spouses to hold these positions (Beem and Taylor 2014a, 4; Schaus 2015, 682).

A prime example is military leadership. As Monter (2012, 49) notes, "Male rulers needed female accessories in order to have legitimate male heirs; female rulers needed male accessories for the same purpose, but for a long time they also needed them to command their armies." Since it was taboo for women to command armies, queens often allocated this task to their husbands. In many cases, the marriage contracts even specified this arrangement. This was the case with Queen Doña Maria II of Portugal, who married Prince Augustus Francis Anthony in 1836 and appointed him to be the chief of the army (Alves 2014, 166).

Even if they were not officially heads of militaries, many male spouses (called king consorts) played critical roles in military conquests. For example, Mary of Burgundy relied heavily on her husband Maximilian, heir to the Holy Roman Empire, for leading successful military campaigns against the French (Monter 2012, 89). Ferdinand V, who coruled Leon and Castile with Isabel I over 1474–1504, helped Isabel defeat her niece, Juana la Beltraneja, who challenged her succession. Ferdinand also led the Spanish conquest of Granada, expunging the last Islamic state from Spanish soil.

Other spouses helped shape the monarchy's foreign policy position, even if they did not oversee wars. For example, Prince Albert was Queen

[8] The advent of the "Military Revolution" in the 1500s introduced new, more expensive military technologies. For example, the widespread use of cannons led to the adoption of stronger, more costly fortifications required to withstand cannon fire (Gennaioli and Voth 2015).

[9] This trend continued into the nineteenth century, with military size spiking after the introduction of railroads in 1859 (Onorato, Scheve, and Stasavage 2014).

[10] For example, the armed forces of England grew threefold over 1550–1780, while the armed forces of Austria increased 28-fold over this same time (Karaman and Pamuk 2010).

Victoria's most trusted advisor and shaped both her colonial policy and her public relations image (Urbach 2014). Victoria, in turn, was said to be most active as a ruler during Albert's lifetime.

Others yet played important roles in carrying out economic reforms and boosting the state's fiscal capacity, which were needed for financing wars. Francis Stephen essentially single-handedly revitalized the financial system of Austria and raised money for an army during the 1740s, when his wife Maria Theresa was its ruler (Beales 2014). In short, when queens put their spouses into positions of power, the polity in some sense received the benefit of oversight from two monarchs.[11]

Spouses played a unique role in several regards, compared to other family members or advisors. First, spouses carried with them the legitimacy of the monarchy, which enabled them to pursue tasks such as collecting taxes from nobles or leading armies into war, which advisors were not positioned to do. At the same time, spouses helped solve the ages-old problem of who could be trusted in ruling. They were typically not a direct threat in terms of seizing power, since most polities had laws in place that prevented them from becoming monarchs, unless they were already designated an official comonarch at the start of the reign.[12] This is in contrast to siblings, who could directly contest the throne. Thus, spouses were uniquely positioned to provide support. This support may ultimately have strengthened the overall capacity of queenly reigns, enabling them to participate in wars more aggressively.

C. *Empirical Implications*

The accounts above lead to the following empirical implications. If the perceived-weakness account holds, having a queen should lead to greater participation in wars in which the polity is attacked. In contrast, if the reign-capacity account holds, having a queen should lead to greater participation in wars in which the polity attacks. This effect should be especially large for married queens, relative to married kings.

III. Data and Sample Description

Testing these empirical implications requires data tracking genealogy and war among European polities. No preexisting data set contains this information. We construct a new data set from various sources, covering

[11] In the online appendix, we present further details on the military and foreign policy pursuits of Queens Isabel, Victoria, and Maria Theresa, highlighting the role of their spouses. We also present profiles of two unmarried queens in our sample: Queen Elizabeth of England and Queen Christina of Sweden.

[12] There are notable exceptions. One was Catherine the Great, who became empress of Russia in 1762 upon the death of her husband Peter III, though she originated from royal German lineage and was not an official comonarch at the start of Peter III's reign.

the period 1480–1913. Our sample starts in 1480, since this is the first year for which the war data are available. Our sample ends at the onset of World War I, after which time monarchs had relatively limited power in deciding when their polities should go to war. We provide an overview of data construction here and provide greater detail in the online appendix.

A. *Genealogy Data*

1. Panel Structure

We use Morby (1989) as the starting point for constructing our polity-year panel, which provides a list of polities that existed in Europe over this period.[13]

Our main sample includes 18 polities that had at least one queen during this time. Table A1 lists these polities, and figure 1 locates them on a map.[14]

For each polity, Morby provides a chronological listing of rulers, along with the start and end years of their reigns. Following this structure, we define a reign as a period in which a given monarch or set of monarchs rule the polity. Our sample includes 193 reigns, 34 of which were ruled by at least one monarch who was female, constituting 18% of the sample. We typically follow Morby's coding of when polities and reigns are in existence. One exception is Austria: we define its time line in accordance with Wright (1942), in order to incorporate the reign of Queen Maria Theresa into our panel. See section A.1 of the online appendix for more detail.[15]

In most reigns, there is a single monarch. However, in 16 reigns, multiple monarchs rule simultaneously. Most of these cases of multiple rule reflect two monarchs coruling simultaneously. This includes cases of (1) husband and wife ruling jointly, as in the case of Suzanne and Charles I, who coruled the Duchy of Bourbonnais over 1505–21 or (2) father and son ruling together, as in the case of Ivan III the Great and Ivan the Younger, who coruled the Tsardom of Russia over 1471–89.[16]

[13] Morby refers to these units as kingdoms. While some of these units—such as the Kingdom of England, the Kingdoms of Leon and Castile, and the Tsardom of Russia—are formally defined as kingdoms, others—such as the Medici and their successors in Florence or the Principality of Monaco—are more accurately described as independent states. We use the term "polity" to encompass both kingdoms and states.

[14] This map was created by overlaying six georeferenced historical vector maps from Euratlas (http://www.euratlas.com/) at the turn of each century, over 1500–2000. The boundaries of the polities are from different time periods and do not necessarily match present-day borders or show the maximum geographical area attained by each polity historically. The aim of the map is simply to show the polities appearing in our sample.

[15] However, our results are also robust to excluding Austria and hence Maria Theresa's reign. These results are available from the authors upon request.

[16] In five additional cases, there was multiple rule because one ruler governed the polity for less than a year before being deposed. For example, Edward V ruled the Kingdom of England for a part of 1483 before he was deposed and his brother Richard III took over as the monarch.

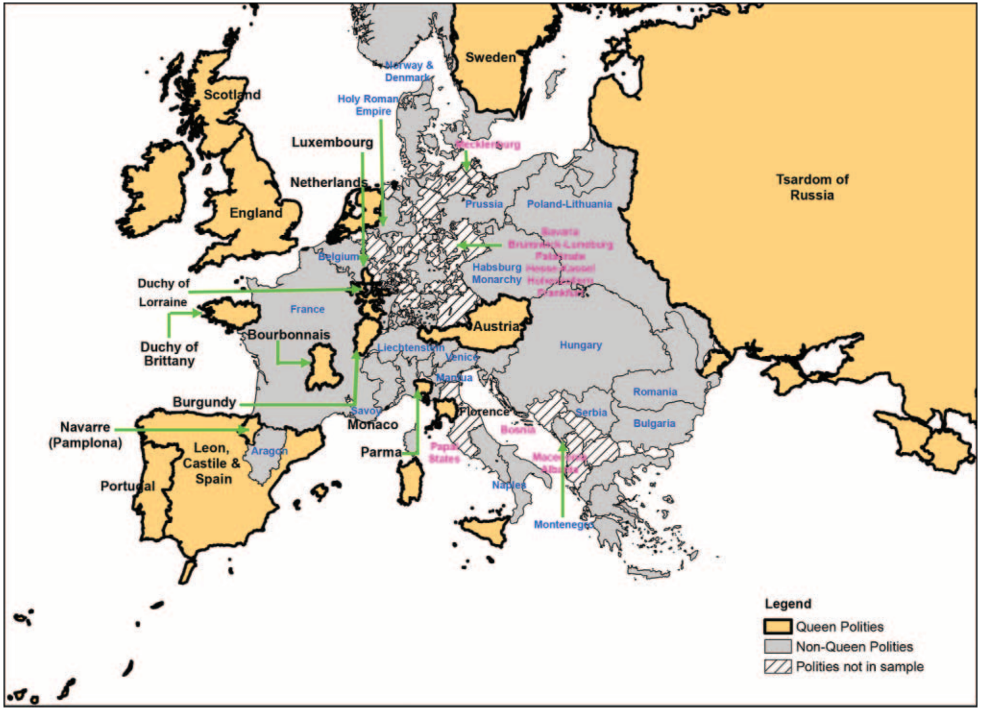

FIG. 1.—Queen and nonqueen polities. This figure was created by overlaying six georeferenced historical vector maps from Euratlas (http://www.euratlas.com/) at the turn of each century over 1500–2000. Polities were chosen from one of these maps to minimize displayed territorial overlap. The territorial boundaries for different polities are from different time periods and do not necessarily match present-day borders or show the maximum geographical area covered by each polity historically. Polity names in black are queen polities, those in blue are nonqueen polities, and those in pink are polities not in the sample.

A monarch can govern in multiple reigns, by ruling alone in one reign and coruling with another monarch during another reign.[17] Thus, within the 193 reigns, there were 192 distinct monarchs. Among the 34 reigns with queens, there were 29 distinct queens. Even if a queen was married, her spouse was not necessarily designated an official comonarch with the title of king. In 24 of the reigns with queens, women ruled as sole regents, which we designate as cases of "sole queens." Among these 24 reigns, 14 were cases in which queens were married but nonetheless governed as sole regents, which highlights the distinction between being a sole regent versus being a monarch who is single or unmarried. In 10 of the remaining cases, queens coruled with their spouses. In one reign alone, two women coruled.[18]

2. Genealogy Variables

For each monarch, we are able to gather genealogical information from the "Catalog of Royal Family Lineages" (Tompsett 1994), which conveniently follows the same polity and ruler listing as Morby (1989), enabling highly accurate matching. For each ruler, we code the ruler's age at accession, marriage year, marriage dissolution year, and spouse birth and death years. This allows us to track whether the rulers were married and whether their spouses were living during their reigns. In addition, we record the birth and death years of their children and siblings.

Although gender is not listed separately, we are able to use the listed name to establish the gender of children and siblings. If the gender was not readily apparent from the name or the name itself was not listed, we conducted an exhaustive search of additional sources to locate this information. We are unable to establish gender in only 2% of the children and 6% of the siblings, and we control for missing gender children/siblings in these cases.

Our instruments are based on the gender of the siblings and firstborn child of the "previous monarchs," who are often monarchs of the previous generation in systems of hereditary succession. Thus, in the construction of our instruments, in most cases, the previous monarchs are simply those who ruled in the previous reign. However, in 30 reigns, corule and one monarch ruling across multiple reigns break the correspondence of previous generations to previous reigns. In these cases, our definition of previous monarchs differs from "monarchs in the last reign." We detail

[17] For example, Queen Suzanne ruled the Duchy of Bourbonnais on her own over 1503–4. She ruled together with her husband Charles III over 1505–21. Upon her death, Charles III ruled on his own, from 1522 to 1527.

[18] This was the case of Mary I and Lady Jane Grey, who ruled the kingdom of England in the same year (1553).

these cases in section A.2 of the online appendix.[19] We use the term "instrument monarchs" to refer to the set of previous monarchs who serve as the basis of our instrument sets. These instrument monarchs also serve as the basis of our clustering strategy, which we discuss in section IV below.

We also generate measures of whether the monarchs were married. We define a monarch as married during their reign if he or she had a (living) spouse at any point during their reign.[20] In cases of corule, we consider whether either monarch had a spouse during the reign. This marital measure differs from whether the monarch was ever married: he or she may also be unmarried during a reign either because their rule precedes marriage or because they were married previously but lost their spouse to death or separation.

B. War Data

We code data on war participation for each polity from Wright (1942). Importantly, this data source tracks when each participant enters and exits each war, which allows us to measure war participation with relative precision.

The listing includes larger wars, described as "all hostilities involving members of the family of nations, whether international, civil, colonial, imperial, which were recognized as states of war in the legal sense or which involved over 50,000 troops" (Wright 1942, 636), as well as smaller wars, described as "hostilities of considerable but lesser magnitude, not recognized at the time as legal states of war, that led to important legal results" (Wright 1942, 636).

It also disaggregates wars by type. It includes 77 balance-of-power wars, which are interstate wars involving European nations;[21] eight defensive wars, which are interstate wars between European states and the Ottoman Empire; 29 imperial wars, which are interstate colonial conflicts; and 40 civil wars, 26 of which involve multiple states and 14 of which are internal to one state alone. Balance-of-power wars are the most prevalent

[19] As an example, in the case of Suzanne and Charles III of Bourbonnais, when Suzanne rules by herself, and Suzanne and Charles III rule together, and Charles rules by himself, we consider Suzanne's father Peter II and her uncle Charles II, who ruled alongside Peter in a previous reign, to be the relevant previous generation and utilize them as the appropriate monarchs in the instrument sets for these three reigns involving Suzanne and her husband Charles.

[20] We use this measure of marital status, rather than annual variation in the year in which the monarchs get married, since annual variation in when they get married is more plausibly endogenous to annual variation in conflict incidence. For example, if the start of a war spurs a monarch to get married to garner support from the spouse's home country, the annual marital measure would reflect this potential reverse causality more directly.

[21] Balance-of-power wars almost exclusively take place among European polities. There are a handful of exceptions documented in the online appendix. For example, the Russo-Japanese War in 1904–5 also involved Japan.

form of conflict, in terms of both the number of wars and conflict incidence. Average participation across all wars is 0.296. Of this, average participation in balance-of-power wars is 0.216.

We examine an aggregate measure of participation in any type of war, since this is the most comprehensive measure. This approach also averts potentially debatable aspects of classification that may affect the prevalence of any one type of war. For example, several wars classified as "civil wars" involve other non-European countries and colonial holdings and thus could arguably have been classified as imperial wars. However, we also present disaggregated effects on wars by type as a robustness test.

A natural concern is whether the Wright data source is truly comprehensive and measures the full extent of war among European polities over this period. This is challenging to assess, since there are few other data sources that track war participation in as fine-grained a manner—that is, that track wars specifically, as opposed to other, broader types of violence, and in a way that enables us to observe when each participant enters and exits the war. However, in section A.5 of the online appendix, we compare war prevalence in our data to war prevalence in two other data sources that track wars for at least part of the time period covered by our analysis. We find that wars are not systematically underrepresented in our data. If anything, these other sources are missing relatively more wars, compared to the Wright data source.

Aggressor coding.—Wright also demarcates which side is the aggressor in the conflict, that is, which side initiated the war. As with any aggressor coding in a conflict setting, Wright (1942)'s coding of aggressors is subjective. We rely on this coding, rather than on our own, to minimize our potential bias in this measure. Nonetheless, if Wright (1942) overattributed aggressive participation to female rulers, this could potentially bias our results. However, the pattern of results we observe, based on marital interactions, would require a very particular form of bias, in which Wright overattributed aggression to women who were married during their reigns and underattributed aggression to women who were single or widowed during their reign. We view this particular form of bias to be unlikely, since it would require extensive detailed institutional knowledge on the timing of marriage and spousal deaths. This reduces our concerns that the results are driven by coding bias, which we also discuss further in section V.D.

C. Data on Other Measures of Stability and Territorial Expansion

Besides war participation, we examine additional outcomes related to internal instability, including the length of reign and whether a monarch died of unnatural causes. This variable is coded on the basis of regicide data by Eisner (2011), who records whether a monarch was killed or had died of other unnatural causes, for the period before 1800. We supplemented this information from Eisner (2011) with other sources to create an equivalent indicator of whether the monarch died of unnatural causes for the duration of our sample period.[22] We additionally examine whether monarchies come to an end via unification, partition, or capture or transform into republics, on the basis of data recorded by Morby (1989).

