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QUEENS

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ABSTRACT

Are states led by women less prone to conflict than states led by men? We answer this question by examining the effect of female rule on war among European polities over the 15th-20th centuries. We utilize gender of the first born and presence of a female sibling among previous monarchs as instruments for queenly rule. We find that polities led by queens were more likely to engage in war than polities led by kings. Moreover, the tendency of queens to engage as aggressors varied by marital status. Among unmarried monarchs, queens were more likely to be attacked than kings. Among married monarchs, queens were more likely to participate as attackers than kings, and, more likely to fight alongside allies. These results are consistent with an account in which marriages strengthened queenly reigns because married queens were more likely to secure alliances and enlist their spouses to help them rule. Married kings, in contrast, were less inclined to utilize a similar division of labor. These asymmetries, which reflected prevailing gender norms, ultimately enabled queens to pursue more aggressive war policies.

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A data appendix is available at http://www.nber.org/data-appendix/w23337

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 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, ultimately have to consider how war affects their state as a whole. And, setting overly conciliatory war policies would weaken their state relative to other states. As a consequence, war policies set by female leaders may be similar to war policies set by male leaders.[1]

A state's aggression in the foreign policy arena, and its 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 as a consequence of 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 historically, exploiting features of hereditary succession to surmount this identification chal-

[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].

lenge. We focus on the 15th-20th centuries and polities that had at least one female ruler during this period. 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.

Importantly, our paper analyzes the question of whether states led by women are less prone to engage in conflict than states 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 over 1480-1913. 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 27% *more* likely to participate in inter-state conflicts, compared to polities ruled by kings. These estimates are economically important, representing a doubling over mean war participation over this period. In contrast, we find that queens were no more likely to experience civil wars or other types of internal instability.

An obvious concern with our IV analysis is that the lack of a first-born child who is male

[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 et al. [2014].

may itself trigger conflicts over succession, regardless of whether a woman comes to power. However, we conduct a number of falsification tests which show that the 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 circumstances.

A second concern 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 are able to control for all of the total siblings of the previous monarchs and show that the results are unaffected if we remove wars of succession from the sample. Importantly, we demonstrate that the results are insensitive to dropping any particular queen, and any particular polity. In addition, we show the robustness of our results to numerous other controls and specifications, including a reign level specification which collapses the annual data to the reign level, as well as a dyadic specification.

We examine two potential accounts of why female ruler may have increased war participation. 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 were primarily with the aim of expanding territory and economic power [Mearsheimer, 2001, Goertz and Diehl, 2002, Copeland, 2015]. Wars of this nature demanded financing, spurring states to develop a broader fiscal reach [Besley and Persson, 2009, Karaman and Pamuk, 2013, Gennaioli and Voth, 2015]. As a result, states undertaking wars required greater capacity. Queenly reigns may have had greater capacity than kingly reigns for two reasons, both of which themselves reflect prevailing gender norms from this period. First, queenly reigns may have been able to secure more military alliances. While marriage brought alliances for both male and female monarchs, male spouses were typically more involved with the military of their home countries (than female spouses). This was a direct

reflection of taboos on female military leadership during this time period. As a consequence, male spouses were also plausibly better positioned to cement alliances on behalf of queens.

Second, queens often enlisted their spouses to help them rule, in ways that kings were less inclined to do with their spouses — an asymmetry again reflects gender identity norms. For example, queens put their spouses in charge of the military or economic reforms, which effectively meant there were two monarchs overseeing state affairs, as compared to one. This greater spousal division of labor may also have enhanced the capacity of queenly reigns, enabling queens to pursue more 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, and to fight alongside allies. 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 [Bertrand et al., 2015b].[3]

We also consider and present evidence against several alternative accounts. Queens may also have fought to signal they were militarily strong, which is 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 participation 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. A second alternative account suggests that it was not the queen, but a persuasive male advisor (such as a foreign minister), who was actually responsible for

[3]Bertrand et al. [2015b] finds that gender identity norms creates an aversion to wives earning more than husbands in the modern period. 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.

setting war policy in queenly reigns. In this were the case, the gender effect on war should be even larger among monarchs who acceded at a younger age, since these monarchs are more likely to be influenced by advisors. However, we observe no differential effect based on age of accession, which casts doubt on the idea that war participation was driven by advisors. Rather we interpret our results as reflecting the direct consequence of having a queen, and associated decisions made by the monarchs themselves.

