Queens *

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Abstract

Do states experience more peace under female leadership? We examine this question in the context of Europe over the 15th-20th centuries. We instrument queenly rule using gender of the first born and whether the previous monarchs had a sister. We find that polities led by queens participated in war more than polities led by kings. Moreover, aggressive participation varied by marital status. Single queens were attacked more than single kings. However, married queens attacked more than married kings. These results suggest that asymmetries in the division of labor positioned married queens to be able to pursue more aggressive war policies.

JEL Classification Codes: N43, D74, H56, F51, J16, J20

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1 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, 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, p.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 (Koch and Fulton, 2011; Caprioli, 2000; Caprioli and Boyer, 2001; Regan and Paskeviciute, 2003), 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

[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 (Ehrenreich and Pollitt, 1999).

historically, exploiting features of hereditary succession to surmount this identification challenge. We focus on the period between 1480-1913 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, p.36-37). As a result, queens were less likely to come to power if the previous monarchs had a first-born 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 if 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 based on broader strategic considerations beyond personal inclinations toward violence.

To conduct our analysis, we construct a new panel dataset which 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 first born 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 first-born male may

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

itself trigger conflicts over succession, regardless of whether a woman comes to power. However, we conduct a number of falsification tests which show that a first-born 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 first born males affect conflict, they do not manifest 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 stand-point 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 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; Karaman and

Pamuk, 2013; Stasavage, 2011; Gennaioli and Voth, 2015).

Queenly reigns may have had greater capacity than kingly reigns due to 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 (Beem and Taylor, 2014; Monter, 2012; Schaus, 2015). In that regard, our results accord with modern day studies which show that gender identity norms continue to play an important role in shaping societal outcomes today (Bertrand, Kamenica, and Pan, 2015).[3]

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

[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 women occupying leadership positions, for example, in the context of the military or as a spouse to a reigning king.

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 are relatives of monarchs. Our instruments select from among this potential pool based on arbitrary factors. However, if there are heterogenous 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 set of 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 inter-state war, given how gender operates in political structures. To date, studies of gender and war have focused on the modern period, and 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 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 (Conover and Sapiro, 1993; Shapiro and Mahajan, 1986; Jelen, Thomas, and Wilcox, 1994; Wilcox, Hewitt, and Allsop, 1996; Eichenberg, 2003); and 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 15th-20th centuries, we also take an identification-based approach to analyzing history (Nunn, 2009).

We also view our work as closely related to micro-economics 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 (Chattopadhyay and Duflo, 2004; Breuning, 2001) education (Clots-Figueras, 2012; Beaman et al., 2012) and corruption (Brollo and Troiano, 2016). Another set of related studies has also shown that female corporate leadership influences firm outcomes (Matsa and Miller, 2013; Bertrand et al., 2015; Ahern and Dittmar, 2012).

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 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 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, 2015)[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 analy-

[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 proto-industrial centers, regardless of executive constraints.

sis.[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; Gennaioli and Voth, 2015; Scheve and Stasavage, 2010), and demonstrated how modern day political and economic development reflect historical conflict and military competition between states (Dincecco and Prado, 2012; Voigtländer and Voth, 2013*a*,*b*). 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 2007-2009.[7] Our goal in this 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.

[6]We are able to examine regicides as 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 number of male heirs in previous reigns affect coups and civil wars. Three points are useful in understanding our results together. First, our IV strategy uses the presence of a first-born male, not the number of male heirs. Gender of the first born 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 which 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 given rise to more internal conflicts during the earlier 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 inter-state 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.

2 Mechanisms

2.1 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, p.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, p.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 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, p.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.

2.2 Gender and Reign Capacity

A second account of female rule and war participation builds on the importance of state capacity in warfare. Over the 16th-20th 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 (Hoff-

[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).

man, 2011; Roberts, 1955; White, 1962; Bean, 1973).[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, 2014, p.4; Schaus, 2015, p.682).

A prime example is military leadership. As Monter notes, "[m]ale 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" (Monter, 2012, p.49). Since it was taboo for women 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, p.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, p.89). Ferdinand V, who co-ruled Leon and Castile with Isabel I over 1474-1504 helped Isabel defeat her niece,

[9] This trend continued into the 19th 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 3-fold over 1550-1780, while the armed forces of Austria increased 28-fold over this same time (Karaman and Pamuk, 2010).

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 Victoria's most trusted advisor, and shaped both her colonial policy and 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 co-monarch 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.

[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 co-monarch at the start of Peter III's reign.

2.3 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.

3 Data and Sample Description

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

3.1 Genealogy Data

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 A.1 lists these polities and Figure 1 locates them on a map.[14]

[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.

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. 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 co-ruling simultaneously. This includes cases of (1) a husband and wife ruling jointly, as in the case of Suzanne and Charles I, who co-ruled the Duchy of Bourbonnais over 1505-1521 or (2) father and son ruling together, as in the case of Ivan III the Great and Ivan the Younger who co-ruled the Tsardom of Russia over 1471-1489.[15]

A monarch can govern in multiple reigns, by ruling alone in one reign and co-ruling with another monarch during another reign.[16] Thus within the 193 reigns, there are 192 distinct monarchs. Among the 34 reigns with queens, there are 29 distinct queens. Even if a queen was married, her spouse was not necessarily designated an official co-monarch 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 co-ruled with their spouses. In one reign alone, two women co-ruled together.[17]

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 match-

[15]In five additional cases, there is 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.

[16]For example, Queen Suzanne ruled the Duchy of Bourbonnais on her own over 1503-1504. She ruled together with her husband Charles III over 1505-1521. Upon her death, Charles III ruled on his own, from 1522-1527.

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

ing. 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 if the rulers were married, and if their spouses were living during their reign. 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 gender of children and siblings. If 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 only unable to establish gender in 2% of the children and 6% of the siblings, and control for missing gender children / siblings in these cases.

Our instruments are based on the gender of the sibling and first born child of the "previous monarchs," which are often monarchs of the previous generation in systems of hereditary succession. Thus in constructing our instruments, in most cases, the previous monarchs are simply those who ruled in the previous reign. However, in 30 reigns, co-rule 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 these cases in Section A.2 of the Online Appendix.[18] 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 the empirical strategies section 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.[19] In cases of co-rule, we consider if either monarch had a spouse dur-

[18]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.

[19]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

ing 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 owing to death or separation.

3.2 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, p.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, p.636).

It also disaggregates wars based on type. It includes 77 Balance of Power wars, which are inter-state wars involving European nations;[20] 8 Defensive wars, which are inter-state wars between European states and the Ottoman empire; 29 Imperial wars, which are inter-state 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 form of conflict, both in terms of the number of wars, and conflict incidence. Average participation across all wars is .296. Of this, average participation in Balance of Power wars is .216.

We examine an aggregate measure of participation in any type of war since this is the

from the spouse's home country, the annual marital measure would reflect this potential reverse causality more directly.

[20]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 1904-05 also involved Japan.

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 – i.e., that track wars, specifically, as opposed to other more broader types of violence, and in a way that enables us to observe when each participant enters and exits the war. However, in the Online Appendix Section A.5, we compare war prevalence in our data to war prevalence in two other data sources which track wars for at least part of the time period covered by our our analysis. We find that wars are not systematically under-represented 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; i.e., which side initiated the war. As with any aggressor coding in a conflict setting, Wright (1942)'s coding of aggressor is subjective. We rely on this coding, rather than on our own, to minimize our potential bias in this measure. Nonetheless, if Wright (1942) over-attributed 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 over-attributed aggression to women who were married during their reigns and under-attributed 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 5.4.

3.3 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), which records whether a monarch was killed or had died of other unnatural causes, for the period prior to 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.[21] We additionally examine whether monarchies come to an end via unification, partition, or capture; or transform into republics, based on 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.[22] Based on these data, we can observe if the contiguous territory under a polity increased by comparing snapshots at the beginning and end of a ruler's reign.[23] This enables us to define if a reign experienced net territorial loss, gain or no change in territory over the course of a reign.

3.4 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 years 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 male monarchs, rather than republics. Table

[21]See the Online Appendix Section A.2 for greater detail.

[22]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.

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

1 provides the descriptive statistics of key variables used in our analysis, at the polity by year panel level.

3.5 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 is comprised 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 A.1 and shown in Figure 1.[24] They cover a large part of the continent including larger polities like France and smaller ones like 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 co-ruling different sub-regions within their polities. These could not be matched to the war data since Wright (1942) does not discern which specific sub-regions participated in each war.

4 Empirical Strategy

Using this 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 sub-sections below.

[24] We include a more detailed discussion of the polities in the auxiliary sample in Section A.1 of the Online Appendix. Not every auxiliary polity can be shown in Figure 1 because the polities in our sample existed over different time periods, and during some historical periods, the geographic area of one polity was covered by another.

4.1 Succession Laws

Succession was partly governed by laws which 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.[25]

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, p.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, p.1604). This system preferred males but allowed females to succeed.[26]

In broad-brush terms, England, Portugal and Russia practiced primogeniture for large durations of their history. However laws of succession also changed substantially over

[25]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 a different empirical strategy than the one we use in this paper since gender of the first-born child and gender of the siblings of previous monarchs do not have predictive power in determining whether queen regents came to power.