Finally, for 14 of 18 polities in our sample, we are able to observe territorial change under each reign, using the Centennia Historical Atlas. These data provide 10 snapshots of territory each year.[23] On the basis of these data, we can observe whether the contiguous territory under a polity increased by comparing snapshots at the beginning and end of a ruler's reign.[24] This enables us to define whether a reign experienced net territorial loss or gain or no change in territory over the course of a reign.

D. *Main Sample*

Our main sample spans 1480–1913 and includes 18 polities that ever had a queen. Not every polity existed for every year: on average, each polity existed for 199 years, though this ranges from 9 to 419 years. This results in an unbalanced panel of 3,586 observations. Periods in which a polity is a republic are not a part of the sample, since our goal is to compare the rule of female monarchs to that of male monarchs, rather than to republics. Table 1 provides the descriptive statistics of key variables used in our analysis, at the polity-by-year panel level.

E. *Auxiliary Sample*

We also coded genealogy and war participation in an auxiliary sample of polities that never had queens, which we use to conduct falsification tests and examine instrument validity. This sample consists of 149 reigns across 18 other polities. We included every polity for which we could match the units in the war and genealogy data. It is just by coincidence, not design, that our main sample includes 18 polities and our auxiliary sample also includes 18 polities that never had queens. These polities are also listed in table A1 and shown in figure 1.[25] They cover a large part of

[22] See sec. A.2 of the online appendix for greater detail.

[23] These snapshots are developed on the basis of a proprietary data source created by Frank Reed. They account for territorial change, including those emerging from wars. See the online appendix and http://www.historicalatlas.com/ for further details.

[24] We are not able to observe the precise increase in area within the reign without access to the GIS (geographic information system) data underlying the snapshots provided by Centennia. Thus, we are not able to measure how much area increased or decreased in each year.

[25] We include a more detailed discussion of the polities in the auxiliary sample in sec. A.1 of the online appendix. Not every auxiliary polity can be shown in fig. 1 because

TABLE 1
SUMMARY STATISTICS OF KEY VARIABLES

Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
Dependent variables:					
In War	3,586	.296	.457	0	1
Reign Entered War	3,586	.240	.427	0	1
Reign Continued War	3,586	.056	.230	0	1
Polity Attacked	3,586	.130	.336	0	1
Polity Was Attacked	3,586	.166	.372	0	1
Reign Length (years)	3,586	30.75	15.68	1	66
Monarch Killed	3,058	.145	.352	0	1
Polity Ends	3,586	.085	.279	0	1
Polity Merged or Partitioned	3,559	.067	.250	0	1
Polity Becomes Republic	3,559	.0008	.029	0	1
Independent variables:					
Queen	3,586	.160	.366	0	1
Sole Queen	3,586	.131	.337	0	1
Firstborn Male (of previous monarchs)	3,586	.502	.500	0	1
Sister (of previous monarchs)	3,586	.740	.438	0	1
Firstborn missing gender (of previous monarchs)	3,586	.019	.137	0	1
Sibling missing gender (of previous monarchs)	3,586	.064	.245	0	1
≥1 legitimate child without missing birth year (of previous monarchs)	3,586	.821	.383	0	1
≥1 legitimate child with missing birth year (of previous monarchs)	3,586	.118	.323	0	1
Total Siblings (of previous monarchs)	3,586	4.302	4.145	0	22
Married in Reign	3,586	.795	.404	0	1
Married in Reign missing	3,586	.049	.216	0	1
Spouse Prior Belligerence	3,499	.037	.188	0	1
Accession Age (years)	3,586	22.40	15.43	0	66
Accession Age missing	3,586	.095	.293	0	1
Corulers Unrelated (among previous monarchs)	3,586	.007	.088	0	1

the continent, including larger polities such as France and smaller ones such as Bulgaria. The online appendix details why we are missing data for some polities. Importantly, it was not possible for us to include the German kingdoms, which typically had multiple houses coruling different subregions within their polities. These could not be matched to the war data, since Wright (1942) does not discern which specific subregions participated in each war.

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the polities in our sample existed over different time periods, and during some historical periods, the geographic area of one polity was covered by that of another.

IV. Empirical Strategy

Using these data to examine the effect of queens on war requires two additional steps: examining how succession occurred and developing relevant instruments. We discuss these in the subsections below.

A. *Succession Laws*

Succession was partly governed by laws that dictated who could rule. Laws of succession varied tremendously across European polities. Some laws de jure barred women from coming to power. Chief among these was Salic law, which governed succession in the French monarchy after 1317. As a consequence, no queen regnants, who ruled in their own right, came to power in France.[26]

Other systems de facto prevented women from coming to power. This is true of systems of elections. During our sample period, elections in European monarchies were not broad-based: rather, a group of elites voted for a monarch among a selected pool of candidates, who were typically all from royal families (Kokkonen and Sundell 2014). This succession law was used perhaps most famously in the Holy Roman Empire, where seven prince-electors would choose an emperor.

No female was ever elected to head the Holy Roman Empire, or indeed any European government, until Margaret Thatcher was elected prime minister in 1979 (Monter 2012, 40).

A third group of laws allowed women to come to power under particular circumstances. This was true of certain types of primogeniture, which broadly is the principle of letting the oldest son inherit power. For example, under male preference primogeniture, "[i]f the male line of a particular heir fails, then the eldest daughter of the most recent male sovereign may succeed to the throne" (Corcos 2012, 1604). This system preferred males but allowed females to succeed.[27]

In broad-brush terms, England, Portugal, and Russia practiced primogeniture for large durations of their history. However, laws of succession also changed substantially over time, even within given polities. These changes may have arisen endogenously in response to conditions such as wars or the availability of male heirs. For example, in 1713, the Austrian monarch Charles VI (who had no sons) put forward the Pragmatic Sanction,

[26] France did have queen consorts who married reigning kings or queen regents who were essentially acting monarchs on behalf of child heirs who were too young to rule (Corcos 2012). Note that identifying the effect of queen regents would require an empirical strategy different from the one we use in this paper, since the gender of the firstborn child and the gender of the siblings of previous monarchs do not have predictive power in determining whether queen regents came to power.

[27] Absolute primogeniture, where the oldest child inherits regardless of gender, was not practiced in any monarchy during our sample period. It was first adopted only in 1980, by Sweden.

which declared that his daughter Maria Theresa or—failing her—his younger daughter Maria Anna should succeed him as monarch (Beales 2014, 127).[28]

The endogeneity of laws such as the Pragmatic Sanction to conflict and other political conditions potentially correlated with conflict suggests that it would be problematic to use them to identify the effect of female rule on war. In addition, no data source systematically tracks which polities had which types of law in place year to year. So instead of relying on how succession worked in law, we exploit how succession worked in practice.

Though formal succession laws varied across polities and years, in practical terms, as Monter (2012, 36–37) describes, "four general principles governed dynastic successions to major states almost everywhere in Christian Europe. They were (1) legitimate birth (2) masculine priority (3) direct over collateral descent and (4) primogeniture."

In his 1579 treatise on female rule, Chambers (1579) also wrote, "it is a general rule that women succeed in the absence of males" and "if a deceased king anywhere else [but France] left legitimate daughters but no legitimate sons, the oldest surviving daughter took precedence over more distantly related males" (cited in Monter 2012, 114). These guiding principles motivate our empirical strategy and our instruments for whether queens were in power.

B. Pathways to Becoming a Queen

Given the nature of dynastic succession, there are two potential forces that led queens to become queens: the presence of a firstborn male and the presence of a sister among the previous ruling monarchs. First, since the oldest son of a monarch had priority in succession, if the previous monarch had a firstborn child who was male, this decreased the chance of having a queen the next period, as the male child was likely to become ruler. Conversely, if the oldest child was female or the only child was female, this increased the chance of having a queen, as older daughters would be given priority in accession over more distantly related males, such as nephews or uncles. We therefore utilize whether the firstborn legitimate child of the previous monarch was male as one of our instruments for whether a queen was in power.

Second, if the previous monarch had a sister, this also enhanced the chance that the throne would pass to a female ruler. A worry with using the presence of a sister as an instrument is that the previous monarch

[28] The Kingdom of Sweden also reversed itself on the question of female rule several times. It prohibited female inheritance from 1654 until 1683 and again after 1720 (Monter 2012, 34).

may have been more likely to have had a sister, if two periods ago their parents had many children, leading to many siblings who could contest the throne. However, conditional on the total number of siblings, the presence of a female sibling should be exogenous to conflict outcomes. We therefore use the presence of a sister as a second instrument, controlling flexibly for the total number of siblings among previous monarchs.

It is possible that sisters may have been especially likely to increase the chance of a queen in the next period if the previous monarchs lacked children. For example, Ulrika Eleanora acceded as monarch of Sweden in 1718 when her brother, Charles XII, passed away without having married or having any children. The lack of children may be even more relevant than the lack of a firstborn male in conditioning the extent to which sisters led to queens. This is because even if the previous monarch did not have a firstborn son, or any sons, but had a daughter, the throne would likely pass to her, since she would have priority in accession over the previous monarch's sister. We avoid using the presence of any children as a part of our primary instrument set, since this may be endogenous—that is, whether the monarchs exert any effort in having children could be correlated with other characteristics that affect how they ruled and fought. However, in the appendix, as an auxiliary check, we utilize alternate instrument sets interacting the sister instrument with a no-children indicator, as well as with the firstborn-male indicator, and find suggestive evidence broadly consistent with this idea. In particular, the strength of the first stage improves only upon inclusion of the interaction with the no-children indicator in the instrument set but not with the interaction of the sister indicator.[29] We therefore view the firstborn-male and sister instruments as two separate sources of variation for queens coming to power and use them as instruments separately in our analysis.

Figure 2 systematically traces out the circumstances under which queens came to power. It shows that among the 29 queens in our sample, 23 represent cases when the previous monarchs lacked a firstborn child who was male, including eight cases in which the previous monarchs had no children. The figure also shows that, coincidentally, in 23 of the cases, the previous monarchs had a sister.

The figure also highlights how the death of male heirs played a role in the pathway of queens becoming queens. Among six queen cases where the previous monarchs had multiple children and a male firstborn child, in all but one case, the males had died by the time of accession. Thus, noncompliance emerges in part from the death of older brothers. In addition, among nine cases where the monarchs had multiple children and the firstborn child was female, again in only one case was there a younger male child who was alive at the time accession occurred. Section A.2 of

[29] We discuss these alternate specifications (presented in table A5) in sec. V below.

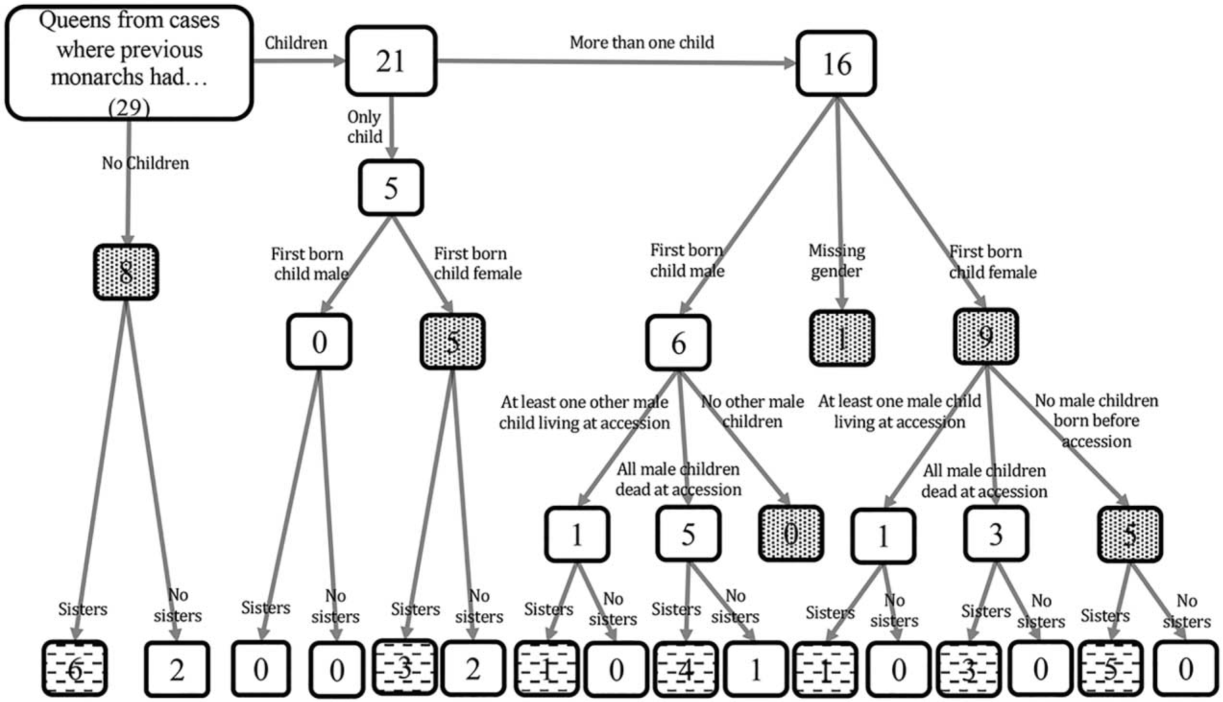

FIG. 2.—Circumstances under which queens came to power. This figure shows the circumstances of the previous monarchs for the 29 queens in our sample. For example, the previous monarchs had children in 21 of 29 queen cases and lacked children in 8 cases. Among these latter 8 cases, the previous monarchs had sisters in 6 cases and had no sister in 2 cases. The 5 cases where all male children were dead at accession when the previous monarchs had a firstborn male child includes one case where the death year of one of the sons is missing. Striped cells show all cases in which there was at least one sister among previous monarchs. Dotted cells show all the cases in which there was no male firstborn child among previous monarchs.

the online appendix provides details on the two cases of queens who came to power with a brother living at accession.[30]

The death of these siblings may be endogenous to conflict. Male children may die at a young age if the reigning monarchs engage in war, or siblings who are particularly aggressive may end up killing their brothers and sisters to rise to power and subsequently lead their polities to war. Given this potential endogeneity, we avoid using information about the death of children in the instrument sets. We instead check the robustness of our findings to controlling for the number of dead children (and siblings) among previous monarchs.

Overall, our instrumental variables strategy is based on the idea that succession was hereditary, and our instruments will predict queenly reigns if succession typically proceeded within a family lineage. Of course, sometimes the lineage changed, and occasionally, laws even changed to facilitate nonhereditary succession.[31] These discrete cases could potentially weaken the strength of the first stage. However, ultimately, first-stage *F*-statistics (presented in sec. V below) demonstrate that succession was sufficiently hereditary for the gender of the firstborn and the presence of a sister in the past reign to be strong predictors of queenly rule.

C. Instrumental Variables Specification

We use an instrumental variables (IV) strategy to estimate the effect of queens on their polity's conflict participation. We use whether the previous monarchs had a male firstborn child and whether they had a sister to instrument for whether a queen is in power.

Our panel data consist of observations at the polity-by-year level. Each monarch rules for a set of years that define a particular reign. Thus, whether the monarch is a queen varies at the level of the polity-reign. The data enable us to observe whether a polity is at war in a given year. Thus, the war-related dependent variables vary at the level of the polity-year. Our main specifications also incorporate decade fixed effects (with latter specifications verifying robustness to year fixed effects). Therefore, the estimating equation for the second stage of the IV specification is given by

[30] Online appendix fig. 1 also shows the equivalent figure for kings. The figure indicates that a much smaller fraction of king cases are associated with firstborn females, among cases in which the previous monarchs had children. In most cases where kings came to power despite a female firstborn, there was also a younger brother living at accession. In addition, a smaller fraction of king cases (vs. queen cases) are associated with the previous monarchs having a sister.