In broad terms, we see our results providing evidence for the idea that leaders matter [Jones and Olken, 2005, Pande, 2003], including in shaping policy outcomes. Most proximate to our paper are studies that examine female leadership and inter-state war. These studies have found mixed results. For example, 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, while having a higher fraction of female legislators is associated with lower defense spending and conflict. Other studies have also found that more female legislators are associated with less external conflict [Caprioli, 2000, Caprioli and Boyer, 2001, Regan and Paskeviciute, 2003]; that female voters are less likely to support the use of force internationally [Conover and Sapiro, 1993, Shapiro and Mahajan, 1986, Jelen et al., 1994, Wilcox et al., 1996, Eichenberg, 2003]; and that female leaders and greater gender equity is correlated with lower rates of internal conflicts [Caprioli, 2000, Melander, 2005, Fearon, 2010]. These results may partly reflect the greater willingness to elect female leaders during times of peace. Owing to this concern, we exploit a plausibly exogenous source of variation in female rule. By focusing our analysis on war over the 15th-20th centuries, we also take an identification-based approach to analyzing history [Nunn, 2009].

Our paper fits into the broader literature of how female political leadership affects public policies, including spending patterns [Chattopadhyay and Duflo, 2004, Breuning, 2001] education [Clots-Figueras, 2012, Beaman et al., 2012] and corruption [Brollo and Troiano, 2016]; as well as how female corporate leadership affects firms outcomes [Matsa and Miller, 2013, Bertrand et al., 2015a, Ahern and Dittmar, 2012].

It also relates to the literature examining how female socialization affects male behav-

ior. These studies have shown how mothers influence their sons' labor market outcomes [Fernández et al., 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].

Our analysis is also related to 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 analysis.[6]

Few papers have systematically examined the determinants of conflict historically. An exception is Iyigun et al. [2017], which shows how conflict responded to climate change over 1400-1900, given its effects on agricultural production. 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], and demonstrated how modern day political and economic development reflect historical conflict and military competition between states [Dincecco and Prado, 2012, Voigtländer and Voth, 2013a,b]. In contrast, our goal is to examine conflict incidence historically, and assess whether gender played a role in shaping the conflict trajectory of European polities.

[4] Fernández et al. [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 et al. [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.

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

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.

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... [Jansen, 2002]."

These perceptions may have led other leaders to view queens as easy targets of attack. Take the case of King Frederick II of Prussia who declared that "no woman should ever be allowed to govern anything", and who has been described by historians as a "notorious misogynist" [Monter, 2012, p. 166]. Frederick's perception of women as incapable rulers fueled his sense that it would be easy to seize Austrian territory, when it came under the rule of Queen Maria Theresa in 1745. A month after Maria Theresa acceded, Frederick invaded Silesia, the richest of the provinces within her territory [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. Both factors became especially important with the advent of the "Military Revolution" in the 1500s, which introduced new military technologies and spurred larger militaries, making war more expensive. For example, the widespread use of cannons led to the use of stronger, more costly fortifications, which were required to withstand cannon fire [Gennaioli and Voth, 2015].[7]

Army sizes also grew with new forms of fortification and gunpowder technology [Hoffman, 2011, Roberts, 1955, White, 1962, Bean, 1973].[8] And, during this period, many countries introduced standing armies and permanent navies, with professional soldiers trained on an ongoing basis. 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]. Larger armies with professional soldiers required greater military management, as well as greater financing. The need for war financing led to larger more centralized states, with more extensive fiscal infrastructure for collecting revenue [Tilly, 1992, Gennaioli and Voth, 2015, Karaman and Pamuk, 2013]. Ultimately, fighting wars effectively required greater capacity, in both collecting revenue and overseeing large armies.

The demands of war and its implications for state capacity point to another reason why female rule may have altered their states tendency to participate in wars: female reigns may have had greater capacity to carry out war. There are two ways in which this greater capacity could have emerged, both of which reflect prevailing gender norms of this time period. First, queenly reigns may have been able to forge more military alliances. While marriage brought alliances for both male and female monarchs, male spouses were typically more engaged with military matters in their home countries than female spouses – often

[7] For example, engineers devised the *trace italienne* fortification to protect cities but these were very expensive to construct.

[8] This trend continued into the 19th century, with military size spiking after the introduction of railroads in 1859 [Onorato et al., 2014].

because they oversaw wars in their home countries prior to marriage or served as ranking officers in the military of their home countries, which remained taboo for females. This direct involvement of male spouses with military affairs of the home country plausibly put them in a better position to cement alliances with their spouses country. Alliances, in turn, served to strengthen the fighting position of a polity, by spreading the burden and costs of fighting over numerous partners.

Second, queens may have utilized their spouses to a greater degree in helping them rule. Queens often put their male spouses in charge of official state matters, which kings were less inclined to do with their female spouses. This asymmetry again reflected prevailing gender norms, as it was more acceptable for male spouses to hold these positions and help their spouses govern, than it was for female spouses to be allocated such positions [Beem and Taylor, 2014, p. 4]. This asymmetry may have been consequential for war participation since greater division of labor under queenly reigns could have freed up time and resources for queens to pursue additional policy objectives such as more aggressive war policies.

There are numerous examples of queens putting their spouses in positions of power. Since women could not serve as heads of militaries, queens would often appoint their husbands to this role, and in many cases, their 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].