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

time, even within given polities. These changes may have arisen endogenously in response to the 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, which declared that his daughter Maria Theresa — and, failing her — his younger daughter Maria Anna should succeed him as monarch (Beales, 2014, p.127).[27]

The endogeneity of laws such as the Pragmatic Sanction to conflict and other political conditions potentially correlated with conflict suggest 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, as Monter (2012, p.36-37) describes, in practical terms:

> 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 decreased 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, p.114). These guiding principles motivate our empirical strategy and our instruments for whether queens were in power.

4.2 Pathways to Becoming a Queen

Given the nature of dynastic succession, there are two potential forces which led queens to become queens: the presence of a first-born male and the presence of a sister among

[27] 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, p.34).

the previous ruling monarchs. First, since the oldest son of a monarch had priority in succession, if the previous monarchs had a first-born 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 first-born legitimate child of the previous monarchs was male as one of our instruments for whether a queen was in power.

Second, if the previous monarchs 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 monarchs 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 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 had any children. The lack of children may be even more relevant than the lack of a first born male in conditioning the extent to which sisters led to queens. This is because even if the previous monarchs did not have a first born 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 – i.e., 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 the first born male indicator, and find suggestive evidence broadly consistent with this idea. In particular, the strength of the first stage only improves upon inclusion of the interaction with the no children indicator in the instrument set, but not with the interaction of the sister indicator.[28] We therefore view the first born male and sisters 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 are cases when the previous monarchs lacked a first-born 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 first-born child, in all but one case, the males had died by the time of accession. Thus non-compliance emerges in part based on the death of older male brothers. In addition, among nine cases where the monarchs had multiple children, and the first-born 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 the Online Appendix provides details on the two cases of queens who came to power with a brother living at accession.[29]

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

[28] We discuss these alternate specifications (presented in Table A.5) in the results section below.

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

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 non-hereditary succession.[30] These discrete cases could potentially weaken the strength of the first-stage. However ultimately, first-stage F-statistics (presented in the results below) demonstrate that succession was sufficiently hereditary for gender of the first born and presence of a sister in the past reign to be strong predictors of queenly rule.

4.3 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 first born child and whether they had a sister to instrument for whether a queen is in power.

Our panel data is comprised 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 given by:

[30] For example, in 18th 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.

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

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 $\widehat{Queen}_{pr}$ 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.[31]

The first stage is given by:

$$Queen_{pr} = \alpha_p + \tau_d + \left(\textit{First-Born Male}_{pr-1}\right) + \left(Sister_{pr-1}\right)\theta + \mathbf{X}'_{pr}\rho + \omega_{prd} \quad (2)$$

where $\textit{First-Born Male}_{pr-1}$ is an indicator of whether the previous monarch(s) had a legitimate first born 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.

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

[31] Our results are robust to the inclusion of year fixed effects, as shown in appendix table Table A.14. We opt for decade fixed effects because our panel stretches from 1480-1913, and including 433 year dummy variables slightly weakens the first stage. However, all of our key second stage estimates remain in place.

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 are co-rulers unrelated to one another, as gender of the first born may be relatively less informative of the actual successor in these cases. Since the *First-Born Male* variable is defined as zero if the previous monarchs had no children, we control for if 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 first born 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.[32]

Importantly, we control for whether the gender of the sibling and gender of the first-born are missing. As discussed in the data section above, we identify gender based on name or an exhaustive search if the name is missing from Tompsett (1994). However, we are still unable to find the names of five first-born 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 gender of the first-born is missing. We are analogously missing gender information for siblings of 10 previous monarchs, and also control for whether there are any siblings with missing gender. These controls comprise our standard controls throughout the tables.

***The First Born Male Instrument* —.** We use gender of the first born 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

[32]We also include war in the past reign as auxiliary controls in some specifications.

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 first born 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, p.37; Monter, 2012, p.37), and indeed it was only under the rarest of circumstances that illegitimate heirs came to rule (Monter, 2012, p.39).

However, one notable case is Henry VIII, King of England over 1509-1547. Henry had a first born child who was a legitimate daughter, followed 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 a 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 prior to 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 first born 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 gender of the first legitimate first born 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 gender of the first born 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.[33]

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 gender of the first born, legitimate or illegitimate, suggests that this mis-classification does not meaningfully affect our analysis.

Finally, we exploit the gender of the legitimate first born, rather than gender 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.

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 first born in 54% of the sample. The naturally occurring sex ratio at birth is 52% male (Grech, Savona-Ventura, and Vassallo-Agius, 2002). Thus the first born ratio in our sample is within the margin of error around this naturally occurring ratio, particularly since the first-born 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).[34] In these sources, we

[33]We prefer to use gender of the legitimate first born as our primary approach because, as this example suggests, gender of the first legitimate first born may be more likely to be reflect nature than gender of the other children who follow. If the previous monarchs respond to legitimate first born 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.

[34]The HMD contains records of births from various national statistical and other academic sources, and it includes 9 of the 18 polities appearing in our main sample - see Section A.3 of the Online Appendix for greater detail.

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 first born children in entirety for the following reasons. Sex-selective infanticide was not a common phenomena 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 bolsters our confidence regarding the accuracy of our genealogy data.

***Interpretation of the IV estimate* —.** There are several ways in which we must be careful when interpreting the IV estimates below. Even when IV produces a causal effect, it is important to consider what this effect means. First, we have to explicitly 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 is comprised of women who are eligible to rule on account of being the relatives of previous monarchs. Our instruments choose rulers from among this pool based on 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 due to the presence of a first born 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 owing to 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 first born male instrument alone, or in conjunction with the sister instrument. They also remain in place when we interact the sister instruments with other features like 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.

Polity Boundaries —. Some of our polities changed boundaries substantially over this period: some polities came to an end as one unit, and re-emerged 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 which 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.

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 across multiple reigns.[35] 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 1000 replications.[36] Throughout the paper we present only p-values that have been adjusted using this bootstrap method.

[35]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 Section 3.1 for greater details).

[36]We use the specific estimation procedure developed by Roodman et al. (2018).

5 Results

In this section, we present evidence on how queens affect war participation. We begin by showing the OLS 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.

5.1 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 latter columns 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 the empirical strategies section, 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 bootstrapped using 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 relative to polities led by kings. The estimates in columns (1)-(2) suggest that queens were between 11 to 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)-(4). In Column (3) we use just the first-born male instrument, and in column (4), we use both the first-born 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 .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 first born male instrument alone produces similar results as using both instruments together, since 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 first-born male, this reduces the likelihood of a queen coming to power by 17 to 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) than column (3). The Montiel-Pflueger Effective F-statistic in column (4) also exceeds the 5% critical value, ruling out weak instruments.[37] Therefore we utilize both instruments

[37] 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, Forthcoming). This test-statistic reduces to the Kleibergen-Paap F-statistic when the specification is just-identified as in

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 Appendix Table A.2, we verify that these effects continue to hold and are similar in magnitude if we either eliminate co-ruling queens (column 1), or eliminate all co-ruling monarchs (column 2), and examine the effect of queens who ruled as sole monarchs in these samples.[38] The precision and magnitude of the "Sole queen" effect indicates that the effect is not driven just by co-ruling queens.

5.2 Examining Instrument Validity

In this section, we present additional validity checks on the instrument set. First, the lack of a first born 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 if these effects hold.

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

column (3), but can be compared to critical values developed by Montiel Olea and Pflueger (2013) in the over-identified case, as in column (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.

[38] In column (1) we are comparing sole queens to sole kings as well as kings co-ruling together and in column (2) we are comparing sole queens to just sole kings.

indicator of war participation in the previous reign.

We also conduct a second, broader falsification. If the presence of a first born 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 which never had queens. To examine this idea, we test whether the presence of a first-born male and sister in the past reign affected conflict in the non-queen polities. We find no evidence of such a relationship in columns (5) - (6).

These falsifications reassure us that actions by reigning monarchs in response to legitimate first born 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 A.3, we repeat the same falsification tests, but instead use gender of the first born child, legitimate or illegitimate. The first two columns show that the presence of a first born 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 (column 4) or with baseline controls (column 7). This further bolsters the validity of using gender of the legitimate first born 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.[39] Table A.3-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.

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

5.3 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 A.4 presents descriptive statistics of the additional variables used for these checks.

Alternate Instrument Sets —. In Appendix Table A.5, 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)-(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 only precisely estimated with the less restrictive sibling controls; and the Effective F-statistic also fails to exceed the critical value indicating potentially weak instruments 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 first-born 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 first born male, it is not precisely estimated and the magnitude of the coefficient is not as large as the interaction involving no legitimate children.[40] This is consistent with the idea that the lack of any children may be a more pertinent conditioning variable than first born males for whether sisters lead to a queen — perhaps because if the previous monarchs lacked a first born son, but had a daughter, the throne would pass to the daughter before it went to the sister.

Finally, whether the first born is male or female may matter disproportionately when there are two or more legitimate children. Column (5) includes the interaction of the first born 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 first born 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.

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 power by killing off other potential brothers (uncles) who may have otherwise inherited the throne. Analogously, first born 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,

[40] In column (4) we continue to control for total siblings flexibly, but are not able to control for it interactively with the first-born male variable, since the first-born male variable is one of our instruments.

then this could again serve as an alternate channel influencing conflict. However, in Table A.6, 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 six years younger at accession. If younger monarchs are more aggressive than older monarchs, then this age difference may give rise to the results. However, Table A.6-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 A.6 shows that queens do not participate in wars that are smaller, as measured by the number of participants in these wars.[41] Finally, column (9) shows that the results are robust to controlling for the lag dependent variable, which controls for war in the previous year.[42] This builds on previous results (Table 4-Column 4) that the results are insensitive to controlling for war in the previous reign.