[31] For example, in eighteenth-century Russia, Peter the Great's succession law of 1722 gave the ruling tsar the right to appoint his or her successor. This opened the door to ambiguity in how succession could occur, leading to a series of successions via coups, depositions, and appointment by the privy council.

$$W_{prdy} = \alpha_p + \tau_d + (\widehat{\text{Queen}_{pr}})\delta + \mathbf{X}'_{pr}\phi + \varepsilon_{prdy}, \tag{1}$$

where W_{prdy} are war-related outcomes in a polity p, reign r, decade d, and year y. The primary dependent variable, In War, is whether the polity is engaged in a war in a given year; α_p are polity fixed effects; τ_d are decade fixed effects; $\mathbf{X}$ is a vector of controls that vary at the reign level (detailed below); and $\widehat{\text{Queen}_{pr}}$ is the instrumented indicator of whether a queen rules during a given reign. By incorporating polity fixed effects, we exploit variation over time in when the polity is ruled by a female monarch versus a male monarch. By incorporating decade fixed effects, we control for decade-to-decade variation in conflict incidence throughout Europe.[32]

The first stage is given by

$$\text{Queen}_{pr} = \alpha_p + \tau_d + \left(\text{Firstborn Male}_{pr-1}\right) + \left(\text{Sister}_{pr-1}\right)\theta + \mathbf{X}'_{pr}\rho + \omega_{prd}, \tag{2}$$

where Firstborn Male_{pr-1} is an indicator of whether the previous monarch(s) had a legitimate firstborn child who was male; Sister_{pr-1} is an indicator of whether the monarch(s) in the previous reign had a female sibling. We use two-stage least squares to estimate equations (1) and (2) together in a one-step procedure.

1. Control Variables

First, as discussed above, we control flexibly for the total number of siblings among previous monarchs. This is important for the following reason. Whether the previous monarchs had a sister amounts to whether the monarchs two periods ago had a daughter. The monarchs two periods ago were more likely to end up with a daughter if they had a lot of children. This would mean that the previous monarchs would have a larger number of total siblings, who could potentially contest succession. The presence of these other siblings would then represent another pathway through which the presence of a sister affects conflict, threatening the validity of the instrument. We flexibly control for total siblings to close out these potential alternative channels.

In all specifications, we control for three cases in which the previous monarchs were corulers unrelated to one another, as the gender of the firstborn may be relatively less informative of the actual successor in these cases. Since the Firstborn Male variable is defined as zero if the previous

[32] Our results are robust to the inclusion of year fixed effects, as shown in table A14. We opt for decade fixed effects because our panel stretches from 1480 to 1913, and including 433 year dummy variables slightly weakens the first stage. However, all of our key second-stage estimates remain in place.

monarchs had no children, we control for whether the previous monarchs had any legitimate children for whom birth years are not missing and any for whom birth years are missing. This disaggregation helps account for measurement error, since we can most accurately identify who is firstborn when there are no missing birth years. These "any-children" controls also account for plausibly endogenous reasons why the previous monarchs may not have had children, such as war in the past reign that led them to die young, which may also affect war in the current reign.[33]

Importantly, we control for whether the gender of the sibling and the gender of the firstborn are missing. As discussed in section III above, we identify gender on the basis of name or an exhaustive search if the name is missing from Tompsett (1994). However, we are still unable to find the names of five firstborn children. We believe these are very likely to be girls—as Jansen (2002) documents in detail, it is common for royal genealogies to provide limited information about female children. But we do not impose this assumption and instead control separately for whether the gender of the firstborn is missing. We are analogously missing gender information for siblings of 10 previous monarchs, and we also control for whether there are any siblings with missing gender. These controls constitute our standard controls throughout the tables.

2. The Firstborn-Male Instrument

We use the gender of the firstborn, since this is arbitrarily determined by nature and thus plausibly exogenous to conflict. In contrast, whether the monarchs have a male child or the number of male children could be a function of their effort. For example, rulers could actively continue having children until they have a son. This effort may be correlated with aggressive behavior, which may affect the proclivity to participate in conflict and the legacy of conflict left behind.

We use the gender of the firstborn child to avoid this potential pitfall. Our focus is on the gender of the first legitimate child, since legitimacy, typically, was a key requirement of succession. However, this introduces the additional possibility that an aggressive monarch may have taken steps toward elevating an illegitimate male heir to the throne. This was not a very common event, since there was a strong norm favoring legitimacy as a condition of succession (Cannon and Griffiths 1998, 37; Monter 2012, 37), and indeed it was only under the rarest of circumstances that illegitimate heirs came to rule (Monter 2012, 39).

However, one notable case is Henry VIII, King of England over 1509–47. Henry had a firstborn child who was a legitimate daughter, followed

[33] We also include war in the past reign as an auxiliary control in some specifications.

by a series of legitimate stillborn sons, before he finally went on to have an illegitimate son who survived past childhood. Henry subsequently passed a law that enabled him to choose an heir without being confined to the requirements of legitimacy, though his intention to appoint his illegitimate son to the throne remains a point of debate (Murphy 2001), and ultimately, this did not transpire, since this illegitimate son also died before succession.

Though Henry's illegitimate son did not come to rule, this example raises the worry that kings who attempt to elevate an illegitimate son to legitimate status may be especially aggressive and provoke conflict in their attempt to engineer succession changes, leaving behind a polity already embroiled in conflict. If monarchs are most likely to respond in this manner when their firstborn child is female, as in the case of Henry VIII, this would represent a potential violation of the exclusion restriction. To address this second concern, we show that the gender of the firstborn legitimate child does not provoke conflict in the contemporaneous reign, that inherited conflict in the previous reign is similar across kingly and queenly reigns, and that controlling for it does not affect the results. In addition, we generate the gender of the firstborn child—legitimate or illegitimate—and show that this variable also does not affect conflict in the reign contemporaneously. Moreover, we show that our main results hold if we use this alternate legitimate or illegitimate version of the instrument.[34]

The example of King Henry could also raise the concern that illegitimate sons may somehow have gotten recorded as legitimate sons in our data. This seems unlikely, since Tompsett (1994) separately lists spouses and their children (who are legitimate) from extramarital "associates" and their children (who are illegitimate). Nonetheless, if there is ambiguity in classification, our robustness check using the gender of the firstborn, legitimate or illegitimate, suggests that this misclassification does not meaningfully affect our analysis.

Finally, we exploit the gender of the legitimate firstborn, rather than that of the oldest legitimate surviving child at accession, because there may be selection bias in who survives. Children who are able to survive harsh conditions or competition with each other to survive may be stronger and fight aggressively later, including in warfare. We instead control for the number of dead siblings as auxiliary controls.

[34] We prefer to use the gender of the legitimate firstborn as our primary approach because, as this example suggests, the gender of the firstborn legitimate child may be more likely to be reflect nature than the gender of the other children who follow. If the previous monarchs respond to legitimate firstborn daughters by going on to have other potentially illegitimate children in the hopes of having a son, then the gender of the subsequent illegitimate children may be more likely to reflect monarch effort and attitudes.

TABLE 2
THE INSTRUMENTS

	N	Percent
Male firstborn (previous monarchs):		
Yes	84	54
No	71	46
Sister (previous monarchs):		
Yes	138	72
No	55	28

NOTE.—The "Male firstborn" rows show the fraction of cases in which the previous monarchs had a male firstborn child among the set of cases in which they had any children. The "Sister" rows show the fraction of cases in which the previous monarchs had a sister.

3. Instruments in the Sample

Table 2 shows the two instruments at the level of the reign. The previous monarchs had a sister in 72% of the cases. Conditional on the previous monarchs having children, there was a male firstborn in 54% of the sample. The naturally occurring sex ratio at birth is 52% male (Grech, Savona-Ventura, and Vassallo-Agius 2002). Thus, the firstborn ratio in our sample is within the margin of error around this naturally occurring ratio, particularly since the firstborn children with missing gender are likely to be female. In addition, we compared the sex ratio at birth in our data sources to records for Europe in the Human Mortality Database (HMD).[35] In these sources, we found the median sex ratio at birth to be 53%, with the range spanning from 51% in Sweden to 55% in Portugal.

In addition, we can be reasonably confident that our genealogical data are complete and that we are not missing many firstborn children in entirety, for the following reasons. Sex-selective infanticide was not a common phenomenon in Europe over this period (Siegfried 1986). Moreover, the Tompsett (1994) data source records even infants who died at birth: for example, we verify that children with the same birth year and death year are included in the catalog. Overall, these checks and the similarity of the sex ratio at birth figures across our data and the HMD data bolster our confidence regarding the accuracy of our genealogy data.

4. Interpretation of the IV Estimate

There are several ways in which we must be careful when interpreting the IV estimates below. Even when the IV approach produces a causal effect, it is important to consider what this effect means. First, we have to explicitly

[35] The HMD contains records of births from various national statistical and other academic sources, and it includes nine of the 18 polities appearing in our main sample—see sec. A.3 of the online appendix for greater detail.

consider the kinds of women the treatment effect is estimated for. We estimate effects under conditions of hereditary succession with masculine priority. The pool of women who are eligible to rule in this context is a selected group—it consists of women who are eligible to rule on account of being the relatives of previous monarchs. Our instruments choose rulers from among this pool on the basis of arbitrary factors, but the pool itself is a select set.

If there are heterogeneous treatment effects, the IV estimate will be the LATE (Imbens and Angrist 1994). It will tell us the effect for the specific group of women who were eligible to rule and induced into ruling because of the presence of a firstborn female or sister among previous monarchs (i.e., the set of women who were compliers).

It is important to acknowledge that the effects may be different if we start with a different pool of eligible women or use different mechanisms (instruments) that induce a different set of women into becoming queens. These limitations underscore ways in which IV estimation cannot produce a generic estimate of having a female ruler. This is particularly relevant when we think about extrapolating to modern-day settings, where the eligible pool and selection mechanisms might be quite different. It also suggests caution in extrapolating to other polities that are not in our study, including those in which women never came to rule because of factors such as succession laws.

However, we find it reassuring that our results are broadly similar across different instrument sets. For example, the main effects are similar when we use the firstborn-male instrument alone and in conjunction with the sister instrument. They also remain in place when we interact the sister instruments with other features, such as the presence of any children among previous monarchs. These instruments are closely related in the sense that they all specify the availability of heirs of different varieties, and so it is possible that there is some similarity in the associated compliers. However, to the extent that compliers differ across these instrument sets, it is reassuring that the treatment effects are similar across these complier groups.

5. Polity Boundaries

Some of our polities changed boundaries substantially over this period: some polities came to an end as one unit and reemerged as a part of another unit after unification or capture by another kingdom. For example, the Kingdoms of Leon and Castile are present in our sample as a polity from 1480 until the first decade of the 1500s, at which point Spain emerges as another polity that lasts through to 1913. We address this in two ways. First, by including polity fixed effects, we look only at changes over time within a given polity. For example, we exploit variation over time within the Kingdoms of Leon and Castile when it is in existence and within the Kingdom of Spain after it comes into existence. Second, we show that having a queen in power does not influence outcomes such as whether the monarchy drew to an end via unification, partition, or capture or through transformation into a republic.

6. Standard Errors

Since wars last more than a year and the Queen variable varies by reign, we take a reign-based approach to clustering the standard errors. Specifically, our identifying variation comes in at the level of the reign of the instrument monarchs (who, for the most part, were the previously ruling monarchs). On occasion, the same instrument monarchs serve as instruments across multiple reigns, for example, when the rulers they serve as instruments for also span multiple reigns.[36] Since the reigns of these instrument monarchs are not independent of one another, we do not treat them as separate reigns but rather define a broad reign, grouping together all reigns associated with a given instrument monarch. We then cluster the standard errors at the level of the broad reign of the instrument monarchs. There are 176 such clusters. Note that this is a more conservative strategy than clustering on reign, of which there are 193.

An additional concern is that standard errors may also be correlated across two polities fighting each other. We address this in two ways. First, we examine effects on participation in wars in which the polity attacked another polity. Although the decision to attack can depend on many factors, this aggressive-participation variable has been constructed so it equals one for only one side. Thus, specifications examining aggressive participation are less subject to concerns that the estimates are driven by the positive correlation of errors across both sides in the conflict, since the aggression outcome, by construction, represents the action of one side. In addition, we also examine war engagement in a dyadic specification, in which we are able to cluster our standard errors at the dyad level.

Finally, there are just 29 queens and 34 queenly reigns in our sample, which raises the worry that small samples will affect inference. To address this concern, we implement the wild-bootstrap procedure (Cameron, Gelbach, and Miller 2008), bootstrapping the standard errors using 1,000 replications.[37] Throughout the paper, we present only p-values that have been adjusted using this bootstrap method.

[36] Returning to the example of Suzanne and Charles of Bourbonnais, these two rulers together ruled in three different reigns, and Suzanne's father and uncle serve as the instrument monarchs for all three of these reigns (see sec. III.A for greater details).

[37] We use the specific estimation procedure developed by Roodman et al. (2019).

V. Results

In this section, we present evidence on how queens affect war participation. We begin by showing the OLS (ordinary least squares) and IV results. We next address instrument validity and perform a series of sensitivity checks. We then show results disaggregated by aggressor status and marital status to examine the perceived-weakness and reign-capacity accounts. We close by examining alternative accounts.

A. *Queens and War: Main Results*

Table 3 examines the OLS relationship between queens and war participation. The first two columns show OLS results, and the later columns

TABLE 3
Queens and War Participation: OLS and IV Results

Variables	In War (1)	In War (2)	In War (3)	In War (4)
Queen	.107**	.130**	.400**	.388**
	[.016]	[.011]	[.039]	[.022]
Observations	3,586	3,586	3,586	3,586
R^2	.439	.460	.399	.437
Mean of DV	.296	.296	.296	.296
Specification	OLS	OLS	IV	IV
Instruments			FBM_{r-1}	FBM_{r-1}, Sister_{r-1}
Standard controls	Y	Y	Y	Y
Flexible sibling controls		Y		Y
Kleibergen-Paap *F*-statistic			9.25	10.32
Montiel-Pflueger effective *F*-statistic			. . .	10.37
Montiel-Pflueger 5% critical value			. . .	5.35
			First Stage	
			Queen	Queen
FBM_{r-1}			−.239***	−.168**
			[.01]	[.033]
Sister_{r-1}			. . .	.288***
				[.009]
Observations			3,586	3,586
R^2			.302	.515
Mean of DV			.160	.160
Standard controls			Y	Y
Flexible sibling controls				Y

Note.—Variables not shown include polity and decade fixed effects. FBM_{r-1} denotes that previous monarchs had a firstborn male. Sister_{r-1} denotes that previous monarchs had a sister. Standard errors are clustered at the broad-reign level and bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped *p*-values are shown in square brackets. Mean of DV, in all tables, is the mean of the dependent variable in the regression sample. Column 4 presents the Montiel-Pflueger effective *F*-statistic and 5% critical value.

** Significant at the 5% level.
*** Significant at the 1% level.

show IV results. All specifications include our standard controls, and the even-numbered columns control flexibly for the total number of siblings of the previous monarchs. As discussed in section IV, the flexible sibling controls bolster the validity of the sister instrument, but we additionally include them in the OLS specification in column 2 for comparability to the IV specification in column 4. The standard errors are clustered on the broad reigns of the instrument monarchs and are bootstrapped with 1,000 replications via the wild-bootstrap procedure. This helps account for potential small-sample bias that may otherwise affect inference.

The results show that polities led by queens participate in external wars more than polities led by kings. The estimates in columns 1 and 2 suggest that queens were between 11 and 13 percentage points more likely to be in war, relative to kings. However, these OLS estimates may be downward biased—for example, if the elite allowed queens to come to power more during times of stability or prevented them from coming to power during times of war.