Many male spouses (called king consorts) played critical roles in military conquests, even if they were not official heads of militaries. 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 the Kingdoms of Leon and Castile with Isabella I over 1474-1504, also played an essential role. Ferdinand helped Isabella defeat her niece, Joan of Castile, who challenged her succession. He also led the Spanish conquest of Granada, expunging the last Islamic state from Spanish soil, and was key in engineering Spain's conquest of the new world.

Though the degree of direct involvement in wars varied across reigns, king consorts were typically involved in governing some aspect of state affairs. For example, some spouses 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 the Austrian monarchy and raised money for an army during the 1740s when his wife Maria Theresa was its ruler [Beales, 2014].

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. In short, when queens put their spouses into positions of power, the polity in some sense, received the benefit of oversight from two monarchs.

Spouses played a unique role in two regards, compared to other family members or advisors. Spouses helped solve the ages old problem of who to trust ruling, since most polities had laws in place that prevented spouses from becoming monarchs and taking power in their spouses's place, unless they were already designated an official co-monarch at the start of the reign.[9] This is in contrast to siblings, who could directly contest power. In addition, spouses could bring with them the alliance of another country, which immediate family members, or advisors who did not originate from royal families, could not provide. Thus, more alliances, and support through spousal division of labor, may have strengthened the overall capacity of queenly reigns, enabling hem to participate in wars more aggressively.

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

[9]There were 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.

lead to greater participation in wars in which the polity is the aggressor. This effect should be especially large for married queens, relative to single queens or kings. In addition, if queens who have the support of a spouse are best positioned to forge alliances, married queens should participate disproportionately in wars in which their polity is fighting alongside an ally.

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 war data is 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 Data Appendix.

3.1 Genealogy Data

Panel Structure—. We use Morby [1989] as the starting point for constructing our polity-year panel. This source provides a list of polities that existed in Europe over this period.[10] 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.[11]

For each polity, Morby provides a chronological listing of rulers, along with the start and end years of their reign. Following this structure, we define a reign as a period in

[10]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.

[11]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.

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.[12]

A monarch can govern in multiple reigns, by ruling alone in one reign and co-ruling with another monarch during another reign.[13] Thus within the 193 reigns, there are 194 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 "Solo 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, i.e., solo queen, 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.[14]

Geneaology Variables—. For each monarch, we are able to gather genealogical information from the Catalog of Royal Family Lineages [Tompsett, 1994], which conveniently follows the same polity and ruler listing as Morby [1989], enabling highly accurate matching. For each ruler, we code the ruler's age at accession, marriage year, marriage dissolution year, and spouse birth and death years. This allows us to track if the rulers were married, and if their

[12]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.

[13]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.

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

spouses were living during their reign. In addition, we record the birth and death year 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 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 often will be 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 differ from monarchs in the last reign. We detail these cases in Section 2 of the data appendix.[15]

We also generate measures of whether the monarchs are married. We define a monarch as married during their reign if he or she has a (living) spouse during any year of their reign. (In cases of co-rule, we consider if either monarch has a spouse during the reign). This marital measure differs from whether the monarch was ever married: He or she may also be unmarried during a reign either because their rule precedes marriage, or because they were married previously, but lost their spouse owing to death or separation. For example, 11% of the rulers in our sample never married, but 24% of the reigns are composed of rulers without spouses.

[15] 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.

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, including **Balance of Power wars**, which are inter-state wars involving European nations[16]; **Defensive wars**, which are inter-state wars between European states and the Ottoman empire; **Imperial wars**, which are colonial conflicts; and **Civil wars** which are internal to a single European nation.

Balance of Power wars are the most prevalent form of conflict, both in terms of the number of wars, and conflict incidence. Our main sample contains 75 balance of power wars, 29 imperial wars, 7 defensive wars, and 28 civil wars. As shown in the descriptive statistics (Table 1), polities find themselves engaged in a Balance of Power war during 21% of the sample years; in Imperial wars during 3% of the years; in Defensive wars during 1% of the years; and in civil wars during 5% of the years. For our initial results examination, we aggregate Balance of Power wars together with Defensive and Imperial wars, to form a comprehensive measure participation in any external conflict. But given their prevalence, we view participation in Balance of Power wars as our main dependent variable.

A natural concern is whether this data is truly comprehensive and measures the full extent of war among European polities over this period. This is challenging to assess since

[16]Balance of power wars almost exclusively take place among European polities. There are a handful of exceptions documented in the Data Appendix. For example, the Russo-Japanese War in 1904-05 also involved Japan, and some wars involved the Ottoman Empire which was based out of what is Turkey today.

there are few other data sources that track participation in wars in a fine-grained manner – i.e., those 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 Data Appendix (Section 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. The concept of the aggressor is conceptually clearest and most precisely measured for Balance of Power wars, which involve European polities, one of which Wright codes as having initiated the war. In contrast, the colonizing power is always assumed to have initiated imperial wars; rebels are always assumed to have initiated civil wars; and no participant is defined as an aggressor in defensive wars [Wright, 1942, p. 637]. This is an additional reason we focus more on participation in Balance of Power wars as our main dependent variable.