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 percent confidence intervals on the queen coefficient. In Figure 4, we repeat this exercise, but drop two queens in each specification instead.[43] The estimates in both figures display remarkable stability, and retain their precision. In Figure A.1, we additionally plot the bootstrapped p-values associated with both sets of

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

[42]Note that Nickel bias should be limited given the long time series of the data.

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

estimates, and all estimates remain significant at the 5% level.

In Table A.7, 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 or Spain or Russia, alone, do not drive the effects.[44] The estimate is if anything larger in column (7) than in remaining columns, indicating that the effects are not driven by the more minor polities that had the occasional queen.

***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 relative to 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 non-queen 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 non-queen polities. (Average war participation is .30 in the sample of queen polities and .27 in the non-queen polities). Second, to address this concern directly, in column (8) of Table A.7, we present a specification which pools together the queen and non-queen 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 A.8, 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

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

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.[45] We also continue to bootstrap and cluster our standard errors on the broad reign of the instrument monarchs. The first three columns of Table A.8 show that queen effect on war remains precisely estimated (in the OLS, IV and 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 analogous falsifications to those in Table 4, with the contemporaneous instruments in the queen polities as well as the non-queen polities.

In Table A.9, we present dyadic specifications. We create a dyadic version of our data, in which units are comprised of polity pairings, for each year in which both polities are in existence. The sample is comprised of both the queen polities and non-queen 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 if 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.[46] We continue to apply the Wild Bootstrap procedure, and 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 is

[45] 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.

[46] When clustering, we define a dyad pairing broadly in the sense that if, for example, 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.

shown in the first two columns of Table A.9. In these specifications, the instruments and controls are defined analogously – i.e., whether the monarchs in either polity had a first-born male or had a sister, etc. 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 second dyad is arbitrary. In fact, even within the course of a reign, a polity may switch positions from the first position (in a pair with one polity) to the second position (when paired with another polity).[47] In these specifications, we have separate indicators for the instruments and control variables in each of the dyads, and 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.[48] Of 154 wars in our dataset, the dyadic data omits representation of 53 wars for

[47] As an example, if we have a dyad comprised of polities AB and another of polities AC, 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).

[48] As an example, if there is an Imperial war in which England is fighting against India, the *In War* variable

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.

5.4 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 A.10 we separately examine effects on specific types of wars to see where effects are concentrated. The magnitude of the coefficients indicate 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 (.092) associated with civil wars that embroiled multiple polities and a small coefficient (.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 inter-state wars.

Second, we examine if increased war participation stems from new wars that the reign initiated or from the continuation of old wars that were started previously. Columns (2)-(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 (.355) and the reign continued outcome (.033) suggest that entry into new wars contributes more to the 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

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 does not include a England-India dyad since India is not part of the sample comprised of European polities.

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 .44 and getting attacked is .56. Columns (4)-(5) of Table 5 present the disaggregated effects. The coefficients indicate that the queen effect on war participation (.388) stems disproportionately from participation in wars in which the polity attacked (.425) rather than in wars in which the polity was attacked (-.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 was Attacked* variable) take on the value of one for only one side in the conflict. (This lies in contrast to the *In War* variable, which takes on 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.[49]

Note that the aggressive participation variables have also been constructed so, for example, the *Polity Attacked* variables 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

[49]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 so only fight 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 queens to conflict aggression even under this scenario. The dyadic data would also address this type of potential under-attribution. Under the hypothesized scenario, where fighting only occurs when a queen is involved, the dyadic *At War* variable would only be switched on 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.

that it enables us to compare the effects directly to aggregate war participation in Column (1), and decompose this effect into the *Polity Attacked* and *Polity was Attacked* components. However, since peace, attacking and getting attacked are three non over-lapping states, in Table A.11, we also verify that the results hold using a multinomial probit specification.[50] The base term in the categorical aggressor variable is peace. The coefficient on the *Polity was Attacked vs. Peace* outcome is positive but insignificant (with a p-value of .568). In contrast, the coefficient on the *Polity Attacked vs. 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 .419 and reduces the likelihood of being in peace by .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.

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 if there was a loss, 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 A.8 (columns 10-11). The base term in the categorical variable is territorial loss. The positive, significant coefficients on both the *Territorial Gain vs. Loss* outcome, as well as the *No Territorial Change vs. Loss* outcome suggest that queens were less likely to lose territory than kings, and these effects stem from both gaining territory and preserving it. The implied marginal effects of having a queen on these outcomes are .131 and .239, while the implied marginal effect on territorial loss is -.371.

Next, we examine if the tendency for queens to participate as aggressors in war var-

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

ied based on 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 based on 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.[51] Similarly, there are 45 reigns in which a king is 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.[52]

To examine heterogenous effects based on marital status, we interact this married in reign variable with the *Queen* indicator. We instrument *Queen* and *Queen x Married* with the first born 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.[53]

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

[51] 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 co-regent. It also includes cases in which a queen became widowed and ruled on her own (which occurred in another five of our cases).

[52] Online Appendix Table 2 provides a listing of the 10 single queen and 24 married queen reigns. Online Appendix 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.

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

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 x 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 (-.053). The relative effect of a married queen aggressing is given by the sum of the coefficients on *Queen* (.013) and *Queen x Married* (.565). The sum of these coefficients (.578) is positive and significant at the 10 percent level. This suggests that married queens were more inclined to participate as aggressors than married kings.

In contrast, single queens participate more in wars in which they are attacked. In column (2), the coefficient on *Queen* (.348), is positive and significant at the 1 percent level, indicating that single queens are attacked more than single kings. The coefficient on *Queen x Married* (-.425) is negative and significant at the 5 percent level, indicating that being married disproportionately reduces the tendency of queens to get attacked, relative to how much it reduces the tendency of kings to get attacked. However, the sum of the coefficients on *Queen* and *Queen x Married* (-.077) is small and insignificant, indicating that married queens do not look different than married kings in terms of their tendency to get attacked.[54]

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 — i.e., 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 rela-

[54]The first stage associated with these specifications from Table 6 can be found in Online Appendix Table 4.

tive to the main effects for two reasons: first, they are 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 re-estimating the marital specifications after dropping each queen iteratively. The left panel of Figure A.2 plots the bootstrapped p-values associated with the sum of the *Queen* and *Queen x Married* coefficients on the *Polity Attacked* outcome. The married queen effect remains significant at the 10% level in all specifications. The right panel 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 royal males who were particularly belligerent with expansionist agendas may have been most inclined to marry queens.[55] 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 co-regent. Thus, in columns (3)-(4) of appendix table A.2, we demonstrate that the marital effects continue to hold if we drop all co-ruling monarchs from the sample, and examine the marital effects of just the sole queen.[56]

Since even spouses who were not co-regents 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 prior to marriage. We gather data on whether they had direct military experience as lieutenants or commanders in their home countries, or whether

[55] 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.

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

they presided over any wars in their home countries prior to marriage. We then introduce this control and its interaction with the *Queen* variable and the instruments, in columns (3)-(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.

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 mental state.[57] 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 A.12 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 over-attribution of aggression to female monarchs who had spouses during their reigns relative to male monarchs who had spouses during their reigns; and under-attribution 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

[57]One case is Juana la Loca who co-ruled Leon and Castile over 1504-1506. As her name suggests, Juana was mentally incapacitated. Another case is Mary II who co-ruled England with William III over 1689-1695, but ceded power to him willingly. A third is Ulrika Eleanora, who ruled Sweden (1718-1719), publicly declared that women were unfit to rule and abdicated when the Riksdag refused to make her husband a co-monarch.

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.

5.5 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 impact 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, unification or capture with another polity, or by becoming a republic. Table A.13 also verifies that controlling for instability in the previous reign does not meaningfully alter the estimated queen effect.[58] Also recall that when we split the *In War* variable into various types of war (in Table A.10) 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 for 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.

[58]Since the monarch killed variable is missing for a number of polities, when we include all previous reign controls in column (6), we also control for an indicator of missingness in this variable while assigning zeroes 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.

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 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 which demarcates the period beyond the first two years of the reign. In these specifications, we also control for the overall length of reign. Our ability to detect heterogenous effects may be 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.[59] 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 by ministers than male rulers. 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

[59]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 column (1) would have to be at least -.528 to be significant at the 5% level and -.444 to be significant at the 10% level. Similarly, the coefficient on the interaction term in column (4) would have to be at least -.299 and -.357 to be significant at the 10% and 5% levels, respectively.

> ...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 (Monter, 2012, p.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);[60] but it is significant at the 10 percent 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 not always passively receive the advice of ministers (Beales, 2014, p.133). Based on 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 appendix table A.14 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.[61] These findings corroborate a robust relationship between queenly rule and war in Europe over the period of our analysis.

[60] This coefficient would have to increase from .014 to .027 to be significant at the 5% level, and to .023 to be significant at the 10% level when considering standard errors unadjusted for bootstrapping.

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

6 Conclusion

A common perspective posits that women are less violent than men, and therefore, 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 gender of the first-born and presence of a sister in the previous reign as instruments for whether queens come to power. We find that queenly reigns engaged more in inter-state 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 based on 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 co-regents; 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 than 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 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 who they recruit into their governments, and who 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.