To account for this potential bias, we present IV estimates in columns 3 and 4. In column 3, we use just the firstborn-male instrument, and in column 4, we use both the firstborn-male and sister instruments. Both specifications produce similar second-stage results, corroborating that queens engage in war more than kings. Both estimates also imply substantial effects. For example, the coefficient of 0.388 in column 4 suggests that queens were 38.8 percentage points more likely to participate in wars than kings. For comparison, the average war participation was 29.6 percentage points over this period. The larger coefficient on the IV estimates relative to the OLS estimate is consistent with downward endogeneity bias on the OLS estimate.

It is reassuring that using the firstborn-male instrument alone produces results similar to those using both instruments together, since the gender of the first child should essentially reflect a coin flip, rather than the fertility behavior of previous monarchs. In contrast, the presence of a sister could reflect such behavior among monarchs two periods ago, since having a daughter will be correlated with having many children. Of course, we control for the total number of siblings flexibly to account for this very effect. Nonetheless, the similarity of the two IV estimates further indicates that the sister instrument, conditional on total siblings, does not affect war through other pathways, beyond its effect on a queen coming to power.

The first stages shown in columns 3 and 4 show that both instruments are important in determining whether a queen comes to power. If the previous monarchs had a firstborn male, this reduces the likelihood of a queen coming to power by 17–24 percentage points. In contrast, if they had a sister, this increases the likelihood of a queen coming to power by 29 percentage points. The first stage is stronger with the inclusion of the sister instrument, as manifest in the larger Kleibergen-Paap *F*-statistic in column 4, relative to column 3. The Montiel-Pflueger effective *F*-statistic in column 4 also exceeds the 5% critical value, ruling out weak instruments.[38] Therefore, we utilize both instruments together and continue to control flexibly for total siblings in all remaining specifications. We also present additional checks on the validity of the instruments in the next section.

In table A2, we verify that these effects continue to hold and are similar in magnitude if we either eliminate coruling queens (col. 1) or eliminate all coruling monarchs (col. 2) and examine the effect of queens who ruled as sole monarchs in these samples.[39] The precision and magnitude of the "sole-queen" effect indicate that the effect is not driven just by coruling queens.

B. Examining Instrument Validity

In this section, we present additional validity checks on the instrument set. First, the lack of a firstborn male could spur war if it signals uncertainty in succession, leading power-hungry monarchs from neighboring polities to wage war with the aim of grabbing power. Alternatively, the reigning monarchs themselves may undertake aggressive actions if they see that the first birth did not produce a male heir. If so, queens would inherit polities that are already participating in more wars, which would present an alternative path through which the instrument affects war participation. In table 4, we examine whether these effects hold.

Columns 1 and 2 examine whether monarchs who have a firstborn male (or sister) end up experiencing more conflict in their current reign. The coefficients are insignificant and small in magnitude and display varying signs, suggesting that they do not. Column 3 then examines whether queens inherit more conflict-prone polities, by examining effects on an indicator of whether the previous reign participated in conflict. The coefficient suggests that they did not. Column 4 also shows that

[38] We focus on the effective *F*-statistic to gauge instrument weakness, since there is no theoretical basis for comparing Kleibergen-Paap *F*-statistics against Stock and Yogo (2005) critical values, which were developed for homoscedastic, serially uncorrelated standard errors (Baum, Schaffer, and Stillman 2007). In contrast, the effective *F*-statistic was developed by Montiel Olea and Pflueger (2013) as a test for weak instruments that is robust to heteroscedasticity, serial correlation, and clustering (Andrews, Stock, and Sun 2019). This test statistic reduces to the Kleibergen-Paap *F*-statistic when the specification is just identified, as in col. 3, but can be compared to critical values developed by Montiel Olea and Pflueger (2013) in the overidentified case, as in col. 4. Column 4 also shows the Montiel-Pflueger 5% critical value (for the null hypothesis that the two-stage least squares bias exceeds 10% of the "worst-case" benchmark). The effective *F*-statistic is larger than the critical value, enabling us to reject the null hypothesis of weak instruments.

[39] In col. 1, we are comparing sole queens to sole kings as well as kings coruling, and in col. 2, we are comparing sole queens to just sole kings.

TABLE 4
Examining Instrument Validity

Variables	Falsifications: Queen Polities		Accounting for War in Previous Reign		Falsifications: Nonqueen Polities	
	In War (1)	In War (2)	In War: Previous Reign (3)	In War (4)	In War (5)	In War (6)
FBM_r	−.021	−.010	. . .	. . .	. . .	. . .
	[.624]	[.848]				
$Sister_r$	.044	.022	. . .	. . .	. . .	. . .
	[.328]	[.698]				
Queen	. . .	. . .	.066	.390**	. . .	. . .
			[.840]	[.022]		
FBM_{r-1}	. . .	. . .	. . .	. . .	−.068	−.108
					[.438]	[.222]
$Sister_{r-1}$	. . .	. . .	. . .	. . .	−.049	.053
					[.510]	[.501]
Observations	3,319	3,319	3,515	3,515	2,903	2,903
R^2	.430	.437	.750	.441	.399	.425
Mean of DV	.311	.311	.583	.298	.275	.275
Standard controls	Y	Y	Y	Y	Y	Y
Flexible sibling controls		Y	Y	Y		Y
War in previous reign				Y		
Sample polities	Queen	Queen	Queen	Queen	Nonqueen	Nonqueen

Note.—Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad-reign level, and bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. FBM_{r-1} denotes that previous monarchs had a firstborn male, while FBM_r denotes that current-period monarchs have a firstborn male. $Sister_{r-1}$ denotes that previous monarchs had a sister, while $Sister_r$ denotes that current-period monarchs have a sister.
** Significant at the 5% level.

the estimated effect remains in place if we control for this indicator of war participation in the previous reign.

We also conduct a second, broader falsification. If the presence of a firstborn male (or sister) in the last reign affects war through some other channel beyond queenly accession, these variables should also affect war participation in polities that never had queens. To examine this idea, we test whether the presence of a firstborn male or sister in the past reign affected conflict in the nonqueen polities. We find no evidence of such a relationship in columns 5 and 6.

These falsifications reassure us that actions by reigning monarchs in response to legitimate firstborn girls, such as attempting to instead crown an illegitimate male heir, did not themselves spur conflict. However, it is possible that monarchs would have been inclined to respond this way if they had an older illegitimate son. To test this idea, in table A3, we repeat the same falsification tests but instead use the gender of the firstborn child, legitimate or illegitimate. The first two columns show that the presence of a firstborn male, whether legitimate or illegitimate, does not produce conflict in the concurrent reign. This table also shows that the queen effect remains in place if we use this variable as an alternate instrument controlling for conflict in the previous reign (col. 4) or with baseline controls (col. 7). This further bolsters the validity of using the gender of the legitimate firstborn as an instrument.

Finally, to address concerns that wars of succession may be driving these effects, we identify and remove wars of succession from the sample.[40] Table A3, column 8, shows that the effects remain in place, and, if anything, the coefficient becomes larger relative to the baseline estimate in table 3, column 4. This further verifies that our estimates are not driven by siblings of previous monarchs initiating conflicts over succession.

C. Additional Checks

In this section, we present a number of additional robustness tests, including alternate instrument sets, additional controls, sensitivity checks to address the small number of queens in the sample, and alternative specifications, including those based on dyadic and reign-level data. Table A4 presents descriptive statistics of the additional variables used for these checks.

1. Alternate Instrument Sets

In table A5, we present results using other instrument sets, utilizing interactions involving the instruments. Column 1 repeats our main specification from table 3, column 4, for comparison purposes. Sisters may have been especially likely to lead to queenly reigns when the previous monarchs had no legitimate children. To examine this, in columns 2 and 3, we introduce an interaction between the Sister variable and an indicator of no legitimate children among previous monarchs as an additional instrument. In these specifications, we control for the direct effect of no legitimate children. Both columns control for the effect of total siblings flexibly, though the third column additionally controls for their interactions with the no-children indicator. The second-stage effect of queens on war remains significant in both of these specifications. However, the interaction term in the instrument set itself is precisely estimated only with the less restrictive sibling controls, and the effective *F*-statistic also fails to exceed the critical value, indicating potentially weak instruments

[40] These five succession wars all involved more than one European power.

with the complete control set. These specifications therefore provide suggestive evidence of an interactive effect of sisters in the first stage. In addition, this specification has the disadvantage that the decision of the previous monarchs to have any children may be plausibly endogenous to conflict outcomes, so we avoid using it as our primary specification.

In column 4, we add in an interaction of the Sister and Firstborn Male variables as a part of the instrument set. Again the second-stage queen effect remains in place. However, the failure of the effective *F*-statistic to exceed the critical value again suggests that the first stage is not strong. Moreover, while the sign on the interaction term does corroborate that the chances of sisters leading to a queen are smaller in the presence of a firstborn male, it is not precisely estimated, and the magnitude of the coefficient is not as large as the interaction involving no legitimate children.[41] This is consistent with the idea that the lack of any children may be a more pertinent conditioning variable than firstborn males for whether sisters lead to a queen—perhaps because if the previous monarchs lacked a firstborn son but had a daughter, the throne would pass to the daughter before it went to the sister.

Finally, whether the firstborn is male or female may matter disproportionately when there are two or more legitimate children. Column 5 includes the interaction of the Firstborn Male variable and an indicator of whether the previous monarchs had two or more children as a part of the instrument set. Here again, the second-stage results remain in place, but the effective *F*-statistics suggest that the first stage is weak. Moreover, we worry about the potential endogeneity in the decision to have two or more children.

Ultimately, our baseline specification uses the firstborn-male and sister instruments separately because this averts using potentially endogenous variables related to the number of children as a part of the instrument set and has the strongest first stage among specifications that avert these endogenous variables. Nonetheless, it is reassuring that our effects remain in place under these alternative approaches, suggesting that the effects are not highly sensitive to the composition of the instrument set.

2. Additional Controls

One alternate reason why we observe queen effects on war may have to do with the presence of dead siblings on the pathway to becoming a queen. In particular, it is possible that sisters of the previous monarchs (aunts from the perspective of the current-period monarch) may have gained

[41] In col. 4, we continue to control for total siblings flexibly but are not able to control for it interactively with the Firstborn Male variable, since the Firstborn Male variable is one of our instruments.

power by killing off other brothers (uncles) who may have otherwise inherited the throne. Analogously, firstborn females may have come to power by killing off younger brothers. If these types of targeted killings are associated with circumstances or personas that produce more violence, then this could again serve as an alternate channel influencing conflict. However, in table A6, we show that controlling linearly for the number of dead male and female siblings of previous monarchs or the dead male and female siblings of current monarchs does not affect our results.

Another potential concern is that queens, on average, were 6 years younger at accession than kings. If younger monarchs are more aggressive than older monarchs, then this age difference may give rise to the results. However, table A6, column 7, shows that controlling for age also does not alter the results. It is also possible that though queens participate in wars more often, they also participate in wars that are smaller in scope. However, column 8 of table A6 shows that queens do not participate in wars that are smaller, as measured by the number of participants in these wars.[42] Finally, column 9 shows that the results are robust to controlling for the lag dependent variable, which controls for war in the previous year.[43] This builds on previous results (table 4, col. 4) that the results are insensitive to controlling for war in the previous reign.

3. Sensitivity Checks

Our sample includes only 29 queens, which raises concerns around potential small-sample bias. We utilize bootstrapped standard errors throughout the analysis to address potential inference issues. Here, we take several additional steps to address the possibility that effects may be driven by a particular queen or a particular polity. First, in figure 3, we drop each queen iteratively from the sample and present the coefficient estimates as well as 90% confidence intervals on the Queen coefficient. In figure 4, we repeat this exercise, but drop two queens in each specification instead.[44] The estimates in both figures display remarkable stability and retain their precision. In figure A1, we additionally plot the bootstrapped p-values associated with both sets of estimates, and all estimates remain significant at the 5% level.

[42] We use this metric, given the absence of data on casualties associated with wars in the Wright data source.

[43] Note that Nickell bias should be limited, given the long time series of the data.

[44] We choose the two queens to drop systematically, using a rank ordering on the basis of random numbers. Each specification then drops two queens on the basis of their sequential position on this list. Across the 29 drop-queens regressions, each queen is dropped twice, each time in combination with a different queen. For example, Queen Elizabeth I of England is dropped in conjunction with Queen Victoria of England in one regression and Queen Christina of Sweden in another.

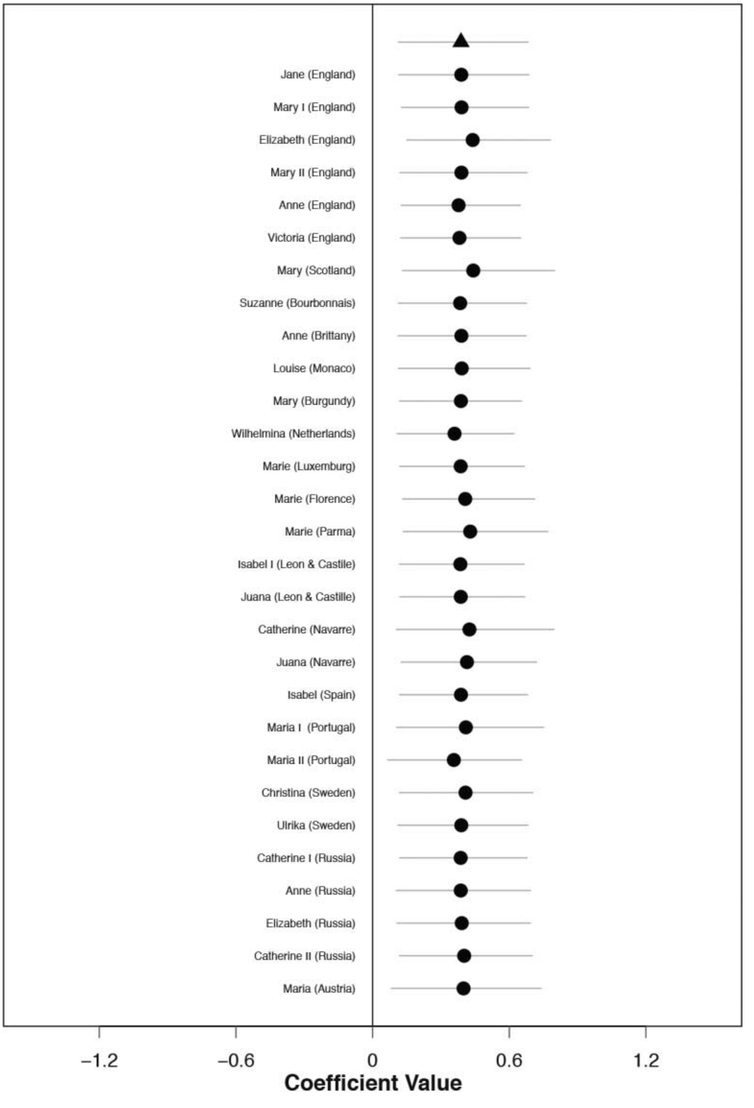

Fig. 3.—Dropping one queen. This figure plots coefficient estimates and 90% confidence intervals on the Queen variable in regressions of In War, dropping each queen one at a time. Standard errors have been clustered at the broad-reign level and bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. The estimate shown with the triangle does not drop any queens. The name of the dropped queen appears to the left of all remaining estimates.