As with any aggressor coding in a conflict setting, Wright'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 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.

Allies Coding—. In addition, we also code realized alliances, which we measure as whether polities were participating in wars in which they were fighting alongside another polity.

Specifically, we used web sources that provide a description of the wars to determine which polities in our sample were allies.

3.3 Data on Other Measures of Stability

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 measures whether a monarch was killed or died of other unnatural causes, for the period prior to 1800. We supplemented this information from Eisner [2011] other sources to create an equivalent indicator of whether the monarch died of unnatural causes for the duration of our sample period.[17]

We are also able to examine whether monarchies come to an end via unification, partition, or capture; or transform into republics, based on data recorded by Morby [1989]. Finally, we are able to observe territorial change under each reign, using Centennia Historical Atlas, which provides 10 snapshots each of territory each year, for most of the European polities in our sample. Based on this data, we can observe if the contiguous territory under a polity increased by comparing snapshots at the beginning and end of the ruler's reign.[18] We use this to generate three measures of changes in contiguous territory – an indicator that equals 1 if territory was lost (and 0 otherwise); another indicator that equals 1 if territory was gained (and 0 otherwise); and an ordered variable that equals -1 if territory was lost, 0 if there was no territorial change, and +1 if there was territorial gain.

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.

[17] See the data appendix Section B for greater detail.

[18] 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.

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 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 for which we were able to match the units in the war and genealogy data.[19] These polities are also listed in Table A.1 and shown in Figure 1. The data appendix details why we are missing data for some polities (which are also shown using hatched lines in Figure 1). 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.

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 were Salic law, which governed succession in the French

[19] We include a more detailed discussion of the polities in the auxiliary sample in Section A of the data appendix.

monarchy after 1317. As a consequence no queen regnants, who ruled in their own right, came to power in France.[20]

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 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.[21]

In broad-brush terms, England, Portugal and Russia practiced primogeniture for large durations of their history. However laws of succession also changed substantially over time, even within given polities. These changes may have arisen endogenously in response to 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].[22]

[20] 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.

[21] 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.

[22] 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 potential endogeneity of these laws to the presence of male heirs and conflict make it 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 instead 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 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

Since the oldest son of a monarch had priority in succession, if the previous monarchs had a first-born child who was male, this increased the chance of having the male child become ruler, or having a king during the next period. Conversely, if the oldest daughter was female, or the only child was female, this increased the chance of having a queen, as older daughters would be given priority over other more distantly-related males such as nephews or uncles. For example, Mary, the only child of King Charles the Rash, became queen of Burgundy and the Low Countries in 1477. Marie Adelaide, the eldest child of William IV came to rule the Grand Duchy of Luxembourg in 1912. Based on this idea, we utilize whether the first-born legitimate child of the previous monarch(s) was male as one of our instruments for whether

a queen hold power.

Of course if the previous monarchs did not have any children, or the children died by the time of accession, or were too young to rule at the time of accession, then the throne could pass to a sibling of the monarch instead. If the previous monarchs had a sister then the throne could pass to her, as she would be given priority over more distantly related males. For example, Ulrika Eleanora became ruler of Sweden in 1718. She was preceded by her brother Charles XII, who never married or had children. In addition, all of their brothers had died by the time Charles' reign drew to an end, leaving Ulrika as the heir. Since having a sister enhanced the chance of having a female accede, we also use whether the previous monarchs had a sister as a second instrument for having a queen in power.

While the paragraphs above provide motivating examples, 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. These cases are shown in grey. The figure shows that in 23 of the 29 queen cases (shown in aqua), 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.[23]

The death of these siblings may be endogenous to conflict or circumstances associated with conflict. For example, male children may die at a young age if the reigning monarchs engage in war; or, it is even possible that siblings who are particularly aggressive may end

[23]Section B data appendix provides details on the two cases of queens who came to power with a brother living at accession.

up killing their brothers and sisters to rise to power and subsequently lead their polities to war. Given this potential endogeneity, we avoid using information about the death of children in the instrument sets. For example, we do not examine the gender of only those children who have survived by the time accession occurs. In fact 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, occasionally the lineage changed, and on rare occasions, laws even changed to facilitated non-hereditary succession.[24] 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 a 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.

The second stage of the IV estimation is given by:

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

where W_{prdy} are war-related outcomes in a polity p, reign r, decade d and year y, such as whether the polity is participating 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);

[24] 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.

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.

The first stage is given by:

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

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.