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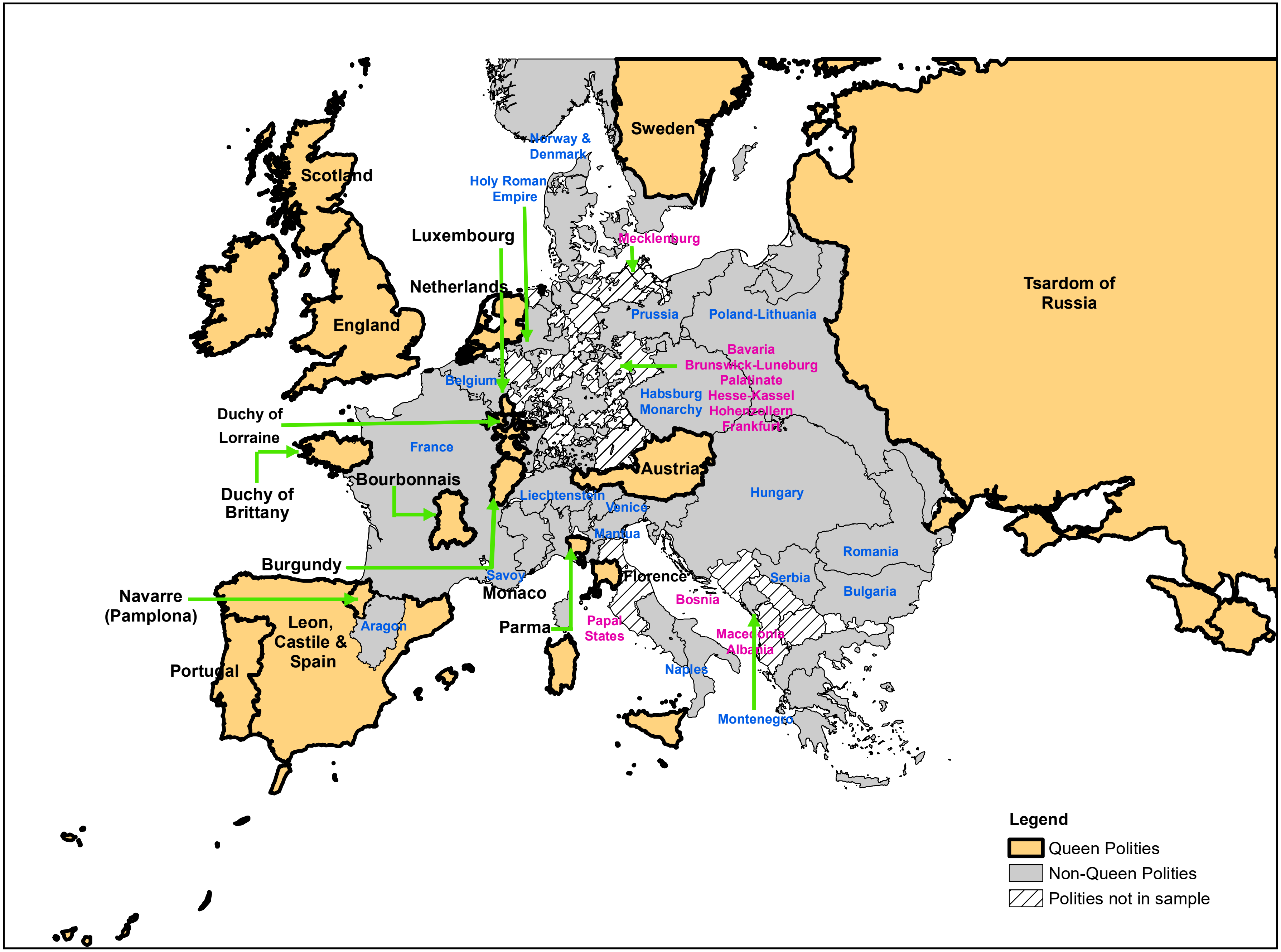
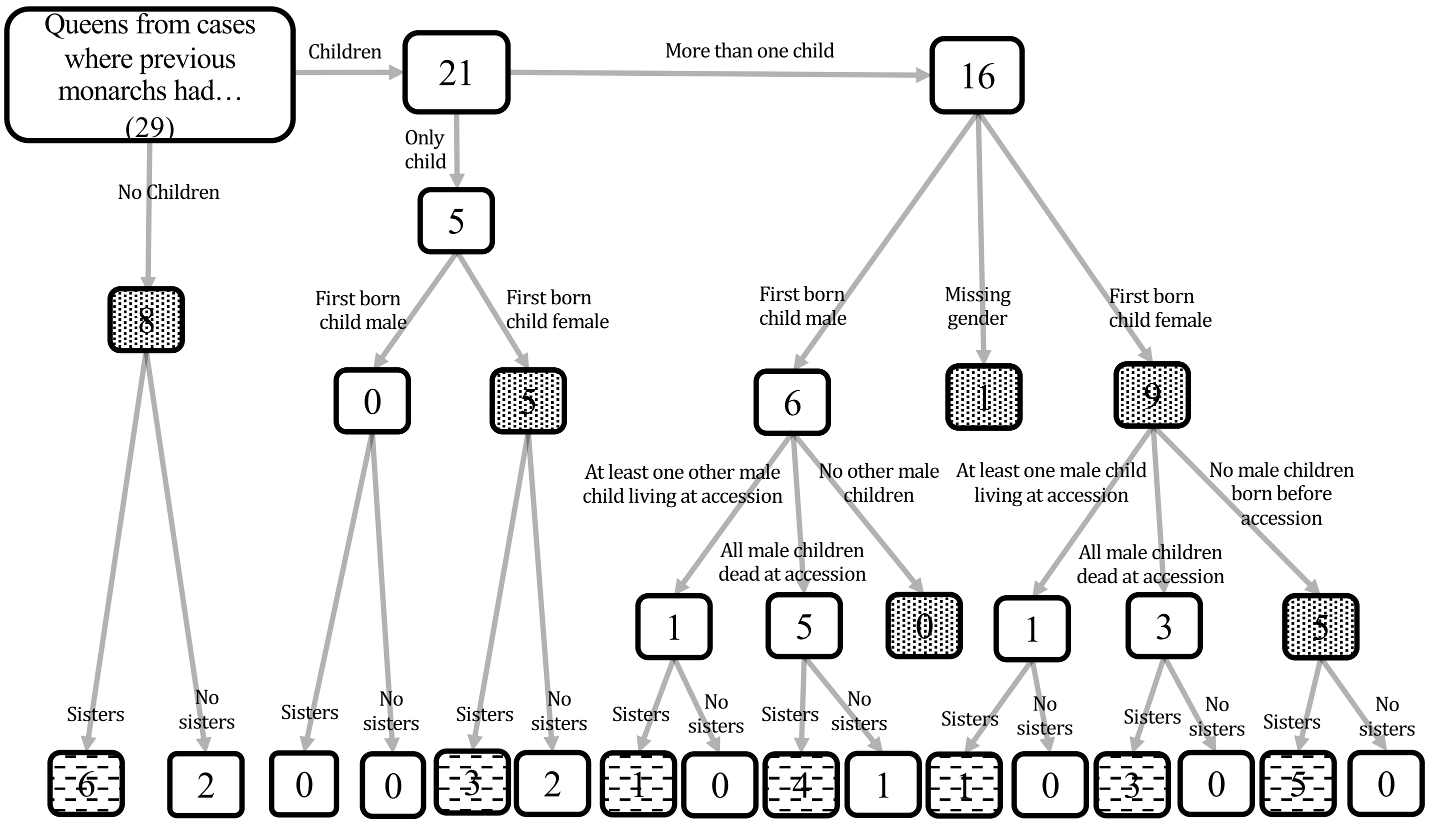
Figure 1
Queen and Non-Queen Polities



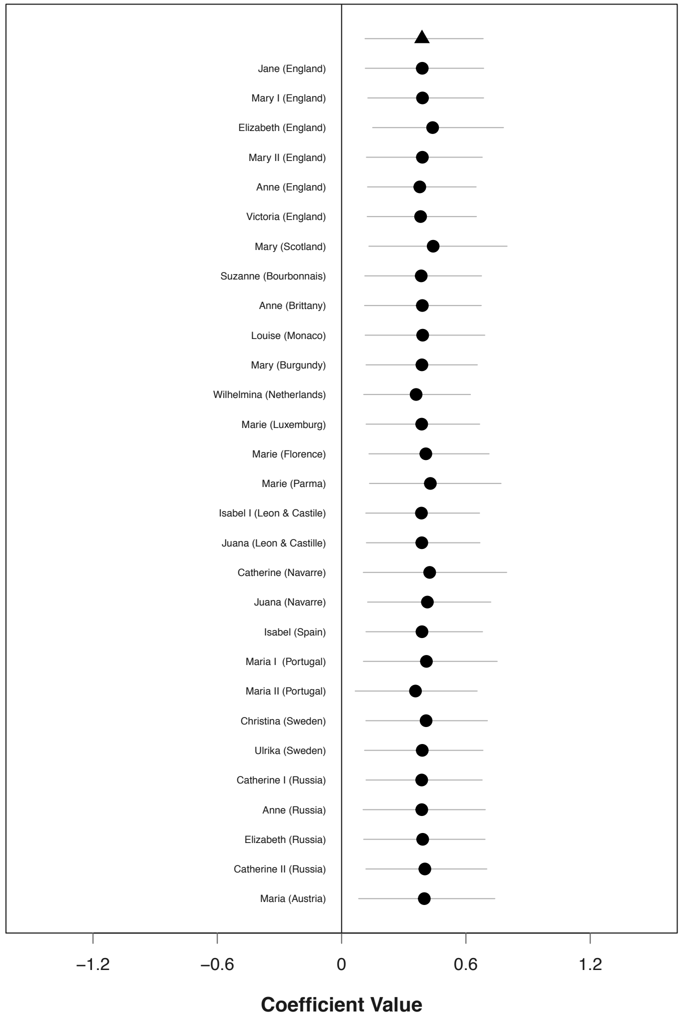
Notes: This figure was created by overlaying six Georeferenced Historical Vector maps from Euratlas at the turn of each century over 1500-2000. Polities were chosen from one of these maps to minimize displayed territorial overlap. The territorial boundaries for different polities are from different time 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, in blue are Non-Queen polities and in pink are polities not in the sample.