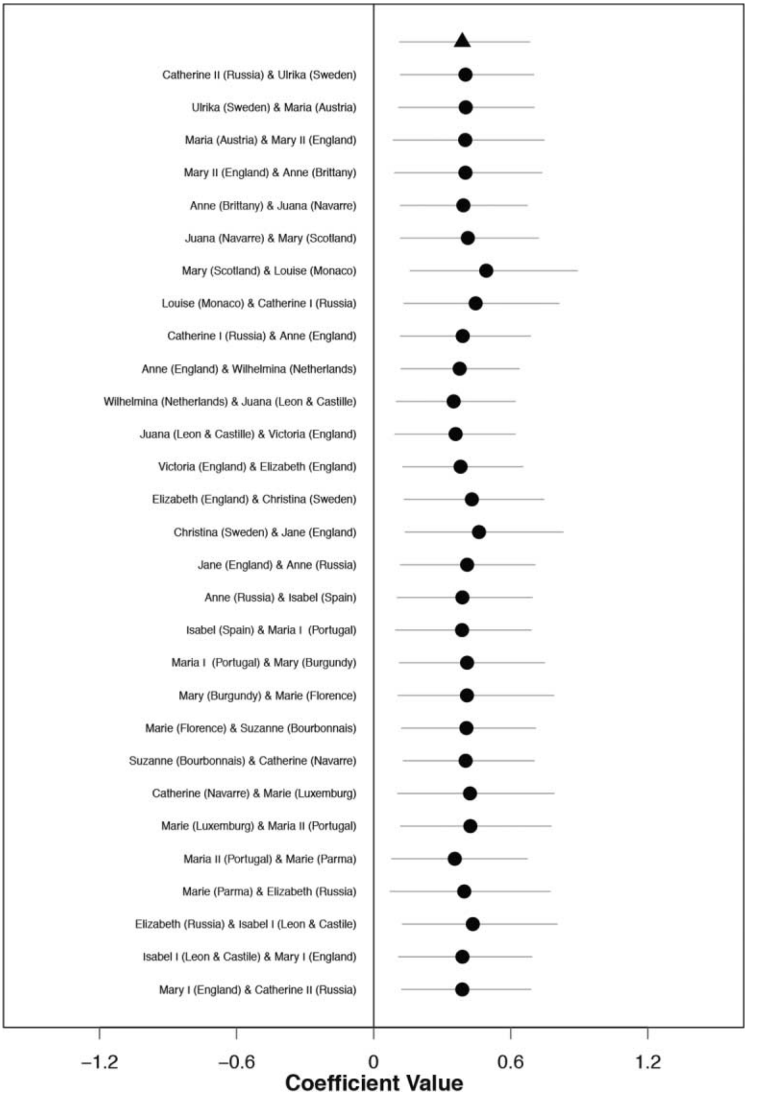

FIG. 4.—Dropping two queens. This figure plots the coefficient estimates and 90% confidence intervals on the Queen variable in regressions of In War, dropping two queens at a time. Standard errors have been clustered at the broad-reign level and bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. The estimate shown with the triangle does not drop any queens. The names of the dropped queens appear to the left of all remaining estimates.

In table A7, we drop not just individual queens but whole polities from the sample. In the first six columns, we iteratively drop each of the polities that had more than one queen, and in the seventh column, we drop all remaining polities that contribute just one queen to the sample. The estimates again remain in place, demonstrating that England, Spain, or Russia alone do not drive the effects.[45] The estimate is, if anything, larger in column 7 than in the remaining columns, indicating that the effects are not driven by the more minor polities that had the occasional queen.

4. Alternate Specifications

In our main specification, we compare queens to kings in polities that have, at some point, been ruled by a queen. This arguably constitutes a better control group than kings in polities that have never been ruled by queens. However, it also raises the concern that our finding of more war under queens would be affected if we included these nonqueen polities in the estimation, especially if war incidence between kings ruling in these other polities had been very high. First, it is worth noting that the average rate of war participation is, if anything, slightly lower in the nonqueen polities. (Average war participation is 0.30 in the sample of queen polities and 0.27 in the nonqueen polities.) Second, to address this concern directly, in column 8 of table A7, we present a specification that pools together the queen and nonqueen polities. We interact our instruments with indicators of whether it is a queen polity, to retain predictive power in the first stage. While the first stage is still weaker under this approach than in our primary specifications, the overall result remains largely unchanged.

In table A8, we also present an alternate reign-level specification. In our main approach using annual data, the Queen variable varies by reign, while the war variables vary by year. While we adjust our standard errors to account for the use of reign-level variation through our clustering strategy, there is still a separate concern that longer reigns will be given more weight in the annual panel, which may affect our coefficient estimates. To address this concern, we collapse our annual data to the reign level and run reign-level regressions in which the dependent variable is the number of years the polity is at war, controlling for the length of the reign (in years). We continue to use polity fixed effects and also incorporate century fixed effects.[46] We also continue to bootstrap and cluster our standard errors on the broad reign of the instrument monarchs. The first

[45] This provides reassurance that idiosyncratic features of these polities, such as the changes that allowed for possible nonhereditary succession in Russia around 1722, do not drive our overall results.

[46] If a reign spans across more than one century, we control for the majority century, i.e., the century in which the majority of the reign years were located.

three columns of table A8 show that the queen effect on war remains precisely estimated (in, respectively, the OLS and IV specifications and the IV specification examining the effect of sole queens). The next two columns verify that queens inherit polities that look similar in terms of years of conflict in the past reign and that the results are robust to controlling for this variable. Columns 6–9 present falsifications analogous to those in table 4, with the contemporaneous instruments in the queen polities as well as the nonqueen polities.

In table A9, we present dyadic specifications. We create a dyadic version of our data, in which units consist of polity pairings, for each year in which both polities are in existence. The sample consists of both the queen polities and the nonqueen polities. In the dyadic specifications, the key dependent variable is whether the two countries in the dyad are engaged in war against each other. Our goal is to assess whether the presence of a queen in either polity affects the likelihood that the polities fight each other.

This approach constitutes an important check because in our primary specifications, it is possible that the standard errors are correlated across polities fighting each other in a war. In the dyadic specifications, we are able to cluster the standard errors on the dyad pairing, broadly defined.[47] We continue to apply the wild-bootstrap procedure, and we also include polity fixed effects and dyad fixed effects in all of these specifications.

We have two approaches to defining the Queen variable in the dyads. The first simply considers an indicator of whether there is a queen in either polity of the dyad, and it is shown in the first two columns of table A9. In these specifications, the instruments and controls are defined analogously—that is, whether the monarchs in either polity had a firstborn male or had a sister, and so on. In the first column, we take the average of the total siblings in the two polities in the dyad and then control flexibly for this measure. In the second column, we include two sets of dummies for the total siblings of the previous monarchs in the first polity and the total siblings of the previous monarchs in the second polity. The coefficients are precise, indicating that the presence of a queen in the dyad increases the likelihood that two countries are at war with another.

In the third column, we separately include indicators for whether there is a queen in the first polity and whether there is a queen in the second polity and examine the joint significance of these two variables. Note that the Queen coefficients for the two polities individually are meaningless, since whether a polity is positioned in the first dyad or the second dyad is arbitrary. In fact, even within the course of a reign, a polity may switch

[47] When clustering, we define a dyad pairing broadly in the sense that if, e.g., a dyad constitutes England-France and another dyad constitutes France-England, we cluster on the broad dyad grouping of either England-France or France-England. This is more conservative than clustering on the narrow dyad.

from the first position (in a pair with one polity) to the second position (when paired with another polity).[48] In these specifications, we have separate indicators for the instruments and the control variables in each of the dyads, and we control flexibly for total siblings in the two dyads separately. The test of joint significance in column 3, which is significant at the 1% level, indicates that queens also have a precise effect on conflict in this dyadic specification.

This presents a reassuring check that the potential correlation of errors across fighting countries is not a driver of our estimates. However, there are two important limitations to the dyadic specification. First, since the dependent variable is whether two polities are engaged in fighting one another, and our sample is composed of European polities, the dyadic specification misses out on wars between European polities and non-European polities.[49] Of 154 wars in our data set, the dyadic data omit representation of 53 wars for this reason. The 14 civil wars that involve just one polity also cannot be represented in the dyadic data. In addition, we cannot examine aggressive war participation in the dyadic data, since which side initiated the conflict is, by construction, a one-sided variable.

D. *Disaggregating War Effects to Examine the Reign-Capacity and Perceived-Weakness Accounts*

In this section, we further disaggregate the effect of queens on war participation to explore accounts of why these effects arise. First, in table 10, we separately examine effects on specific types of wars to see where effects are concentrated. The magnitude of the coefficients indicates that balance-of-power wars contribute most to the overall effect. This is unsurprising, given that they are the most prevalent form of conflict, with 77 of 154 wars classified under this category. We disaggregate civil wars into those that involved more than one polity and those that involved just one polity. We find a larger coefficient (0.092) associated with civil wars that embroiled multiple polities and a small coefficient (0.022) associated with civil wars internal to just one polity. Overall, this pattern of results suggests that the queen effect on war stems from participation in interstate wars.

[48] As an example, if we have a dyad AB of polities A and B and another dyad AC of polities A and C, when a dyad of polities B and C is formed, it requires either B or C to switch positions, forming either BC (in which case B has switched to the first position) or CB (in which case C has switched to the first position).

[49] As an example, if there is an imperial war in which England is fighting against India, the In War variable in the panel data will represent this with an indicator that switches on for England, for the years in which it is fighting India. In contrast, the dyadic data do not include an England-India dyad, since India is not part of the sample consisting of European polities.

Second, we examine whether increased war participation stems from new wars that the reign initiated or from the continuation of old wars. Columns 2 and 3 of table 5 show this decomposition. Note that the coefficients on these two outcomes add up to the coefficient in column 1, the main war effect from table 3, column 4. The magnitudes of the coefficients for the reign-entered outcome (0.355) and the reign-continued outcome (0.033) suggest that entry into new wars contributes more to war participation than the continuation of old wars.

Polities can find themselves in war either because they are aggressors or because they are attacked. We next examine whether queens participated more in wars in which their polity attacked or in which their polities were attacked, utilizing Wright's coding of who initiated the conflict. Conditional on war, the mean prevalence of polities attacking is 0.44, and that of getting attacked is 0.56. Columns 4 and 5 of table 5 present the disaggregated effects. The coefficients indicate that the queen effect on war participation (0.388) stems disproportionately from participation in wars in which the polity attacked (0.425) rather than from wars in which the polity was attacked (−0.037).

These results suggest that queens did not end up engaged in war solely because they were attacked and that the perceived-weakness idea alone cannot account for the effects. While the decision to be an aggressor can reflect many factors, the Polity Attacked variable (and the Polity

TABLE 5
REIGN ENTRY AND AGGRESSION

	In War (1)	Reign Entered War (2)	Reign Continued War (3)	Polity Attacked (4)	Polity Was Attacked (5)
Queen	.388**	.355*	.033	.425**	−.037
	[.022]	[.054]	[.787]	[.04]	[.802]
Observations	3,586	3,586	3,586	3,586	3,586
R^2	.437	.326	.230	.163	.327
Mean of DV: war years	. . .	.812	.188	.439	.561
Mean of DV	.296	.240	.056	.130	.166
Specification	IV	IV	IV	IV	IV
Instruments	FBM_{r-1}, Sister_{r-1}	FBM_{r-1}, Sister_{r-1}	FBM_{r-1}, Sister_{r-1}	FBM_{r-1}, Sister_{r-1}	FBM_{r-1}, Sister_{r-1}
Standard controls	Y	Y	Y	Y	Y
Flexible sibling controls	Y	Y	Y	Y	Y

NOTE.—Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped *p*-values are shown in square brackets.
* Significant at the 10% level.
** Significant at the 5% level.

Was Attacked variable) takes the value of one for only one side in the conflict. (This lies in contrast to the In War variable, which takes the value of one for both sides participating in the conflict.) Given the one-sided nature of the aggressor variables, the results in table 5 are also less subject to the concern that the positive correlation of standard errors across countries participating in wars drives the estimates. These results therefore complement the war participation results from the dyadic specification in providing reassurance that this form of correlation does not produce spurious effects.[50]

Note that the aggressive-participation variables have also been constructed so, for example, the Polity Attacked variable takes on a value of one when the polity participates as attacker and zero both when it has been attacked and when it is at peace. A nice feature of examining the aggressor outcomes in this way, using least squares estimates, is that it enables us to compare the effects directly to aggregate war participation in column 1 and to decompose this effect into the Polity Attacked and Polity Was Attacked components. However, since peace, attacking, and getting attacked are three nonoverlapping states, in table A11, we also verify that the results hold under a multinomial probit specification.[51] The base term in the categorical aggressor variable is peace. The coefficient on the Polity Was Attacked versus Peace outcome is positive but insignificant (with a p-value of .568). In contrast, the coefficient on the Polity Attacked versus Peace outcome is significant, with a p-value of .001. The implied marginal effects indicate that having a queen increases the likelihood of attacking by 0.419 and reduces the likelihood of being in peace by 0.525. These results are similar to the estimates in table 5 and reiterate that the queen effect on participating in war stems largely from participating as war aggressors.

[50] The aggressor analysis in the panel data and the dyadic analysis also guard against the potential concern that the queen effect could be understated under certain scenarios of geographic dispersion. Specifically, consider the scenario in which wars occur between neighbors, queens are the sole drivers of war, and queens are geographically dispersed and so fight only kings. Kings will find themselves engaged in war, even if they are never responsible for initiating them. The In War variable in the panel data is not able to make this distinction. However, this is precisely the distinction that the aggressor variables are able to pick up. Thus, the Polity Attacked outcome would fully attribute conflict aggression to queens even under this scenario. The dyadic data would also address this type of potential underattribution. Under the hypothesized scenario, where fighting occurs only when a queen is involved, the dyadic At War variable would be switched on only for cases in which kings were paired with queens and never for cases in which kings were paired with kings. Thus, the estimate of whether polities are more likely to fight when at least one monarch in the dyad is a queen would fully attribute war engagement to queens even under the hypothesized scenario. These additional considerations further underscore the importance of the aggression and dyadic estimates.

[51] In these models, we bootstrap the p-values with the score bootstrap in the wild-bootstrap toolkit, using the procedure developed by Roodman (2011).

Did queens typically succeed by participating in wars? After all, if monarchs lost wars they engaged in, this could have produced major drawbacks, such as loss of territory. While we cannot observe who won wars, we can observe whether polities gained or lost territory over the course of their reigns. This is directly relevant, since territorial expansion was a major objective of war among European actors. We are able to use the Centennia Historical Atlas to measure whether there was a loss, a gain, or no change in territory over the course of a monarch's reign. Given these three potential states, we present estimates from a multinomial probit model of territorial change in table A8 (cols. 10, 11). The base term in the categorical variable is territorial loss. The positive, significant coefficients on both the Territorial Gain versus Loss outcome and the No Territorial Change versus Loss outcome suggest that queens were less likely to lose territory than kings and that these effects stem from both gaining territory and preserving it. The implied marginal effects of having a queen on these outcomes are 0.131 and 0.239, respectively, while the implied marginal effect on territorial loss is -0.371.

Next, we examine whether the tendency for queens to participate as aggressors in war varied on the basis of marital status. If aggressive war participation reflects greater capacity in queenly reigns and spouses enhanced capacity by providing additional support for the conduct of war, we should see that the queen effect on participating in wars of aggression is especially large among married queens.

We define a monarch as married in their reign on the basis of whether they had a living spouse during the course of their reign. Note that this is distinct from whether a monarch was ever married. For example, there are only three queens in our sample who never married and stayed single throughout their lifetime. In contrast, there are 10 queenly reigns (out of 34) in which a queen was unmarried throughout the reign.[52] Similarly, there are 45 reigns in which a king was unmarried during a reign, while there are only 19 kings who never married. In the online appendix, we present evidence suggesting that single- and married-queen reigns do not look different from one another along critical dimensions such as prior conflict.[53]

To examine heterogeneous effects based on marital status, we interact this Married in Reign variable (hereafter "Married") with the Queen indicator. We instrument Queen and Queen × Married with the Firstborn

[52] This includes three cases in which a queen was single during a reign and then got married. This process can give rise to a new reign if the spouse she married became an official coregent. It also includes cases in which a queen became widowed and ruled on her own (which occurred in another five of our cases).

[53] Online app. table 2 provides a listing of the 10 single-queen and 24 married-queen reigns. Online app. table 3 presents simple OLS regressions indicating that war and internal instability in the previous reign do not differ significantly between these single- and married-queen reigns.