Standard Errors —. The queen variable, as well as the two instruments, vary at the level of the reign. However, war incidence annually may be serially correlated over time within a polity, for example, if particular polities tend to experience spurts of war during particular centuries. To account for this potential serial correlation, we cluster the standard errors at the polity by century level. There are 67 such clusters in our main specifications. In addition, it is worth noting that when a polity finds itself at war, this can either be because it has decided to attack another polity, or because another polity has decided to attack it. This suggests that when examining participation in external wars, the standard errors may even be correlated across polities fighting in the same wars. We account for this in two steps. First, we subject our analysis of aggregate war participation to a specification using dyadic data, in which we cluster our standard errors at the dyad level. Second, we separately examine effects on participation in wars in which the polity was the aggressor. Specifications using this outcome are less subject to concerns that correlated errors across polities fighting on opposite sides affect the estimates, as conflict initiation, by construction, represents the actions of one side in the conflict.

Control Variables —. The *First-Born Male* variable is defined to be zero if the previous

monarchs had no legitimate children. So we additionally control for whether the rulers had any legitimate children with two variables: The first indicates if they had any children for whom birth years are not missing, and the second indicates if they had any children with missing birth years. 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.[25] In addition, we control for three cases in which the previous monarchs are co-rulers who are unrelated to one another, since the gender of the first born may be relatively less informative of the actual successor in these cases.

In all our specifications, we also 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 name of five first-born children. We believe these are very likely to be girls — as Jansen [2002] documents in detail, it is common royal genealogies to provide limited information about female children. However, 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. We additionally control for whether our search filled in any missing demographic information.These controls comprise our standard controls throughout the tables.

Polity Boundaries —. Some of our polities changed boundaries substantially over this period — some polities have come 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

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

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 over time 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 by via unification, partition or capture, or through transformation into a republic.

Exogeneity of Instruments —. We use gender of the first born since this is arbitrarily determined by nature, and thus plausibly exogenous to conflict in the polity. In contrast, whether the monarchs have any child who is male or the number of children who are male could be a function of their effort. For example, rulers could actively continue having children until they have a son. This effort may be correlated with other characteristics such as aggressive behavior, which may, in turn, affect the proclivity to participate in conflict aggressively, as well as the legacy of conflict left behind in the polity.

We also exploit the gender of the first born, rather than gender of the oldest surviving child at accession, since there may be selection bias in who survives. For example, children who are able to survive harsh conditions may be stronger, and strength may be correlated with a tendency to be aggressive and fight aggressively, including in warfare. In addition, if siblings kill each other off in their ambition to become monarchs, the strongest monarchs may the ones who survive and fight wars aggressively once they become rulers. We instead control for the number of dead siblings as auxiliary controls.

The sister instrument is arguably less arbitrarily determined than the first born male variable. In the absence of changes in the ruling house, whether the previous monarchs have a sister is equivalent to whether the monarchs from two periods ago had a daughter. Thus, this instrument is subject to the concern that monarchs who were aiming to have at least one son or a child of both genders may have ended up with a daughter and a larger number of total children two periods ago, which amounts to a larger number of total siblings among previous rulers (or equivalently, a larger number of aunts and uncles from the perspective of the current period monarch). If having more of these aunts and uncles means there are more

individuals who may contest succession, this would represent another alternate pathway affecting conflict. To close out this potential other channel, we control for the total number of siblings of previous monarchs in all our main specifications. Since gender of the first-born is more plausibly exogenous, we additionally present tests of overidentifying restrictions to address the exogeneity of the two instruments together, and present additional falsification tests to examine instrument validity in the results.

Instruments in the Sample—. Table 2 shows two instruments at the level of the reign. The previous monarchs had a sister in 71.5% 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 et al., 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).[26] In these sources, we found the median sex ratio at birth to be 53%, with the range spanning from 51% in Sweden to 55% in Portugal.

In addition, we can be reasonably confident that our genealogical data is 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.

[26]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 C of the data appendix for greater detail.

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 present sensitivity checks. We then present results disaggregated by aggressor 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 examine the aggregated external war participation variable, while the latter columns show disaggregated effects on balance of power wars, defensive wars, and imperial wars, respectively. The even numbered controls include our standard controls. These are not needed for the OLS specifications, but we include them for comparability to the IV specifications.

The results show that polities led by queens participated in external wars more relative to polities led by kings. The estimate in column (2) indicates a differential war participation rate of 8.6%. The results also show that this effect stems from greater participation in Balance of Power wars: The coefficients in columns (3)-(4) are substantial and precisely estimated while the coefficients for other types of war are both small in magnitude and statistically insignificant. This is perhaps unsurprising given that Balance of Power wars are by far the most prevalent form of external conflict.

However, the OLS estimates in Table 3 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. In fact, even some reigning queens articulated the view that women should not govern if they had to lead armies into battle. This was the position of Ulrika Eleanora who asked that the Swedish Riksdag that her husband Frederick be made co-regent [Persson, 2014].