Figure 2
Circumstances under which Queens Came to Power



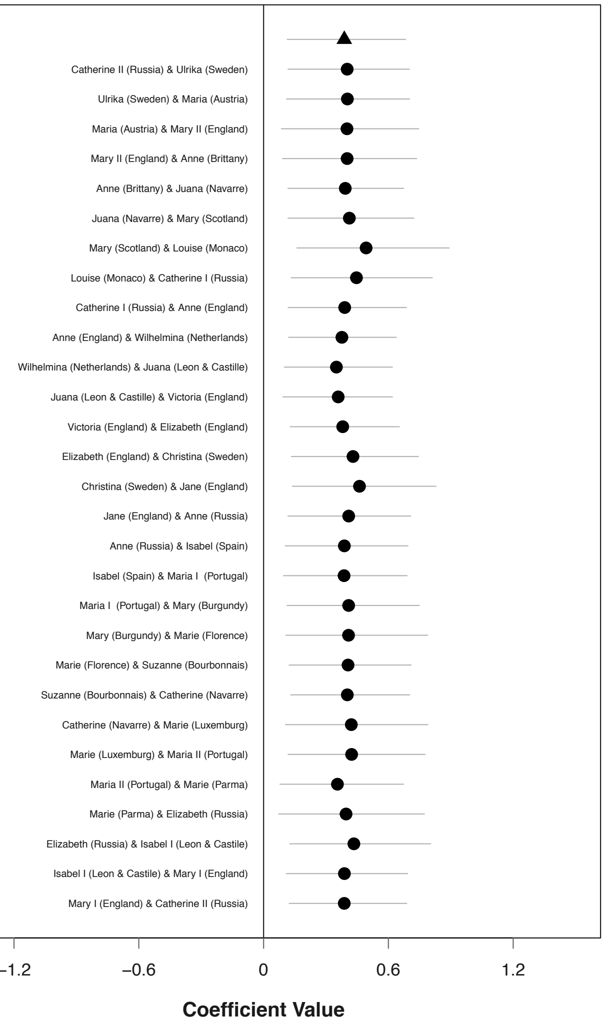
Notes: This figure shows the circumstances of the previous monarchs for the 29 queens in our sample. For example, the previous monarchs had children in 21 of 29 queen cases and lacked children in 8 cases. Among these latter 8 cases, the previous monarchs had sisters in 6 cases and had no sister in 2 cases. The 5 cases where all male children were dead at accession when the previous monarchs had a first born male child includes one case where the death year of one of the sons is missing. Horizontal 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 first born child among previous monarchs.

Figure 3
Dropping One Queen



Notes: This figure plots coefficient estimates and 90 percent 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 1000 replications) using 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.

Figure 4
Dropping Two Queens



Notes: This figure plots the coefficient estimates and 90 percent 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 1000 replications) using the Wild Bootstrap procedure. The estimate shown with the triangle does not drop any queens. The name of the dropped queens appear to the left of all remaining estimates.

Table 1
Summary Statistics of Key Variables

VARIABLES	Obs	Mean	Std.Dev	Min	Max
Dependent Variables					
In War	3,586	0.296	0.457	0	1
Reign Entered War	3,586	0.240	0.427	0	1
Reign Continued War	3,586	0.056	0.230	0	1
Polity Attacked	3,586	0.130	0.336	0	1
Polity was Attacked	3,586	0.166	0.372	0	1
Reign Length	3,586	30.75	15.68	1	66
Monarch Killed	3,058	0.145	0.352	0	1
Polity Ends	3,586	0.085	0.279	0	1
Polity Merged or Partitioned	3,559	0.067	0.250	0	1
Polity Becomes Republic	3,559	0.0008	0.029	0	1
Independent Variables					
Queen	3,586	0.160	0.366	0	1
Sole Queen	3,586	0.131	0.337	0	1
First-born male (of previous monarchs)	3,586	0.502	0.500	0	1
Sister (of previous monarchs)	3,586	0.740	0.438	0	1
First-born missing gender (of previous monarchs)	3,586	0.019	0.137	0	1
Missing gender sibling (of previous monarchs)	3,586	0.064	0.245	0	1
At least one legitimate child without missing birth year (of previous monarchs)	3,586	0.821	0.383	0	1
At least one legitimate child with missing birth year (of previous monarchs)	3,586	0.118	0.323	0	1
Total Siblings (of previous monarchs)	3,586	4.302	4.145	0	22
Married in Reign	3,586	0.795	0.404	0	1
Married in Reign Missing	3,586	0.049	0.216	0	1
Spouse-Prior Belligerence	3,499	0.037	0.188	0	1
Accession Age	3,586	22.40	15.43	0	66
Accession Age Missing	3,586	0.095	0.293	0	1
Co-rulers unrelated (among previous monarchs)	3,586	0.007	0.088	0	1

Table 2
The Instruments

Male First Born (Previous Monarchs)			Sister (Previous Monarchs)		
Yes	84	54%	Yes	138	72%
No	71	46%	No	55	28%

Notes: The left side of the table shows the fraction of cases in which the previous monarchs had a male first-born child among the set of cases in which they had any children. The right side of the table shows the fraction of cases in which the previous monarchs had a sister.

Table 3
Queens and War Participation: OLS and IV Results

VARIABLES	(1) In War	(2) In War	(3) In War	(4) In War
Queen	0.107*	0.130*	0.400*	0.388*
	[0.016]	[0.011]	[0.039]	[0.022]
Observations	3,586	3,586	3,586	3,586
R-squared	0.439	0.460	0.399	0.437
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}			-0.239**	-0.168*
			[0.01]	[0.033]
$Sister_{r-1}$			-	0.288**
				[0.009]
Observations			3,586	3,586
R-squared			0.302	0.515
Mean of DV			0.160	0.160
Standard Controls			Y	Y
Flexible Sibling Controls				Y

Notes: Variables not shown include polity and decade fixed effects. FBMr-1 denotes previous monarchs had a First-Born Male. Sisterr-1 denotes previous monarchs had a sister. Standard errors are clustered at the broad reign level, and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. Mean of DV is the mean of the dependent variable in the regression sample. Column (4) presents the Montiel-Pfluegger Effective F-statistic and 5% critical value.** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table 4
Examining Instrument Validity

	(1)	(2)	(3)	(4)	(5)	(6)
	Falsifications - Queen Polities		*Accounting for War in Previous Reign*		*Falsifications - Non-queen Polities*	
VARIABLES	**In War**	**In War**	**In War - Previous Reign**	**In War**	**In War**	**In War**
FBM_r	-0.021	-0.010	-	-	-	-
	[0.624]	[0.848]				
$Sister_r$	0.044	0.022	-	-	-	-
	[0.328]	[0.698]				
Queen			0.066	0.390*		
			[0.840]	[0.022]		
FBM_{r-1}	-	-	-	-	-0.068	-0.108
					[0.438]	[0.222]
$Sister_{r-1}$	-	-	-	-	-0.049	0.053
					[0.510]	[0.501]
Observations	3,319	3,319	3,515	3,515	2,903	2,903
R-squared	0.430	0.437	0.750	0.441	0.399	0.425
Mean of DV	0.311	0.311	0.583	0.298	0.275	0.275
Standard Controls	Y	Y	Y	Y	Y	Y
Flexible Sibling Controls		Y	Y	Y		Y
War in Previous Reign				Y		
Sample	Queen Polities	Queen Polities	Queen Polities	Queen Polities	Non-Queen Polities	Non-Queen Polities

Notes: Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad reign level, and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. FBMr-1 denotes previous monarchs had a First-Born Male while FBMr denotes current period monarchs have a first born male. Sisterr-1 denotes previous monarchs had a sister while Sisterr denotes current period monarchs have a sister.** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table 5
Reign Entry and Aggression

	(1)	(2)	(3)	(4)	(5)
VARIABLES	**In War**	**Reign Entered War**	**Reign Continued War**	**Polity Attacked**	**Polity was Attacked**
Queen	0.388*	0.355†	0.033	0.425*	-0.037
	[0.022]	[0.054]	[0.787]	[0.04]	[0.802]
Observations	3,586	3,586	3,586	3,586	3,586
R-squared	0.437	0.326	0.230	0.163	0.327
Mean of DV-war years	-	0.812	0.188	0.439	0.561
Mean of DV	0.296	0.240	0.056	0.130	0.166
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

Notes: Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad reign level, and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table 6
Effects by Marital Status