Male and Sister variables as well as their interactions with the Married variable. We do not have a separate instrument for marital status and instead control for the direct effect of the Married variable and its interactions with the standard control variables. Since age may also influence war aggression, we additionally control for interactions of age at accession and the marital variable.[54]

The results are presented in table 6. The first two columns show a pattern. Among married monarchs, queens were more likely to participate in wars as attackers than kings. Among single monarchs, queens were more likely to be attacked than kings. To highlight the differences between married queens and kings in wars of aggression, the table includes tests for the sum of the coefficients on Queen and Queen × Married. The omitted category is single kings. In column 1, the effect of being a married king on aggressing is given by the coefficient on the Married variable (−0.053). The relative effect of a married queen aggressing is given by the sum of the coefficients on Queen (0.013) and Queen × Married (0.565). The sum of these coefficients (0.578) is positive and significant at the 10% level. This suggests that married queens were more inclined to participate as aggressors than married kings.

In contrast, single queens participated more in wars in which they were attacked. In column 2, the coefficient on Queen (0.348), is positive and significant at the 1% level, indicating that single queens were attacked more than single kings. The coefficient on Queen × Married (−0.425) is negative and significant at the 5% level, indicating that being married disproportionately reduced the tendency of queens to get attacked, relative to how much it reduced the tendency of kings to get attacked. However, the sum of the coefficients on Queen and Queen × Married (−0.077) is small and insignificant, indicating that married queens do not look different from married kings in terms of their tendency to get attacked.[55]

These results provide two insights regarding the reign-capacity and perceived-weakness accounts. First, the differential tendency of married queens to participate in wars of aggression is consistent with the idea that marriage enhanced the reign capacity of queens, enabling them to engage in more war. In contrast, marriage did not exert an equivalent effect for kings. Second, the differential tendency of single queens to get attacked (relative to all other monarchs) provides some support for the perceived-weakness account—that is, it suggests that unmarried queens, specifically, may have been perceived as weak and easy to attack.

The results from these marital specifications should be taken as more suggestive, relative to the main effects, for two reasons: first, they are

[54] To account for missing values, we include indicators and their interactions for whether the marital and age variables are missing.

[55] The first stage associated with these specifications from table 6 can be found in online app. table 4.

TABLE 6

EFFECTS BY MARITAL STATUS

	Polity Attacked (1)	Polity Was Attacked (2)	Polity Attacked (3)	Polity Was Attacked (4)
Queen	.013	.348***	−.078	.420**
	[.94]	[.009]	[.77]	[.033]
Queen × Married	.565*	−.425*	.704*	−.513*
	[.094]	[.070]	[.077]	[.087]
Married	−.053	.091	−.085	.069
	[.678]	[.530]	[.593]	[.652]
Test of Queen + Queen × Married	.578*	−.077	.626*	−.093
	[.059]	[.695]	[.069]	[.686]
Observations	3,586	3,586	3,499	3,499
R^2	.193	.342	.203	.352
Mean of DV: war years	.439	.561	.433	.567
Mean of DV	.130	.166	.126	.165
Specification	IV	IV	IV	IV
Instruments	FBM_{r-1}, $Sister_{r-1}$, FBM_{r-1} × Married, $Sister_{r-1}$ × Married	FBM_{r-1}, $Sister_{r-1}$, FBM_{r-1} × Married, $Sister_{r-1}$ × Married	FBM_{r-1}, $Sister_{r-1}$, FBM_{r-1} × Married, $Sister_{r-1}$ × Married	FBM_{r-1}, $Sister_{r-1}$, FBM_{r-1} × Married, $Sister_{r-1}$ × Married
Standard controls	Y	Y	Y	Y
Flexible sibling controls	Y	Y	Y	Y
Accession Age	Y	Y	Y	Y
Spouse Prior Belligerence			Y	Y

NOTE.—All columns include polity and decade fixed effects. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. Bootstrapped *p*-values are shown in square brackets. All columns also include a test for the significance of the sum of the coefficients on Queen + Queen × Married. Bootstrapped *p*-values of this test are also presented in square brackets. Flexible sibling controls are interacted with Married and an indicator of whether this variable is missing. Accession Age and Married, as well as indicators of missingness in these variables, are also interacted. Spouse Prior Belligerence indicates the spouse's involvement in wars and the military before marriage. It is interacted with the Queen variable as well as the instruments in cols. 3 and 4.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

identified on the basis of relatively few cases, and second, marital status may be endogenous to conflict outcomes. Thus, below, we try to address aspects of each of these concerns.

To address the small sample, we again verify that these effects are not driven by any one queen by reestimating the marital specifications after dropping each queen iteratively. Figure A2*A* plots the bootstrapped *p*-values associated with the sum of the Queen and Queen × Married coefficients on the Polity Attacked outcome. The married-queen effect remains significant at the 10% level in all specifications. Figure A2*B* presents analogous *p*-values on the Queen coefficient from the Polity Was Attacked outcome. This single-queen effect also remains significant across specifications.

One potential endogeneity concern with this specification is that marriages could have been organized for strategic reasons and that royal males who were particularly belligerent, with expansionist agendas, may have been most inclined to marry queens.[56] In that case, the greater tendency for married queens to attack may serve as a reflection of the spouse's ambitions. To account for this possibility, we take two steps. First, the most ambitious males who married for strategic reasons would most likely have been motivated to garner marriages in which they could rule alongside the queen as an official coregent. Thus, in columns 3 and 4 of table A2, we demonstrate that the marital effects continue to hold if we drop all coruling monarchs from the sample and examine the marital effects of just the sole queen.[57]

Since even spouses who were not coregents could have married for strategic reasons, in a second step, we take a more general approach. We measure whether the spouses were already more belligerent before marriage. We gather data on whether they had direct military experience as lieutenants or commanders in their home countries or whether they presided over any wars in their home countries before marriage. We then introduce this control and its interaction with the Queen variable and the instruments, in columns 3 and 4 of table 6. The same pattern of results continues to hold: the coefficients are slightly larger in magnitude with the inclusion of this control, and the single-queen and married-queen effects remain in place. This suggests that the tendency of married queens to participate more in wars of aggression does not arise as a sole consequence of the spouse's prior belligerence.

[56] This concern is underscored by the fact that many male consorts who married queens originated from other polities. In our sample, among the 26 queens who married at some point in time, 18 (or 69%) had spouses who originated from another polity.

[57] We are able to identify marital interactions with sole queens because a queen who ruled as the sole regent could have been either single or married. But if she were married, her husband would not have been an official coregent.

We also combed through historical records and found three cases in which the queens could have been considered weak owing to either their public posture or their mental state.[58] It is unlikely that these women were major drivers of decision-making, given their stances, which raises concerns that their husbands may have been the key decision makers. However, table A12 shows that our results continue to hold even after we drop these three queens from the sample.

The results pattern we observe in table 6 also suggests that our results are unlikely to be driven by bias in Wright's aggressor coding. For the results to emerge because of coding bias, it would have to be the case that there is overattribution of aggression to female monarchs who had spouses during their reigns, relative to male monarchs who had spouses during their reigns, and underattribution of aggression to female monarchs who were unmarried during their reigns, relative to male monarchs who were unmarried during their reigns. This seems unlikely, as it would require relatively precise awareness around the timing of marriage and widowhood.

Overall, these results are consistent with the idea that asymmetries in the division of labor under queenly reigns, relative to kingly reigns, strengthened the relative capacity of queens, increasing their war participation. Of course, this is one potential channel through which queens could have exerted effects on war, and there could be others in effect simultaneously. Thus, we do not interpret this as an exclusive channel. However, in the next section, we do consider and present evidence against three specific alternative channels.

E. Addressing Alternative Accounts

One alternative account suggests that queens pursued external war strategically because they faced greater internal instability and sought to unify the polity against an external threat (Ostrom and Job 1986).

In table 7, we examine effects on contemporaneous internal instability outcomes. We find that having a queen does not differentially affect the length of a monarch's reign. We also find that there is no significant impact on the likelihood that a monarch ends up dying of unnatural causes, including regicide. In addition, having a queen does not bring about the end of a kingdom: columns 3–5 show that there are no significant effects on whether a polity ended, either through partition, through unification with or capture by another polity, or by becoming a republic. Table A13

[58] One case is Juana la Loca, who coruled Leon and Castile over 1504–6. As her name suggests, Juana was mentally incapacitated. Another case is Mary II, who coruled England with William III over 1689–95 but ceded power to him willingly. A third is Ulrika Eleanora, who ruled Sweden (1718–19), publicly declared that women were unfit to rule, and abdicated when the Riksdag refused to make her husband a comonarch.

TABLE 7
Effects on Internal Stability

	Reign Length (1)	Monarch Killed (2)	Polity Ends (3)	Polity Merged or Partitioned (4)	Polity Becomes Republic (5)
Queen	4.324	.086	−.036	−.076	.024
	[.71]	[.813]	[.894]	[.763]	[.461]
Observations	3,586	3,058	3,586	3,559	3,559
R^2	.425	.408	.567	.571	.022
Mean of DV	30.746	.145	.085	.067	.001
Standard controls	Y	Y	Y	Y	Y
Flexible sibling controls	Y	Y	Y	Y	Y

Note.—Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped *p*-values are shown in square brackets.

also verifies that controlling for instability in the previous reign does not meaningfully alter the estimated queen effect.[59] Also recall that when we split the In War variable into various types of war (in table A10) there were small, imprecise effects of queens on participation in civil wars internal to a country, suggesting that these internal conflicts contribute little to the overall war participation effect. Together, these results indicate that greater internal instability is unlikely to be the key motivating reason why queens participated more in external wars. Conversely, they also suggest that greater war engagement by queens did not, in turn, produce greater backlash and internal upheaval.

Another alternative account posits that queens may have chosen to attack to signal their strength. Influential accounts of war, such as the bargaining model (Fearon 1995), imply that states may fight in order to send a costly signal that they are not as militarily weak as others perceive. However, if queens were signaling, it would be most advantageous for them to send this signal early in the reign, to maximally ward off potential attacks over the duration of their rule. This suggests that we should observe a greater tendency to participate as attackers earlier in their reign. In table 8, we test this idea by introducing an interaction between the Queen variable and two indicators: one that demarcates the second half of the reign and another that demarcates the period beyond the first 2 years of the reign. In these specifications, we also control for the overall length of reign. Our ability to detect heterogeneous effects may be

[59] Since the Monarch Killed variable is missing for a number of polities, when we include all previous reign controls in col. 6, we also control for an indicator of missingness in this variable while assigning zeros to missing values. This ensures that the effect is estimated on a complete sample when all controls are included simultaneously. The first two columns of this table also show that there is balance on internal stability in the previous reign across king and queen reigns.

TABLE 8

EFFECTS BY TIMING AND AGE

	In War (1)	Polity Attacked (2)	Polity Was Attacked (3)	In War (4)	Polity Attacked (5)	Polity Was Attacked (6)	In War (7)	Polity Attacked (8)	Polity Was Attacked (9)
Queen	.407**	.416**	−.010	.476***	.418**	.058	.336*	.196	.140
	[.02]	[.036]	[.942]	[.01]	[.037]	[.713]	[.077]	[.3]	[.276]
Queen × After First 2 Years of Reign	−.198	.070	−.269	. . .	. . .	. . .	. . .	. . .	. . .
	[.485]	[.705]	[.341]						
Queen × Second Half of Reign	. . .	. . .	. . .	−.155	.020	−.175	. . .	. . .	. . .
				[.442]	[.893]	[.346]			
Queen × Accession Age	. . .	. . .	. . .	. . .	. . .	. . .	.014	.026*	−.012
							[.433]	[.091]	[.258]
Observations	3,586	3,586	3,586	3,586	3,586	3,586	3,586	3,586	3,586
R^2	.441	.172	.324	.443	.173	.348	.463	.258	.372
Mean of DV	.296	.130	.166	.296	.130	.166	.296	.130	.166
Standard controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Interacted flexible siblings controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Reign Length	Y	Y	Y	Y	Y	Y			

NOTE.—Variables not shown include polity and decade fixed effects. The interacted flexible sibling controls are the interactions between the fixed effects for Total Siblings and the following variables: After First 2 Years of Reign (cols. 1–3), Second Half of Reign (cols. 4–6), and Accession Age (cols. 7–9). Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

limited, given the sample size. However, the coefficient on the interaction term for the Polity Attacked variable is both statistically insignificant, and positive in sign, suggesting, if anything, a greater tendency to attack more later in the reign.[60] This provides suggestive evidence that the queen effects on war do not seem to arise from signaling, specifically.

A third alternate account suggests that aggressive actions undertaken during a queen's reign may reflect the actions of an advisor or foreign minister, rather than the queen herself. This conjecture is based on two assumptions—that foreign ministers are more aggressive than monarchs and that female rulers are more easily influenced than male rulers by ministers. Scholars throughout history have questioned the second assumption. In 1630, Gregorio Leti, who produced a biography of Elizabeth I, wrote,

> I do not know why men have conceived such a strange and evil opinion of women so as to consider them incapable of conducting important business. . .if men see a person of that sex govern a state with prudence and success they will inevitably take the glory away from her and attribute it to her favorites and ministers. (cited in Monter 2012, 153)

Although this assumption has been questioned, if female rulers were in fact more easily influenced by male ministers, these effects should be larger if they acceded to the throne at a younger age. This is when they were most impressionable and likely had not yet developed clear policy positions of their own. To test this idea, we introduce interactions of age at accession with the Queen variable, in columns 7–9 of table 8. These estimates suggest that, if anything, queens participated more as war aggressors when they came to rule at an older age. The coefficient on the interaction term is positive but imprecise for the In War outcome in column 7,[61] but it is significant at the 10% level for the Polity Attacked outcome in column 8. These results seem inconsistent with the idea that ministers were the main force in making decisions around aggressive war participation and more in line with qualitative accounts that queens did

[60] The effects on the Polity Attacked variable are most telling of the hypothesis about queen aggression. However, even if we consider the aggregate In War outcome, the coefficients would typically have to be around twice as large in absolute-value terms to be statistically significant at conventional levels, even with (smaller) standard errors unadjusted for bootstrapping. For example, the interaction term in col. 1 would have to be at least −0.528 to be significant at the 5% level and −0.444 to be significant at the 10% level. Similarly, the coefficient on the interaction term in col. 4 would have to be at least −0.299 or −0.357 to be significant at the 10% or 5% levels, respectively.

[61] This coefficient would have to increase from 0.014 to 0.027 to be significant at the 5% level and to 0.023 to be significant at the 10% level when standard errors unadjusted for bootstrapping are considered.

not always passively receive the advice of ministers (Beales 2014, 133). On the basis of these results, we interpret the queen effects on war to be reflections of decisions made by the monarchs themselves.

We conduct one final check. In table A14, we show that the key specifications in our paper, including those addressing alternative accounts, are robust to the inclusion of year fixed effects rather than decade fixed effects.[62] These findings corroborate a robust relationship between queenly rule and war in Europe over the period of our analysis.

VI. Conclusion

A common perspective posits that women are less violent than men and therefore that states led by women will be more peaceful than states led by men. We examine the effect of female rule on conflict historically, focusing on Europe over 1480–1913. Our analysis examines how states fared in conflict engagement under female rulers, which is conceptually distinct from the question of whether women, as individuals, are less violent than men. We exploit the gender of the firstborn and the presence of a sister in the previous reign as instruments for whether queens come to power. We find that queenly reigns engaged more in interstate wars, relative to kingly reigns. Queens were also more likely to gain territory over the course of their reigns but did not experience greater internal instability.

Notably, queens engaged more in wars in which their polity was the aggressor, though this effect varies by marital status. Among unmarried monarchs, queens were attacked more than kings. Among married monarchs, queens participated as attackers more than kings. These results are consistent with an account in which unmarried queens were attacked as they were perceived to be weak, while married queens had greater capacity to attack, based on a willingness to use their spouses to help them rule.