To account for this potential bias, we present the IV estimates in Table 4. The second-stage results again demonstrate that queens participate in external wars more than kings, and that these effects are concentrated in Balance of Power wars. The coefficient in column (1) suggests that the likelihood of external conflict is 27% higher for queens relative to kings. The larger coefficient on the IV estimate relative to the OLS estimate is consistent with downward bias on the OLS estimates.

The bottom of Table 4 shows that the instruments together make for a strong first stage: the Kleibergen-Paap F-statistic is 13.7. Individually, each instrument also has a statistically significant effect on the likelihood of a queen coming to power. If the previous monarchs had a first-born male, this reduced the likelihood of a queen coming to power by 21.2%. In contrast, if they had a sister, this increased the likelihood of queen coming to power by 18.9%.

In Appendix Table A.2, we present results using other variants of the instrument set, including interactions of the sister and first-born male instruments; interactions of the the sister instrument with an indicator that the monarch had no legitimate children; as well as each of the instruments individually. Although the strength of the first stage and precision of the second stage estimates vary across specifications, all instrument sets yield second-stage coefficients of similar magnitudes, indicating that the results are not especially dependent on any one particular IV approach. For example, estimate with the first-born male instrument is .341 and marginally insignificant with a p-value of .11. This is reassuring in that the has the advantage that gender of the first child should essentially be determined by a coin flip, and is unaffected by the fertility behavior of previous monarchs. We use the first born male and sister instruments together since this yields the strongest first stage among potential instrument sets. We address potential concerns regarding the exclusion restriction and the validity of the instruments in the section below.

5.2 Examining Instrument Validity

We present tests of over-identifying restrictions (at the bottom of Table 4). These tests fail to reject the null that the instruments together are valid – i.e., that, conditional on the exogeneity of one instrument, the other instrument is also exogenous. This is reassuring as a first step. In the remainder of this section, we directly address and present evidence against several other ways in which the instruments could affect conflict beyond their effect on queens.

First, the previous monarchs were more likely to have had a sister if their parents had a larger number of children. This would correspond to previous monarchs having a larger number of total siblings. If these siblings (i.e., more aunts and uncles from the perspective of the current period monarch) were potential contenders for the power, their presence may have spurred more conflicts over the throne. These wars of succession would then serve as an alternate channel affecting conflict, violating the exclusion restriction.

In Table 5, we take two steps to address this concern. First, we control for the total number of siblings to close off this alternative channel. In addition, we identify and remove wars of succession from the sample.[27] Table 5 shows that the effect of queens on external war participation remains precise and increases in magnitude under both changes. In addition, patterns by war type remain unchanged, with the effects clearly concentrated among Balance of Power Wars. These results indicate that our estimates are not driven by siblings of previous monarchs initiating conflicts over succession. Going forward, we continue to control for the number of total siblings in all remaining specifications.

A second potential concern lies in the use of the first born male instrument. The lack of a first born make could spur war if it signals uncertainty in succession. Other monarchs may choose to attack the polity if they see that the first birth did not yield 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 6, we examine if these effects hold. For completeness, we conduct these tests for all war

[27] These five succession wars are all external wars since they involve more than one European power.

types (including civil wars). Columns (1) - (5) 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.

We 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) - (8). These two falsifications further bolster the validity of our instruments.[28]

In Table A.3, we turn back to our main sample, and additionally show that there are no significant effects of having a queen on external conflict in the previous reign (or other measures of internal stability in the previous reign such as reign length and whether monarchs died of natural causes). This suggests that queens and kings inherited polities that were similar in terms of the conflict they had experienced. We also show that that controlling for conflict and internal stability in the previous reign do not affect the results.

Finally, it is worth noting that most new wars that started during a reign did not start immediately at the beginning of the reign. For example, new Balance of Power wars started on average, 8.2 years after the start of reign; and this figure is 8 years for reigns with kings and 10 years (i.e., even longer) for reigns with queens. This timing is inconsistent with the idea that the lack of a first born male in the prior reign triggers conflict immediately during the new reign.

The results in Tables 3-5 as well as Table A.3 all demonstrate that the effects on war participation stem primarily from participation in Balance of Power wars, the most prevalent

[28] Acharya and Lee [2015] find that over 1000-1500 AD, the number of male heirs in the past reign affects internal conflicts (civil wars). Four 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. Second, we use the first born male instrument in conjunction with the sister instrument which is a different and additional source of variation. Third, our sample begins when their sample ends — and it is possible that succession may have been more contentious and given rise to more internal conflict during the earlier pre-1500 period, if succession laws were less detailed during that time. Finally, we find second-stage effects of queens on external wars, not internal wars (See Table 10). Thus, from the angle of instrument validity, we are most concerned about alternative ways in which our instruments can affect external wars, not internal wars, which is the focus of their finding.

type of conflict in our sample. In the remainder of the paper we focus on this dependent variable.

5.3 Additional Checks

In this section, we present a number of additional robustness tests, including additional controls, sensitivity checks to address the small number of queens in the sample, and alternative specifications including those using dyadic data. Table A.4 presents descriptive statistics of the additional variables used for these checks.