VARIABLES	(1) Polity Attacked	(2) Polity was Attacked	(3) Polity Attacked	(4) Polity was Attacked
Queen	0.013	0.348**	-0.078	0.420*
	[0.94]	[0.009]	[0.77]	[0.033]
Queen x Married	0.565†	-0.425†	0.704†	-0.513†
	[0.094]	[0.070]	[0.077]	[0.087]
Married	-0.053	0.091	-0.085	0.069
	[0.678]	[0.530]	[0.593]	[0.652]
Test of Queen + Queen x Married	0.578†	-0.077	0.626†	-0.093
	[0.059]	[0.695]	[0.069]	[0.686]
Observations	3,586	3,586	3,499	3,499
R-squared	0.193	0.342	0.203	0.352
Mean of DV-war years	0.439	0.561	0.433	0.567
Mean of DV	0.130	0.166	0.126	0.165
Specification	IV	IV	IV	IV
Instruments	FBM_{r-1} & $Sister_{r-1}$ & FBM_{r-1} x Married & $Sister_{r-1}$ x Married	FBM_{r-1} & $Sister_{r-1}$ & FBM_{r-1} x Married & $Sister_{r-1}$ x Married	FBM_{r-1} & $Sister_{r-1}$ & FBM_{r-1} x Married & $Sister_{r-1}$ x Married	FBM_{r-1} & $Sister_{r-1}$ & FBM_{r-1} x Married & $Sister_{r-1}$ x 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

Notes: All columns include polity and decade fixed effects. Standard errors are clustered at the broad reign level, and bootstrapped (with 1000 replications) using 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 x 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 prior to marriage. It is interacted with the queen variable as well as the instruments in columns (3)-(4). ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table 7
Effects on Internal Stability

VARIABLES	(1) Reign Length	(2) Monarch Killed	(3) Polity Ends	(4) Polity Merged or Partioned	(5) Polity Becomes Republic
Queen	4.324	0.086	-0.036	-0.076	-0.024
	[0.71]	[0.813]	[0.894]	[0.763]	[0.461]
Observations	3,586	3,058	3,586	3,559	3,559
R-squared	0.425	0.408	0.567	0.571	0.022
Mean of DV	30.746	0.145	0.085	0.067	0.001
Standard Controls	Y	Y	Y	Y	Y
Flexible Sibling Controls	Y	Y	Y	Y	Y

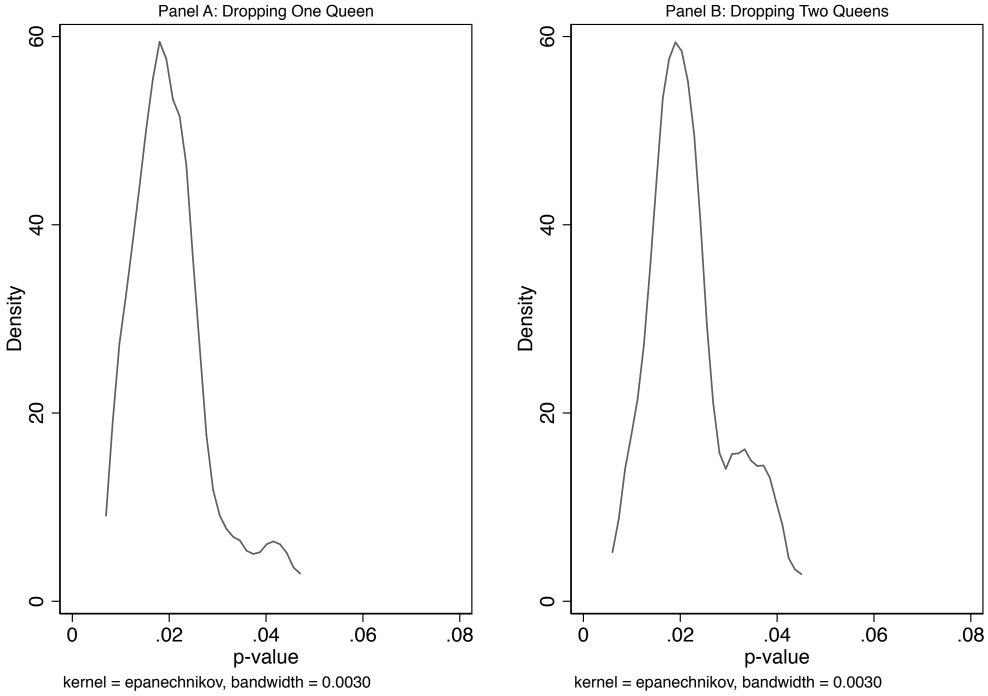
Notes: Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad reign level, and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table 8
Effects by Timing and Age

VARIABLES	(1) In War	(2) Polity Attacked	(3) Polity was Attacked	(4) In War	(5) Polity Attacked	(6) Polity was Attacked	(7) In War	(8) Polity Attacked	(9) Polity was Attacked
Queen	0.407*	0.416*	-0.010	0.476**	0.418*	0.058	0.336†	0.196	0.140
	[0.02]	[0.036]	[0.942]	[0.01]	[0.037]	[0.713]	[0.077]	[0.3]	[0.276]
Queen x After First Two Years of Reign	-0.198	0.070	-0.269	-	-	-	-	-	-
	[0.485]	[0.705]	[0.341]						
Queen x Second Half of Reign	-	-	-	-0.155	0.020	-0.175	-	-	-
				[0.442]	[0.893]	[0.346]			
Queen x Accession Age	-	-	-	-	-	-	0.014	0.026†	-0.012
							[0.433]	[0.091]	[0.258]
Observations	3,586	3,586	3,586	3,586	3,586	3,586	3,586	3,586	3,586
R-squared	0.441	0.172	0.324	0.443	0.173	0.348	0.463	0.258	0.372
Mean of DV	0.296	0.130	0.166	0.296	0.130	0.166	0.296	0.130	0.166
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			

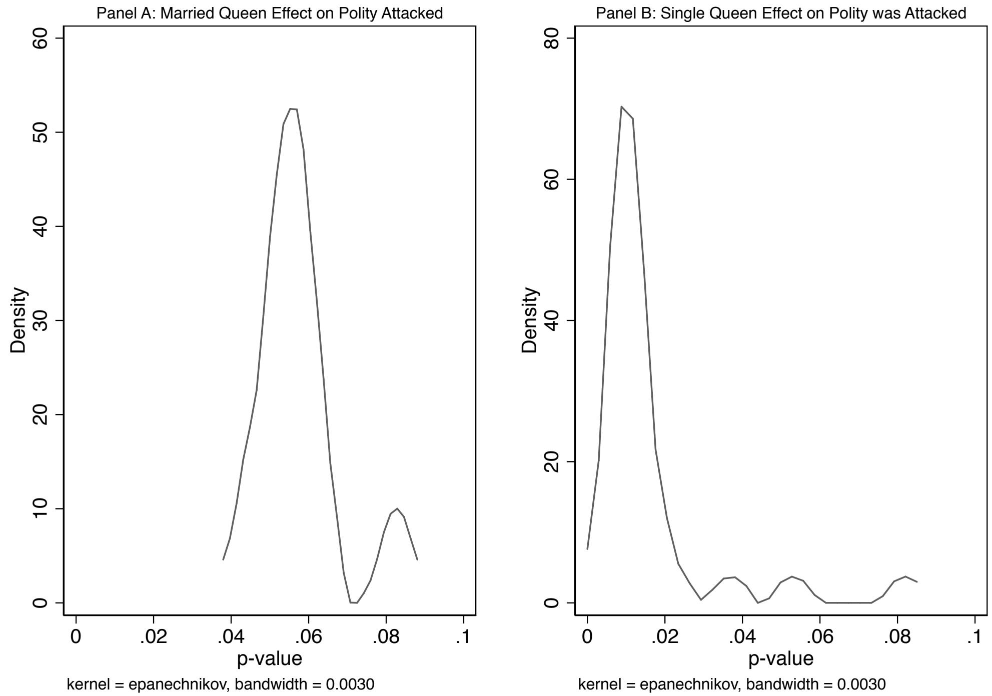
Notes: Variables not shown include polity and decade fixed effects. The interacted flexible sibling controls are the interactions between the fixed effects for total siblings and the following variables: After First Two Years of Reign (columns 1-3), Second Half of Reign (columns 4-6), and Accession Age (columns 7-9). Standard errors are clustered at the Broad Reign level, and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Figure A.1
Sensitivity Analysis: Queen Effects on War Participation



Notes: These figures plot the distribution of bootstrapped p-values from estimates of the queen variable in regressions of *In War* dropping each queen one at a time (in the left panel) and dropping two queens at a time (in the right panel). Standard errors have been clustered at the broad reign level and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. Kernel density plots are shown with kernels and bandwidths as reported below each panel.

Figure A.2
Sensitivity Analysis: Marital Effects on War Aggression Outcomes



Notes: The left panel shows the distribution of bootstrapped p-values associated with *Queen + Queen x Married* in regressions of the *Polity Attacked* outcome, dropping each queen one at a time. The right panel shows the 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 1000 replications) using the Wild Bootstrap procedure. Kernel density plots are shown with kernels and bandwidths as reported below each panel.