These different tendencies themselves reflected prevailing gender norms. For example, queens were more inclined to put their husbands into positions of power to help them rule, even if they were not their official coregents, but kings were less inclined to do the same with female spouses, given gender norms during this historical period.

Care must be taken in extrapolating directly from our results to the modern era. The logic of war is different today from that in the historical period we study. Leaders today are not necessarily selected by the rules of hereditary succession, and women eligible to lead are not necessarily relatives of those in power. Thus, estimates could differ on the basis of all of

[62] The inclusion of 433 year indicators weakens our Kleibergen-Paap first-stage *F*-statistic slightly, to 9.49 in the main IV estimate in col. 1. However, the second-stage effects are largely unaffected in both magnitude and precision.

these contextual factors. It is nonetheless interesting to speculate about the implications of our findings for leaders today, particularly because existing work also documents a positive relationship between female executives and conflict in modern-day democracies (Koch and Fulton 2011).

Broadly speaking, our findings suggest that there may be systematic differences in war policy based on a ruler's gender, if male and female leaders continue organizing their rules differently, for example, in whom they recruit into their governments and whom they enlist to play supportive roles. The marital interactions we uncover for Europe historically also suggest that the largest gender-based effects today may arise in weakly institutionalized settings, where families continue to play a role in solving the challenge of who to trust in leading. To what extent do family ties play a role in determining how a leader's gender identity shapes high-stakes policy outcomes? Can other social networks play a similar role? These questions should be the subject of future research on gender and conflict.

Appendix

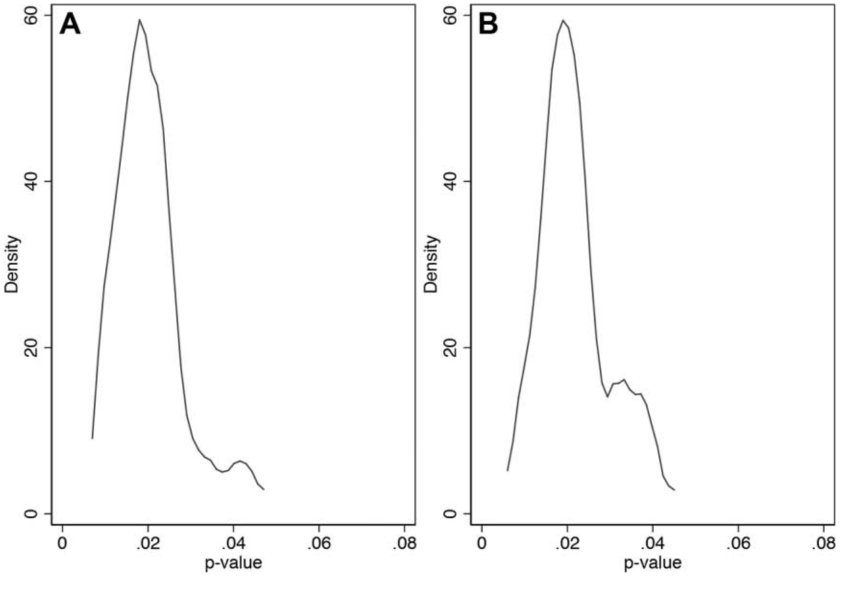

Fig. A1.—Sensitivity analysis: queen effects on war participation; kernel density plots with Epanechnikov kernel; bandwidth = 0.0030. These plots show the distribution of bootstrapped *p*-values from estimates of the Queen variable in regressions of In War, dropping each queen one at a time (*A*) or dropping two queens at a time (*B*). Standard errors have been clustered at the broad-reign level and bootstrapped (with 1,000 replications) with the wild-bootstrap procedure.

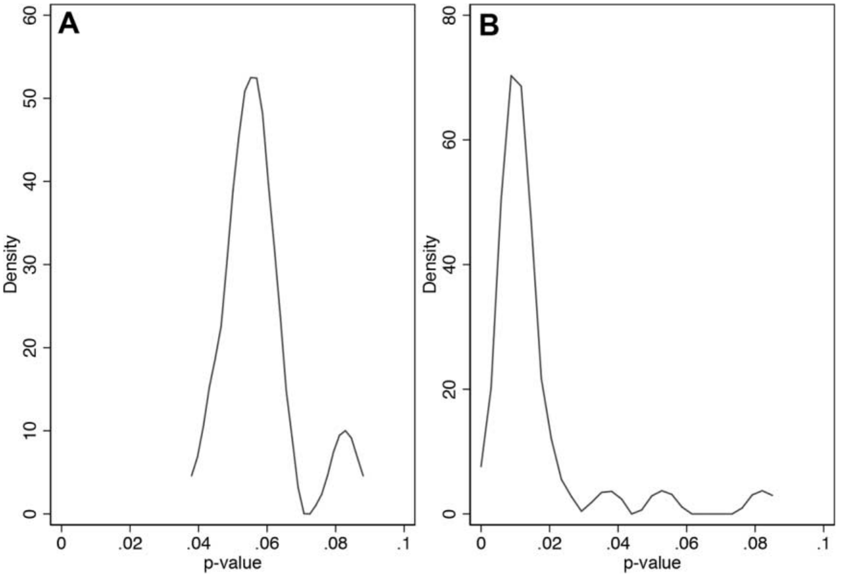

Fig. A2.—Sensitivity analysis: marital effects on war aggression outcomes; kernel density plots with Epanechnikov kernels and bandwidth = 0.0030. *A*, Distribution of bootstrapped *p*-values associated with Queen + Queen × Married in regressions of the Polity Attacked outcome, dropping each queen one at a time. *B*, Distribution of *p*-values associated with Queen on the Polity Was Attacked outcome, dropping each queen one at a time. Standard errors have been clustered at the broad-reign level and bootstrapped (with 1,000 replications) with the wild-bootstrap procedure.

TABLE A1
Queen and Nonqueen Polities

Polities with Queens	Nonqueen Polities
Burgundy and the Low Countries	Modern Bulgaria
Portugal	Modern Greece
Spain	Modern Serbia and Yugoslavia
Austria	The Este in Ferrara and Modena
Duchy of Bourbonnais	The Gonzaga in Mantua
Duchy of Brittany	Holy Roman Empire
Duchy of Lorraine	House of Liechtenstein
The Farnese and Bourbons in Parma	House of Savoy
Grand Duchy of Luxemburg	Kingdom of Bohemia
Kingdom of England	Kingdom of Denmark
Kingdom of Navarre (Pamplona)	Kingdom of France
Kingdom of Scotland	Kingdom of Hungary
Kingdom of Sweden	Kingdom of Montenegro
Kingdoms of Leon and Castile	Kingdom of Naples and Sicily
The Medici and their successors in Florence	Kingdom of Poland
Modern Netherlands	Kingdom of the Belgians

TABLE A1 (*Continued*)

Polities with Queens	Nonqueen Polities
Principality of Monaco	The Montefeltro and Della Rovere in Urbino
Tsardom of Russia	The Visconti and Sforza in Milan

NOTE.—“Polities with Queens” refer to the 18 polities in our main sample that had at least one queen during our study period. “Nonqueen Polities” refer to the 18 additional polities in our auxiliary sample used for falsification tests.

TABLE A2
SOLE-QUEEN EFFECTS

	In War (1)	In War (2)	Polity Attacked (3)	Polity Was Attacked (4)
Queen ruling as sole monarch	.463**	.472**	.031	.374***
	[.017]	[.017]	[.834]	[.007]
Sole Queen × Married	. . .	. . .	.788*	−.532*
			[.098]	[.094]
Married	. . .	. . .	−.022	.109
			[.877]	[.472]
Test of Queen + Queen × Married	. . .	. . .	.819*	−.158
			[.079]	[.623]
Observations	3,482	3,454	3,454	3,454
R^2	.423	.424	.133	.339
Mean of DV	.298	.298	.131	.168
Specification	IV	IV	IV	IV
Instruments	FBM$_{r-1}$, Sister$_{r-1}$	FBM$_{r-1}$, Sister$_{r-1}$	FBM$_{r-1}$m Sister$_{r-1}$	FBM$_{r-1}$, Sister$_{r-1}$
Standard controls	Y	Y	Y	Y
Sample restriction	No coruling queens	No coruling monarchs	No coruling monarchs	No coruling monarchs
Flexible sibling controls	Y	Y	Y	Y
Accession Age			Y	Y

NOTE.—Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. Bootstrapped p-values are shown in square brackets. Columns 3 and 4 also include a test for the significance of the sum of the coefficients on Queen + Queen × Married. Bootstrapped p-values of this test are also presented in square brackets. In these columns, flexible sibling controls are interacted with Married and an indicator of whether this variable is missing; Accession Age and Married, as well as indicators of missingness in these variables, are interacted.

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

TABLE A3
Additional Checks on Instrument Validity

	Falsification: Queen Polities		Accounting for War in Previous Reign		Falsification: Nonqueen Polities		All Wars	No Succession Wars
	In War (1)	In War (2)	Previous Reign (3)	In War (4)	In War (5)	In War (6)	In War (7)	In War (8)
Queen	. . .	. . .	.058	.469***	. . .	. . .	.480***	.480**
			[.846]	[.007]			[.007]	[.021]
FBM_r	−.034	−.026	. . .	. . .	. . .	. . .	. . .	. . .
	[.410]	[.558]						
$Sister_r$	.037	.024	. . .	. . .	. . .	. . .	. . .	. . .
	[.36]	[.705]						
FBM_{r-1}	. . .	. . .	. . .	. . .	−.071	−.109	. . .	. . .
					[.416]	[.212]		
$Sister_{r-1}$	. . .	. . .	. . .	. . .	−.050	.048	. . .	. . .
					[.499]	[.543]		
Observations	3,487	3,487	3,822	3,822	2,903	2,903	3,901	3,586
R^2	.428	.434	.750	.422	.399	.425	.413	.394
Mean of DV	.303	.303	.541	.286	.275	.275	.284	.277
Instruments	Legit/Illegit FBM_{r-1}, $Sister_{r-1}$	Legit/Illegit FBM_{r-1}, $Sister_{r-1}$	Legit/Illegit FBM_{r-1}, $Sister_{r-1}$	Legit/Illegit FBM_{r-1}, $Sister_{r-1}$	Legit/Illegit FBM_{r-1}, $Sister_{r-1}$	Legit/Illegit FBM_{r-1}, $Sister_{r-1}$	Legit/Illegit FBM_{r-1}, $Sister_{r-1}$	Legit FBM_{r-1}, $Sister_{r-1}$
Standard controls	Y	Y	Y	Y	Y	Y	Y	Y
Flexible sibling control		Y	Y	Y		Y	Y	Y
War in previous reign				Y				
Sample polities	Queen	Queen	Queen	Queen	Nonqueen	Nonqueen	Queen	Queen

Note.—Variables not shown include polity and decade fixed effects. Legit/Illegit FBM_{r-1} indicates whether the previous monarchs had a firstborn child, legitimate or illegitimate, who was male. This is used as an instrument in cols. 1–7, which also control for whether the previous monarchs had any legitimate or illegitimate children disaggregated by missing birth years. In col. 8, wars of succession are removed from the sample. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets.

** Significant at the 5% level.

*** Significant at the 1% level.

TABLE A4
Summary Statistics of Additional Variables

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Panel level:					
In War	3,586	.296	.457	0	1
In Balance-of-Power War	3,586	.216	.412	0	1
In Defensive War	3,586	.017	.128	0	1
In Imperial War	3,586	.035	.183	0	1
In Civil War (all)	3,586	.075	.263	0	1
In Civil War (multiple polities)	3,586	.052	.222	0	1
In Civil War (single polity)	3,586	.025	.155	0	1
Reign Length (previous reign)	3,515	17.81	13.64	1	64
Monarch Killed (previous reign)	3,125	.167	.373	0	1
Categorical Aggression[a]	3,586	1.426	.710	1	3
Dead Male Siblings (of previous monarchs)	3,571	1.318	1.658	0	6
Dead Female Siblings (of previous monarchs)	3,286	1.210	1.524	0	7
Dead Male Children (of previous monarchs)	3,524	.709	1.189	0	6
Dead Female Children (of previous monarchs)	3,565	.701	1.290	0	9
Dead Male Siblings (current monarchs)	3,581	.784	1.179	0	6
Dead Female Siblings (of current monarchs)	3,574	.603	1.085	0	5
Reign level:					
In War Years	193	5.503	8.458	0	44
Categorical Territorial Change[b]	166	2.036	.622	1	3
Dyad level:					
Dyad: In War	37,116	.0284	.166	0	1
Queen in any dyad	37,116	.223	.416	0	1
Queen in dyad 1	37,116	.117	.321	0	1
Queen in dyad 2	37,116	.115	.320	0	1

[a] Categories: 1 = peace; 2 = polity was attacked; 3 = polity attacked.
[b] Categories: 1 = loss; 2 = no change; 3 = gain.

TABLE A5
Other Instrument Sets

	In War (1)	In War (2)	In War (3)	In War (4)	In War (5)
Queen	.388**	.313**	.501**	.288**	.313**
	[.022]	[.022]	[.018]	[.043]	[.022]
Observations	3,586	3,586	3,586	3,586	3,586
R^2	.437	.442	.420	.451	.449
Mean of DV	.296	.296	.296	.296	.296
Instruments	FBM$_{r-1}$, Sister$_{r-1}$	FBM$_{r-1}$, Sister$_{r-1}$, Sister$_{r-1}$ × No Children$_{r-1}$	FBM$_{r-1}$, Sister$_{r-1}$, Sister$_{r-1}$ × No Children$_{r-1}$	FBM$_{r-1}$, Sister$_{r-1}$, Sister$_{r-1}$ × FBM$_{r-1}$	FBM$_{r-1}$, Sister$_{r-1}$, FBM$_{r-1}$ × Two Children$_{r-1}$
Standard controls	Y	Y	Y	Y	Y
Flexible sibling controls	Y	Y	Y	Y	Y
Flexible sibling controls interacted with No Children			Y		
Kleibergen-Paap F-statistic	10.32	10.98	10.36	8.312	8.602
Montiel-Pflueger effective F-statistic	10.372	11.723	7.265	8.225	8.807
Montiel-Pflueger 5% critical value	5.35	11.250	16.383	12.119	12.615
	Queen	Queen	Queen	Queen	Queen
First stage:					
FBM$_{r-1}$	−.168**	−.178***	−.162**	.011	−.572
	[.033]	[.01]	[.027]	[.917]	[.118]
Sister$_{r-1}$	.288***	.153	.140	.427***	.259**
	[.009]	[.119]	[.259]	[.001]	[.012]
Sister$_{r-1}$ × No Children	. . .	.494**	.583	. . .	. . .
		[.024]	[.275]		
FBM$_{r-1}$ × Sister$_{r-1}$	. . .	. . .	. . .	−.241	. . .
				[.109]	

TABLE A5 (*Continued*)

	In War (1)	In War (2)	In War (3)	In War (4)	In War (5)
FBM_{r-1} × Two or More Children	...	...	...	...	.476
					[.162]
Observations	3,586	3,586	3,586	3,586	3,586
R^2	.515	.547	.598	.527	.541
Mean of DV	.16	.16	.16	.16	.16
Standard controls	Y	Y	Y	Y	Y
Flexible sibling controls	Y	Y	Y	Y	Y
Flexible sibling controls interacted with No Children			Y		

Note.—Variables not shown include polity and decade fixed effects. Columns 2 and 3 control for an indicator that equals one if the previous monarchs had no legitimate children and its interaction with whether the gender of the previous monarchs sibling is missing. Column 3 additionally interacts flexible sibling controls with the no-legitimate-children indicator. Columns 4 and 5 control our standard indicators of whether the previous monarchs had no legitimate children disaggregated by missing birth years. Column 5 also controls for an indicator that equals one if the previous monarchs had two or more legitimate children, and its interaction with whether the gender of the firstborn legitimate child is missing. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped *p*-values are shown in square brackets.