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 then this could again serve as an alternate channel influencing conflict. However, in Table A.5, we show that controlling separately for the number of dead male and female siblings of previous monarchs, or the dead male and female siblings of current monarchs do 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.5 shows that controlling for age also also does not alter the results.

Finally, it is possible that though queens participate in wars more often, they also participate in wars that are smaller in scope. In remaining columns of Table A.5, we show that queens do not participate in wars that are smaller, as measured by the number of participants in these wars.[29]

Sensitivity Checks —. Our sample includes only 29 queens, which raises the concern that

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

the results may be driven by a particular queen or a particular polity. We address this concern in several steps. First, we drop each queen iteratively from the sample, and present the coefficient estimates and 90 percent confidence intervals from in Figure 3. The results in this figure corroborate that the effects are not driven by any individual queen.

In Table A.6, 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 contribute more than one queen, and in the seventh column, we drop all remaining polities that contribute just one queen to the sample. The estimates retain their significance across all of these specifications, demonstrating that England or Spain or Russia, alone, do not drive the effects.[30] The estimate is if anything larger in column (7) than 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 overturned 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 (for example, average external war participation is .19 and Balance of Power war participation is .14 in our auxiliary sample of non-queen polities, while the equivalent figures are .25 and .21, respectively, in the main sample of queen polities.)

Second, to address this concern directly, in column (8) of Table A.6, 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 results remain largely unchanged.

[30] 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.

In Table A.7, we also present an alternate reign-level specification. In our main specifications, which use annual data, the queen variable varies at the level of the reign, while the war variables vary at the level of the year. While we adjust our standard errors to account for the use of reign-level variation through our clustering strategy, there is still a separate concern that longer reigns will be given more weight in the annual panel, which may affect our coefficient estimates. To address this concern, we collapse our annual data to the reign level, and run reign level regressions in which the dependent variable is the number of years the polity is at war, controlling for the length of the reign (in years). We continue to use polity fixed effects and also incorporate century fixed effects. Here we also cluster the standard errors at the polity level. Since there are 18 clusters, and standard errors may be understated when there are fewer than 30-40 clusters [Cameron et al., 2008], we additionally adjust the errors using a wild bootstrap procedure (with 1,000 replications). The results in Table A.7 verify the robustness of our main results to this alternate reign level approach.

In Table A.8, we address the concern that the decision of two polities to fight in a war may not be independent. Our primary specifications, which examine war participation in an annual panel with standard errors clustered at the polity (by century) level, may not account for this form of correlation across standard errors. We therefore convert our data into dyadic format, where the units are comprised of polity year pairings for each year in which both polities are in existence. Using this data, we implement specifications in which the independent variable is whether there is a queen in either polity of the dyad, and the dependent variable is whether the polities are engaged in the same balance of power war during a given year. We also include decade fixed effects, dyad fixed effects and our standard control variables (either as an indicator of whether either polity in the pair has a given characteristic in the case of dichotomous controls or as averages in the case of continuous controls). We cluster the standard errors at the dyad level, as well as the dyad by century level. Table A.8 presents these results. We find that the queen effect remains in place across these specifications, suggesting that correlated across countries fighting in the same wars do not drive our results. In addition to presenting these dyadic results, in the next section, we also examine

war participation disaggregated by which polity was the aggressor in the conflict.

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, 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) Table 7 show this decomposition. Note that the coefficients on these two outcomes add up to the coefficient in column (1). The magnitude of the coefficients for the reign entered outcome (.21) and the reign continued outcome (.11) suggest that both entry and continuation contribute to the queen effect on Balance of Power wars.

Second, we gauge whether queens participate more in wars in which their polity attacked, or in which their polities were attacked, utilizing Wright's coding of who initiated the conflict. Since the aggressor coding is missing for some observations, column (4) shows the queen effect on Balance of Power war participation in the sub-sample of observations for which aggressor variables are available. Columns (5)-(6) present the disaggregated effects. The coefficients indicate that the queen effect on balance of power war participation (.33) stems disproportionately from participation in wars in which the polity attacked (.26) than in wars in which the polity was attacked (.07). This indicates that queens did not end up at war solely because they were attacked, and that the perceived weakness idea alone cannot account fully for the effects. Since attacking as an aggressor, by definition, represents the actions of one side, these results are also less subject to the concern that correlated standard errors drive the estimates, which is a concern regarding the war participation outcome, as this variable, by definition, involves two sides. In that regard, the results in Table 7 complement the war participation estimates in the dyadic specification, to address concerns that this type of correlation drives the estimated effects.

If the effects on aggressive war participation are driven by cases of co-rule, in which the husband is an official co-monarch, then it is difficult to interpret them as an effect of female rule and female decision-making. To address this possibility, in Table A.9, we presents the estimates for the Solo queens, who ruled as the sole regent (i.e., their spouse, if they had one during their reign, did not hold the title of official co-regent). We find the same results hold here, which suggests that the effects on aggressive war participation do not simply reflect decisions made by co-ruling kings.