Table A.1
Queen & Non-Queen Polities

Polities with Queens	Non-Queen Polities
Burgundy and the Low Countries	Modern Bulgaria
Portugal	Modern Greece
Spain	Modern Serbia and Yugoslavia
Austria	The Este in Ferrara and Modena
The Duchy of Bourbonnais	The Gonzaga in Mantua
The Duchy of Brittany	The Holy Roman Empire
The Duchy of Lorraine	The House of Liechtenstein
The Farnese and Bourbons in Parma	The House of Savoy
The Grand Duchy of Luxemburg	The Kingdom of Bohemia
The Kingdom of England	The Kingdom of Denmark
The Kingdom of Navarre (Pamplona)	The Kingdom of France
The Kingdom of Scotland	The Kingdom of Hungary
The Kingdom of Sweden	The Kingdom of Montenegro
The Kingdoms of Leon and Castile	The Kingdom of Naples and Sicily
The Medici and their Successors in Florence	The Kingdom of Poland
The Modern Netherlands	The Kingdom of the Belgians
The Principality of Monaco	The Montefeltro and Della Rovere in Urbino
The Tsardom of Russia	The Visconti and Sforza in Milan

Notes: "Polities with Queens" refer to the 18 polities in our main sample which had at least one queen during our study period. "Non-Queen Polities" refer to the 18 additional polities in our auxiliary sample used for falsification tests.

Table A.2
Sole Queen Effects

VARIABLES	(1) **In War**	(2) **In War**	(3) **Polity Attacked**	(4) **Polity was Attacked**
Queen Ruling as Sole Monarch	0.463*	0.472*	0.031	0.374**
	[0.017]	[0.017]	[0.834]	[0.007]
Sole Queen x Married	-	-	0.788†	-0.532†
			[0.098]	[0.094]
Married	-	-	-0.022	0.109
			[0.877]	[0.472]
Test of Queen + Queen x Married	-	-	0.819†	-0.158
			[0.079]	[0.623]
Observations	3,482	3,454	3,454	3,454
R-squared	0.423	0.424	0.133	0.339
Mean of DV	0.298	0.298	0.131	0.168
Specification	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} & $Sister_{r-1}$
Standard Controls	Y	Y	Y	Y
Sample Restriction	No Co-ruling Queens	No Co-ruling Monarchs	No Co-ruling Monarchs	No Co-ruling Monarchs
Flexible Sibling Controls	Y	Y	Y	Y
Accession Age			Y	Y

Notes: Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad reign level, and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. Bootstrapped p-values are shown in square brackets. Columns (3)-(4) also include a test for the significance of the sum of the coefficients on Queen + Queen x 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. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table A.3
Additional Checks on Instrument Validity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Falsification - Queen polities		*Accounting for War in Prev Reign*		*Falsification - Non-Queen Polities*		*All wars*	*No succ wars*
VARIABLES	**In War**	**In War**	**In War - Previous Reign**	**In War**	**In War**	**In War**	**In War**	**In War**
Queen	-	-	0.058	0.469**	-	-	0.480**	0.480*
			[0.846]	[0.007]			[0.007]	[0.021]
FBM_r	-0.034	-0.026	-	-	-	-	-	-
	[0.410]	[0.558]						
$Sister_r$	0.037	0.024	-	-	-	-	-	-
	[0.36]	[0.705]						
FBM_{r-1}	-	-	-	-	-0.071	-0.109	-	-
					[0.416]	[0.212]		
$Sister_{r-1}$	-	-	-	-	-0.050	0.048	-	-
					[0.499]	[0.543]		
Observations	3,487	3,487	3,822	3,822	2,903	2,903	3,901	3,586
R-squared	0.428	0.434	0.750	0.422	0.399	0.425	0.413	0.394
Mean of DV	0.303	0.303	0.541	0.286	0.275	0.275	0.284	0.277
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	Queen Polities	Queen Polities	Queen Polities	Queen Polities	Non-Queen Polities	Non-Queen Polities	Queen Polities	Queen Polities

Notes: Variables not shown include polity and decade fixed effects. Legit/Illegit FBMr-1 indicaites if the previous monarchs had a first born child, legitimate or illegitimate, who was male. This is used as an instrument in columns 1-7, which also control for whether the previous monarchs had any legitimate or illegitimate children disaggregated by missing birth years. In column 8, wars of succession are removed from the sample. Standard errors are clustered at the broad reign level, and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table A.4
Summary Statistics of Additional Variables

VARIABLES	Obs	Mean	Std.Dev	Min	Max
Panel-level:					
In War	3,586	0.296	0.457	0	1
In Balance of Power War	3,586	0.216	0.412	0	1
In Defensive War	3,586	0.017	0.128	0	1
In Imperial War	3,586	0.035	0.183	0	1
In Civil War (All)	3,586	0.075	0.263	0	1
In Civil War (Multiple Polities)	3,586	0.052	0.222	0	1
In Civil War (Singe Polity)	3,586	0.025	0.155	0	1
Reign Length - Previous Reign	3,515	17.81	13.64	1	64
Monarch Killed - Previous Reign	3,125	0.167	0.373	0	1
Categorical aggression (categories 1 = peace; 2= polity was attacked; 3= polity attacked)	3,586	1.426	0.710	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	0.709	1.189	0	6
Dead female children (of previous monarchs)	3,565	0.701	1.290	0	9
Dead male siblings (current monarchs)	3,581	0.784	1.179	0	6
Dead female siblings (of current monarchs)	3,574	0.603	1.085	0	5
Reign-level:					
In War Years	193	5.503	8.458	0	44
Categorial territorial change (categories 1 = loss; 2= no change; 3=gain)	166	2.036	0.622	1	3
Dyad-level:					
Dyad - In War	37,116	0.0284	0.166	0	1
Queen in any dyad	37,116	0.223	0.416	0	1
Queen in dyad1	37,116	0.117	0.321	0	1
Queen in dyad2	37,116	0.115	0.320	0	1

Table A.5
Other Instrument Sets

VARIABLES	(1) In War	(2) In War	(3) In War	(4) In War	(5) In War
Queen	0.388*	0.313*	0.501*	0.288*	0.313*
	[0.022]	[0.022]	[0.018]	[0.043]	[0.022]
Observations	3,586	3,586	3,586	3,586	3,586
R-squared	0.437	0.442	0.420	0.451	0.449
Mean of DV	0.296	0.296	0.296	0.296	0.296
Instruments	FBM_{r-1} & $Sister_{r-1}$	FBM_{r-1} & $Sister_{r-1}$ & $Sister_{r-1}$ X No $Children_{r-1}$	FBM_{r-1} & $Sister_{r-1}$ & $Sister_{r-1}$ X No $Children_{r-1}$	FBM_{r-1} & $Sister_{r-1}$ & $Sister_{r-1}$ X FBM_{r-1}	FBM_{r-1} & $Sister_{r-1}$ & FBM_{r-1} X Two $Children_{r-1}$
Standard Controls	Y	Y	Y	Y	Y
Flexible Sibling Controls	Y	Y	Y	Y	Y
Flexible Sibling Interacted 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
FIRST STAGE	**Queen**	**Queen**	**Queen**	**Queen**	**Queen**
FBM_{r-1}	-0.168*	-0.178**	-0.162*	0.011	-0.572
	[0.033]	[0.01]	[0.027]	[0.917]	[0.118]
$Sister_{r-1}$	0.288**	0.153	0.140	0.427**	0.259*
	[0.009]	[0.119]	[0.259]	[0.001]	[0.012]
$Sister_{r-1}$ x No Children	-	0.494*	0.583	-	-
		[0.024]	[0.275]		
FBM_{r-1} x $Sister_{r-1}$	-	-	-	-0.241	-
				[0.109]	
FBM_{r-1} x Two or More Children	-	-	-	-	0.476
					[0.162]
Observations	3,586	3,586	3,586	3,586	3,586
R-squared	0.515	0.547	0.598	0.527	0.541
Mean of DV	0.16	0.16	0.16	0.16	0.16
Standard Controls	Y	Y	Y	Y	Y
Flexible Sibling Controls	Y	Y	Y	Y	Y
Flexible Sibling Interacted No Children			Y		

Notes: 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 the equals one if the previous monarchs had two or more legitimate children, and its interaction with whether gender of the first born legitimate child is missing. Standard errors are clustered at the broad reign level, and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table A.6
Robustness Checks with Additional Controls and Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	**In War**	**In War**	**In War**	**In War**	**In War**	**In War**	**In War**	**No. War Participants**	**In War**
Queen	0.289*	0.326*	0.306*	0.411**	0.390**	0.405**	0.450*	-1.216	0.138*
	[0.025]	[0.026]	[0.027]	[0.005]	[0.009]	[0.004]	[0.017]	[0.611]	[0.045]
Observations	3,271	3,214	3,264	3,271	3,214	3,264	3,586	1,180	3539
R-squared	0.440	0.428	0.438	0.458	0.457	0.460	0.428	0.694	0.709
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			
Age at Accession							Y		
Lag Dependent Variable									Y

Notes: Variables not shown include polity and decade fixed effects. In column 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 bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table A.7
Robustness Across Samples

VARIABLES	(1) In War	(2) In War	(3) In War	(4) In War	(5) In War	(6) In War	(7) In War	(8) In War
Queen	0.326*	0.393*	0.385*	0.451*	0.310†	0.275†	0.647**	0.385*
	[0.044]	[0.03]	[0.018]	[0.027]	[0.098]	[0.061]	[0.009]	[0.015]
Observations	3,167	3,186	3,559	3,455	3,229	3,236	1,684	6,489
R-squared	0.489	0.454	0.439	0.422	0.460	0.463	0.343	0.402
Mean of DV	0.272	0.267	0.294	0.307	0.296	0.286	0.398	0.286
Sample	Drop England	Drop Russia	Drop Leon and Castile	Drop Navarre	Drop Portugal	Drop Sweden	Drop all 1 Queen Polities	Add Non-Queen Polities
Specification	IV	IV	IV	IV	IV	IV	IV	IV
Instruments				FBM_{r-1} & $Sister_{r-1}$				FBM_{r-1} & $Sister_{r-1}$ Interacted
Standard Controls	Y	Y	Y	Y	Y	Y	Y	Y
Flexible Sibling Controls	Y	Y	Y	Y	Y	Y	Y	Y

Notes: Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad reign level, and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level. 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 non-queen 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.