** Significant at the 5% level.

*** Significant at the 1% level.

TABLE A6
ROBUSTNESS CHECKS WITH ADDITIONAL CONTROLS AND OUTCOMES

	In War (1)	In War (2)	In War (3)	In War (4)	In War (5)	In War (6)	In War (7)	No. War Participants (8)	In War (9)
Queen	.289**	.326**	.306**	.411***	.390***	.405***	.450**	−1.216	.138**
	[.025]	[.026]	[.027]	[.005]	[.009]	[.004]	[.017]	[.611]	[.045]
Observations	3,271	3,214	3,264	3,271	3,214	3,264	3,586	1,180	3539
R^2	.440	.428	.438	.458	.457	.460	.428	.694	.709
Mean of DV	.311	.312	.309	.311	.312	.309	.296	5.74	.296
Specification	IV	IV	IV	IV	IV	IV	IV	IV	IV
Standard controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Flexible sibling controls				Y	Y	Y	Y	Y	Y
Dead Siblings (previous monarchs)	Y	Y	Y	Y	Y	Y			
Dead Children (previous monarchs)		Y	Y		Y	Y			
Dead Siblings (current monarchs)			Y			Y			
Accession Age							Y		
Lag dependent variable									Y

NOTE.—Variables not shown include polity and decade fixed effects. In col. 8, the dependent variable is the average number of participants among wars that the polity is engaged in fighting. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped *p*-values are shown in square brackets.

** Significant at the 5% level.

*** Significant at the 1% level.

TABLE A7
Robustness across Samples

	In War (1)	In War (2)	In War (3)	In War (4)	In War (5)	In War (6)	In War (7)	In War (8)
Queen	.326**	.393**	.385**	.451**	.310*	.275*	.647***	.385**
	[.044]	[.03]	[.018]	[.027]	[.098]	[.061]	[.009]	[.015]
Observations	3,167	3,186	3,559	3,455	3,229	3,236	1,684	6,489
R^2	.489	.454	.439	.422	.460	.463	.343	.402
Mean of DV	.272	.267	.294	.307	.296	.286	.398	.286
Sample	Drop England	Drop Russia	Drop Leon and Castile	Drop Navarre	Drop Portugal	Drop Sweden	Drop all 1-queen polities	Add nonqueen polities
Specification	IV	IV	IV	IV	IV	IV	IV	IV
Instruments	FBM_{t-1} and Sister_{t-1}							FBM_{t-1} and Sister_{t-1} interacted
Standard controls	Y	Y	Y	Y	Y	Y	Y	Y
Flexible sibling controls	Y	Y	Y	Y	Y	Y	Y	Y

Note.—Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped *p*-values are shown in square brackets. Columns 1–6 iteratively drops each of the queen polities that had more than one queen. Column 7 drops all queen polities that had just one queen. Column 8 includes all queen and nonqueen polities. In this column, the Queen variable and the instruments are all interacted with an indicator of whether the polity is part of the polities-with-queens sample.

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

TABLE A8
Reign-Level Specifications

	Main Effects			Accounting for War in Previous Reign		Falsifications: Queen Polities		Falsifications: Nonqueen Polities		Territorial Changes	
	In War Years			In War Years: Previous Reign	In War Years	In War Years		In War Years		No Change vs. Loss	Gain vs. Loss
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Queen	2.691***	14.146**	. . .	.466	13.424**	. . .	. . .	. . .	. . .	1.991**	2.215**
	[.008]	[.019]		[.959]	[.015]					[.025]	[.009]
Sole Queen	. . .	. . .	17.761**	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
			[.02]								
FBM_r	. . .	. . .	. . .	. . .	. . .	−.098	.591	. . .	. . .	. . .	. . .
						[.935]	[.648]				
$Sister_r$	. . .	. . .	. . .	. . .	. . .	1.636	1.489	. . .	. . .	. . .	. . .
						[.149]	[.444]				
FBM_{r-1}	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.217	−.302	. . .	. . .
								[.89]	[.872]		
$Sister_{r-1}$	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.157	3.795	. . .	. . .
								[.928]	[.110]		
Observations	193	193	183	184	184	180	180	149	149	193	193
R^2											
Mean of DV	5.503	5.503	5.672	6.060	5.690	5.733	5.733	5.349	5.349	Loss (17%); no change (61%); gain (21%)	
Specification	OLS	IV	IV	IV	IV	Falsification	Falsification	Falsification	Falsification	Multinomial probit IV	

TABLE A8 (*Continued*)

	Main Effects			Accounting for War in Previous Reign		Falsifications: Queen Polities		Falsifications: Nonqueen Polities		Territorial Changes	
	In War Years			In War Years: Previous Reign	In War Years	In War Years		In War Years		No Change vs. Loss	Gain vs. Loss
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Standard controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Flexible sibling controls		Y	Y	Y	Y		Y		Y	Y	Y
Reign Length	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
War in previous reign					Y						

Note.—Variables not shown include polity and majority century fixed effects. Column 3 eliminates coruling queens from the sample to estimate the effect of sole queens. Column 5 controls for the effect of years of war in the previous reign. Columns 10 and 11 estimate a multinomial probit model in which the base term is territorial loss. The frequencies of territorial loss, territorial gain, and no change are shown in the mean-of-DV cell. In all columns indicating IV (including 10 and 11), Queen is instrumented with FBM_{r-1} and $Sister_{r-1}$, which denote whether the previous monarchs had a firstborn male and whether they had a sister, respectively. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. Bootstrapped *p*-values are shown in square brackets.

** Significant at the 5% level.

*** Significant at the 1% level.

TABLE A9
Dyadic Specifications

	At War (1)	At War (2)	At War (3)
Queen in either polity of dyad	.110*** [.001]	.146*** [.000]	. . .
Queen in polity 1 of dyad	. . .	. . .	.078 [.169]
Queen in polity 2 of dyad	. . .	. . .	.101** [.011]
Joint test:			
χ^2 test statistic			10.92**
p-value			[.004]
Observations	37,116	37,116	37,116
Mean of DV	.028	.028	.028
R^2	.145	.132	.169
Specification	IV	IV	IV
Instruments	FBM_{r-1} and Sister_{r-1} in either dyad		FBM_{r-1} and Sister_{r-1} in polity 1/polity 2
Dyad fixed effects	Y	Y	Y
Decade fixed effects	Y	Y	Y
Standard controls	Y	Y	Y
Flexible sibling controls	Y	Y	Y
Kleibergen-Paap *F*-statistic	46.313	42.386	30.825
Montiel-Pflueger effective *F*-statistic	47.344	43.61	. . .
Montiel-Pflueger 5% critical value	8.86	7.433	. . .

Note.—Variables not shown include dyad and decade fixed effects. Column 1 controls flexibly for the average of total siblings in the two polities of the dyad. Columns 2 and 3 control flexibly for total siblings in the two polities of the dyad separately. In cols. 1 and 2, the instrument and controls are based on the presence of these variables in either polity of the dyad. In these columns we also present the Montiel-Pflueger effective *F*-statistic and 5% critical value. Standard errors are clustered at the level of dyad pairings and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped *p*-values are shown in square brackets. Column 3 also presents the χ^2 test statistic and *p*-value associated with the test of joint significance for queen in polity 1/queen in polity 2.

** Significant at the 5% level.

*** Significant at the 1% level.

TABLE A10
Disaggregating Effects by Type of War

	Balance-of-Power Wars	Imperial Wars	Defensive Wars	Civil Wars: All	Civil Wars: Multiple Polities	Civil Wars: Single Polity
	(1)	(2)	(3)	(4)	(5)	(6)
Queen	.317*	.163	−.048	.104	.092	.022
	[.076]	[.382]	[.499]	[.447]	[.435]	[.822]
Observations	3,586	3,586	3,586	3,586	3,586	3,586
Mean of DV	.216	.035	.017	.074	.052	.025
R^2	.404	.12	.259	.288	.248	.303
Specification	IV	IV	IV	IV	IV	IV
Instruments	FBM$_{r-1}$, Sister$_{r-1}$	FBM$_{r-1}$, Sister$_{r-1}$	FBM$_{r-1}$, Sister$_{r-1}$	FBM$_{r-1}$, Sister$_{r-1}$	FBM$_{r-1}$, Sister$_{r-1}$	FBM$_{r-1}$, Sister$_{r-1}$
Standard controls	Y	Y	Y	Y	Y	Y
Flexible sibling controls	Y	Y	Y	Y	Y	Y

Note.—Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped *p*-values are shown in square brackets.

* Significant at the 10% level.

TABLE A11

Multinomial Specification for Aggression Outcomes

	Polity Was Attacked vs. Peace (1)	Polity Attacked vs. Peace (2)
Queen	2.243	3.957***
	[.568]	[.001]
Observations	3,586	3,586
Frequency	Peace: 70%; Polity Was Attacked: 17%; Polity Attacked: 13%	
Specification	IV	IV
Instruments	FBM_{r-1}, Sister_{r-1}	FBM_{r-1}, Sister_{r-1}
Standard controls	Y	Y
Flexible sibling controls	Y	Y

Note.—This table presents multinomial probit specifications in which Peace is the base term. Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the score-bootstrap procedure. In all columns, bootstrapped *p*-values are shown in square brackets.

*** Significant at the 1% level.

TABLE A12
ROBUSTNESS CHECKS ON MARITAL EFFECTS

	Polity Attacked (1)	Polity Was Attacked (2)	Polity Attacked (3)	Polity Was Attacked (4)
Queen	.010	.352***	.033	.396**
	[.957]	[.01]	[.877]	[.014]
Queen × Married	.564*	−.420*	.638*	−.534**
	[.074]	[.071]	[.065]	[.036]
Married	−.058	.096	−.120	.097
	[.666]	[.525]	[.464]	[.509]
Test of Queen + Queen × Married	.574**	−.068	.671**	−.138
	[.045]	[.703]	[.048]	[.504]
Observations	3,574	3,574	3,487	3,487
R^2	.201	.341	.210	.357
Mean of DV	.13	.164	.126	.163
Specification	IV	IV	IV	IV
Instruments	FBM_{r-1}, $Sister_{r-1}$, FBM_{r-1} × Married, $Sister_{r-1}$ × Married	FBM_{r-1}, $Sister_{r-1}$, FBM_{r-1} × Married, $Sister_{r-1}$ × Married	FBM_{r-1}, $Sister_{r-1}$, FBM_{r-1} × Married, $Sister_{r-1}$ × Married	FBM_{r-1}, $Sister_{r-1}$, FBM_{r-1} × Married, $Sister_{r-1}$ × Married
Standard controls	Y	Y	Y	Y
Flexible sibling controls	Y	Y	Y	Y
Accession Age	Y	Y	Y	Y
Spouse Prior Belligerence			Y	Y
Sample restriction	No weak queens	No weak queens	No weak queens	No weak queens

NOTE.—All columns include polity and decade fixed effects. All specifications drop three weak queens: Juana la Loca of Leon and Castile, Mary II of England, and Ulrika Eleanora of Sweden. Flexible sibling controls are interacted with Married and an indicator of whether this variable is missing. Accession Age and Married, as well as indicators of missingness in these variables, are also interacted. Spouse Prior Belligerence indicates the spouse's involvement in wars and the military before marriage. It is interacted with the Queen variable as well as the instruments in cols. 3 and 4. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. Bootstrapped *p*-values are shown in square brackets. All columns also include a test for the significance of the sum of the coefficients on Queen + Queen × Married. Bootstrapped *p*-values of this test are also presented in square brackets.

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

TABLE A13
ACCOUNTING FOR INTERNAL STABILITY IN PREVIOUS REIGN

	Internal Stability: Previous Reign		Effects on War Participation: Accounting for Internal Stability			
	Reign Length: Previous Reign (1)	Monarch Killed: Previous Reign (2)	In War (3)	In War (4)	In War (5)	In War (6)
Queen	−5.060	.058	.393**	.334*	.360**	.356**
	[.689]	[.851]	[.017]	[.055]	[.02]	[.03]
Observations	3,515	3,125	3,515	3,125	3,515	3,515
R^2	.308	.421	.439	.473	.453	.455
Mean of DV	17.806	.167	.298	.307	.298	.298
Specification	IV	IV	IV	IV	IV	IV
Instruments	FBM_{r-1}, Sister_{r-1}	FBM_{r-1}, Sister_{r-1}	FBM_{r-1}, Sister_{r-1}	FBM_{r-1}, Sister_{r-1}	FBM_{r-1}, Sister_{r-1}	FBM_{r-1}, Sister_{r-1}
Standard controls	Y	Y	Y	Y	Y	Y
Flexible sibling controls	Y	Y	Y	Y	Y	Y
Previous Reign Length			Y	Y	Y	Y
Previous Monarch Killed				Y	Y	Y
Previous Monarch Killed Missing					Y	Y
Previous War						Y

NOTE.—Variables not shown include polity and decade fixed effects. Previous Monarch Killed Missing has a value of one if the Previous Monarch Killed variable is missing. It is included in cols. 5 and 6 to estimate effects in the full sample including observations for which this variable is missing. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped *p*-values are shown in square brackets.

* Significant at the 10% level.

** Significant at the 5% level.

TABLE A14
ROBUSTNESS TO YEAR FIXED EFFECTS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	In War	In War	Reign Entered War	Reign Continued War	Polity Attacked	Polity Was Attacked	Polity Attacked	Polity Was Attacked
Queen	.375**	.390**	.333*	.042	.423**	−.048	−.010	.341**
	[.034]	[.022]	[.068]	[.747]	[.048]	[.754]	[.953]	[.011]
Queen × Married	. . .	. . .	. . .	. . .	. . .	. . .	.593*	−.431*
							[.088]	[.068]
Married	. . .	. . .	. . .	. . .	. . .	. . .	−.081	.081
							[.537]	[.593]
Test of Queen + Queen × Married	. . .	. . .	. . .	. . .	. . .	. . .	.583*	−.091
							[.072]	[.645]
Observations	3,586	3,515	3,586	3,586	3,586	3,586	3,586	3,586
Standard controls	Y	Y	Y	Y	Y	Y	Y	Y
Flexible sibling controls	Y	Y	Y	Y	Y	Y	Y	Y
War in Previous Reign		Y						
Accession Age							Y	Y
	Reign Length	Monarch Killed	Polity Ends	Polity Merged or Partitioned	Polity Becomes Republic	Polity Attacked	Polity Attacked	Polity Attacked
Queen	3.164	.045	−.027	−.073	−.021	.414**	.427**	.184*
	[.785]	[.912]	[.907]	[.773]	[.452]	[.046]	[.032]	[.084]

Queen × after First 2 Years of Reign	. . .	. . .	. . .	. . .	. . .	.078	. . .	. . .
						[.702]		
Queen × Second Half of Reign	. . .	. . .	. . .	. . .	. . .	. . .	−.001	. . .
							[.997]	
Queen × Accession Age	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.028*
								[.084]
Observations	3,586	3,058	3,586	3,559	3,559	3,586	3,586	3,586
Standard controls	Y	Y	Y	Y	Y	Y	Y	Y
Flexible sibling controls	Y	Y	Y	Y	Y	Y	Y	Y
Reign Length						Y	Y	

Note.—Variables not shown include polity and year fixed effects. In col. 1, the Kleibergen-Paap first-stage *F*-statistic = 9.485. In cols. 6, 7, and 8 (bottom panel), the flexible sibling controls are also interacted with an indicator for the first two years of the reign, the second half of the reign, and age at accession, respectively. Standard errors are clustered at the broad-reign level and are bootstrapped (with 1,000 replications) via the wild-bootstrap procedure. In all columns, bootstrapped *p*-values are shown in square brackets. Columns 7 and 8 (top panel) also include a test for the significance of the sum of coefficients on Queen + Queen × Married. The bootstrapped *p*-value of this test is presented in square brackets.

* Significant at the 10% level.

** Significant at the 5% level.

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