Table A.8
Reign Level Specifications

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Main Effects			*Acounting for War in Previous Reign*		*Falsifications - Queen Polities*		*Falsifications- Non-Queen Polities*		*Territorial Changes*	
VARIABLES		**In War Years**		**In War Years- Previous Reign**	**In War Years**	**In War Years**		**In War Years**		**No Change vs. Loss**	**Gain vs. Loss**
Queen	2.691**	14.146*	-	0.466	13.424*	-	-	-	-	1.991*	2.215*
	[0.008]	[0.019]		[0.959]	[0.015]					[0.025]	[0.009]
Sole Queen	-	-	17.761*	-	-	-	-	-	-	-	-
			[0.02]								
FBM$_{r}$	-	-	-	-	-	-0.098	0.591	-	-	-	-
						[0.935]	[0.648]				
Sister$_{r}$	-	-	-	-	-	1.636	1.489	-	-	-	-
						[0.149]	[0.444]				
FBM$_{r-1}$	-	-	-	-	-	-	-	0.217	-0.302	-	-
								[0.89]	[0.872]		
Sister$_{r-1}$	-	-	-	-	-	-	-	0.157	3.795	-	-
								[0.928]	[0.110]		
Observations	193	193	183	184	184	180	180	149	149	193	193
R-squared											
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	Multi-Nomial Probit IV	
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						

Notes: Variables not shown include polity and majority century fixed effects. Column 3 eliminates co-ruling 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 10-11 estimate a multinomial probit model in which the base term is territorial loss. The frequency of territorial loss, gain and no change are shown in the mean of the DV cell. In all columns indicating IV (including 10 and 11) Queen is instrumented with FBMr-1 and Sisterr-1 which denote whether the previous monarchs had a First-Born Male and whehter they had a sister, respectively. Standard errors are clustered at the broad reign level, and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. Bootstrapped p-values are shown in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table A.9
Dyadic Specifications

VARIABLES	(1) At War	(2) At War	(3) At War
Queen in either polity of dyad	0.110**	0.146**	-
	[0.001]	[0.000]	
Queen in polity 1 of dyad	-	-	0.078
			[0.169]
Queen in polity 2 of dyad	-	-	0.101*
			[0.011]
Joint Test - Queen in polity 1 / Queen in polity 2	-	-	[0.004]**
Observations	37,116	37,116	37,116
Mean DV	0.028	0.028	0.028
R-squared	0.145	0.132	0.169
Specification	IV	IV	IV
Instruments	FBM_{r-1} & $Sister_{r-1}$ in either dyad		FBM_{r-1} & $Sister_{r-1}$ 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	-

Notes: 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 columns 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-Pfluegger Effective F-statistic and 5% critical value. Standard errors are clustered at the level of dyad pairings, and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. Column 3 also presents the p-value associated with the test of joint significance for Queen in polity 1 / Queen in polity 2. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table A.10
Disaggregating Effects by Type of War

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	**Balance of Power Wars**	**Imperial Wars**	**Defensive Wars**	**Civil Wars**		
				All	*Multiple Polities*	*Single Polity*
Queen	0.317†	0.163	-0.048	0.104	0.092	0.022
	[0.076]	[0.382]	[0.499]	[0.447]	[0.435]	[0.822]
Observations	3,586	3,586	3,586	3,586	3,586	3,586
Mean of DV	.216	.035	.017	.074	.052	.025
R-squared	0.404	0.12	0.259	0.288	0.248	0.303
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

Notes: Variables not shown include polity and decade fixed effects. Standard errors are clustered at the broad reign level, and bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table A.11

Multinomial Specification for Aggression Outcomes

	(1)	(2)
VARIABLES	**Polity was Attacked vs. Peace**	**Polity Attacked vs. Peace**
Queen	2.243	3.957**
	[0.568]	[0.001]
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

Notes: 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 bootstrapped (with 1000 replications) using the Score Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table A.12
Robustness Checks on Marital Effects

VARIABLES	(1) Polity Attacked	(2) Polity was Attacked	(3) Polity Attacked	(4) Polity was Attacked
Queen	0.010	0.352**	0.033	0.396*
	[0.957]	[0.01]	[0.877]	[0.014]
Queen x Married	0.564†	-0.420†	0.638†	-0.534*
	[0.074]	[0.071]	[0.065]	[0.036]
Married	-0.058	0.096	-0.120	0.097
	[0.666]	[0.525]	[0.464]	[0.509]
Test of Queen + Queen x Married	0.574*	-0.068	0.671*	-0.138
	[0.045]	[0.703]	[0.048]	[0.504]
Observations	3,574	3,574	3,487	3,487
R-squared	0.201	0.341	0.210	0.357
Mean of DV	0.13	0.164	0.126	0.163
Specification	IV	IV	IV	IV
Instruments	FBM_{r-1} & $Sister_{r-1}$ & FBM_{r-1} x Married & $Sister_{r-1}$ x Married	FBM_{r-1} & $Sister_{r-1}$ & FBM_{r-1} x Married & $Sister_{r-1}$ x Married	FBM_{r-1} & $Sister_{r-1}$ & FBM_{r-1} x Married & $Sister_{r-1}$ x Married	FBM_{r-1} & $Sister_{r-1}$ & FBM_{r-1} x Married & $Sister_{r-1}$ x 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

Notes: All columns include polity and decade fixed effects. All specficiations drop 3 weak queens: Juana la Loca of Leon & 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 prior to marriage. It is interacted with the queen variable as well as the instruments in columns (3)-(4). Standard errors are clustered at the broad reign level, and bootstrapped (with 1000 replications) using 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 x Married. Bootstrapped p-values of this test are also presented in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table A.13
Accounting for Internal Stability in Previous Reign

	(1)	(2)	(3)	(4)	(5)	(6)
	Internal Stability - Previous Reign		*Effects On War Participation - Accounting for Internal Stability*			
VARIABLES	**Reign Length - Previous Reign**	**Monarch Killed - Previous Reign**	**In War**	**In War**	**In War**	**In War**
Queen	-5.060	0.058	0.393*	0.334†	0.360*	0.356*
	[0.689]	[0.851]	[0.017]	[0.055]	[0.02]	[0.03]
Observations	3,515	3,125	3,515	3,125	3,515	3,515
R-squared	0.308	0.421	0.439	0.473	0.453	0.455
Mean of DV	17.806	0.167	0.298	0.307	0.298	0.298
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

Notes: Variables not shown include polity and decade fixed effects. Previous Monarch Killed-Missing is one if the previous monarch killed variable is missing. It is included in columns 5-6 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 bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.

Table A.14
Robustness to Year Fixed Effects

VARIABLES	(1) In War	(2) In War	(3) Reign Entered War	(4) Reign Continued War	(5) Polity Attacked	(6) Polity was Attacked	(7) Polity Attacked	(8) Polity was Attacked
Queen	0.375*	0.390*	0.333†	0.042	0.423*	-0.048	-0.010	0.341*
	[0.034]	[0.022]	[0.068]	[0.747]	[0.048]	[0.754]	[0.953]	[0.011]
Queen x Married	-	-	-	-	-	-	0.593†	-0.431†
							[0.088]	[0.068]
Married	-	-	-	-	-	-	-0.081	0.081
							[0.537]	[0.593]
Test of Queen + Queen x Married	-	-	-	-	-	-	0.583†	-0.091
							[0.072]	[0.645]
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

VARIABLES	Reign Length	Monarch Killed	Polity Ends	Polity Merged or Paritioned	Polity Becomes Republic	Polity Attacked	Polity Attacked	Polity Attacked
Queen	3.164	0.045	-0.027	-0.073	-0.021	0.414*	0.427*	0.184†
	[0.785]	[0.912]	[0.907]	[0.773]	[0.452]	[0.046]	[0.032]	[0.084]
Queen X After 1st Two Years of Reig	-	-	-	-	-	0.078	-	-
						[0.702]		
Queen X Second Half of Reign	-	-	-	-	-	-	-0.001	-
							[0.997]	
Queen x Accession Age	-	-	-	-	-	-	-	0.028†
								[0.084]
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	

Notes: Variables not shown include polity and year fixed effects. In column 1, the KP first stage F-statistic = 9.485. In columns 6,7 & 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 bootstrapped (with 1000 replications) using the Wild Bootstrap procedure. In all columns, bootstrapped p-values are shown in square brackets. Columns 7 & 8 (top panel) also include a test for the significance of the sum of coefficients on Queen + Queen x Married. The bootstrapped p-value of this test is presented in square brackets. ** is significant at the 1% level, * is significant at the 5% level, † is significant at the 10% level.