Did queens typically succeed by pursuing aggressive participation? After all, if monarchs lost wars they engaged in, this could produce 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 particular reigns. This is directly relevant since territorial expansion was a major objective of balance of power wars among European actors. In the second half of Table A.7, we examine effects on indicators of territorial gain, loss and a ordered variable that includes both. These results demonstrate that queenly reigns are associated with a greater likelihood of territorial gain. Of course territory can be gained for reasons other than war. Table A.10 divides the sample based on years in which polities were involved in external wars, and shows that the queen effect on territorial gain is both larger and more precisely estimated for the years in which there were external wars. This provides suggestive evidence that wars played some role in the territorial expansion of queenly reigns. But overall, we interpret our estimates as indicating that the aggregate set of policies pursued by queenly reigns, including participation in wars of aggression, led to the greater likelihood of territorial expansion.

The effects in Tables 7, A.7 and A.10 show that queens participated more in wars of aggression. If this reflects greater capacity in queenly reigns, and spouses further bolstered this capacity providing additional resources and support for the conduct of war, we should see that the tendency to participate in wars of aggression was especially large among married queens. Table 8 examines whether a queen's proclivity to attack or be attacked varies by marital status. As discussed in the data section, a monarch is married in reign if they

have a living spouse during their reign; so a monarch can be unmarried because their reign preceded marriage, because they never married or because they became widowed.[31]

We interact this married in reign variable with the *Queen* indicator, the instruments, and the control variables. Since marital status varies by age, and age may influence war aggression, we also control for equivalent age at accession interactions. To account for missing values, we include indicators of whether the marriage and accession age variables are missing, and include interaction terms with these indicators and the endogenous variable, as well as the instruments and controls.

These results are presented in Table 8. The first two columns show a distinct pattern. Married queens participate more in wars of aggression, relative to both unmarried queens, as well as unmarried kings and married kings. Conversely, unmarried queens are most likely to participate in wars in which their polity is attacked, relative to married queens as well as kings, married or unmarried.

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 pursue aggressive war policies. In contrast, marriage did not exert an equivalent effect for kings. For example, in column (1), coefficient on the *Married in Reign* variable, which captures the effect of being married for kings, is .027 (and statistically insignificant).

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.

It is again important to consider if these effects on aggressive war participation, concentrated among married queens, actually simply reflect the dictate's of a queen's husband. We present evidence against this in several ways. First, we posit that a queen's husband is most

[31]For example, there are 10 reigns in which a queen is unmarried during her reign, while there are only 3 queens who never married. Similarly, there are 36 reigns in which a king is unmarried during his reign, while there are only 19 kings who never married.

likely to be influential when he is also an official co-regent. But when we eliminate all cases of queens co-ruling with a co-regent in columns (3)-(4), we continue to observe the same pattern of results for the solo queens. This suggests that even married queens who were sole regents had greater capacity to fight wars of aggression; and even unmarried queens who were sole regents tended to be attacked to a greater degree.

In Table 8, the coefficients on the *Solo Queen x Married* interaction terms are even larger than those on the *Queen x Married* interactions. This raises the possibility that king consorts who were not official co-regents may have been especially militaristic and dominated war-making decisions. It is even possible that marriages may have been organized strategically to wed queens to these militaristic spouses. To account for this, we control for whether the spouses of monarchs had any military experience prior to the marriage. This variable measures whether they had direct experience as military lieutenants or commanders, or presided over a war as the adult monarch of a polity prior to their marriage. When we include this spousal military experience variable and its interactions in columns (5)-(6), the results continue to hold. This suggests that the differential tendency of married queens to participate as aggressors reflects some factor beyond the militaristic tendency of their spouses. In our view, these latter estimates provide the most compelling evidence that married queens were most inclined to fight in wars of aggression.

In addition, qualitative accounts also suggest that queens who involved their spouses in state matters did not necessarily retract their own decision-making authority in those matters. For example, Ferdinand played a prominent role during Isabella's rule, but when they clashed over important policy issues, such as who the throne would pass to in the event of her death, she did not retract her position [Jansen, 2002, p.15]. In addition, though Ferdinand played a critical in military confrontations, Isabella also never withdrew from this realm. During the internal conflict against Juana, she rode throughout her territory to garner support for her cause [Jansen, 2002, p.21]. Her military role only expanded during the war against Granada:

> An "accomplished strategist," she ultimately moved out from behind the scenes to center stage, taking the field with the Castilian army in Cordoba, Malaga, Baeza, and, at last, in Granada, where she appeared wearing armor and mounted on a warhorse (*ibid*).

In short, though Isabella relied on her husband, she retained her own decision-making authority.

In Table A.11, we present two additional checks. We 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.[32] 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, in columns 1-4 of Table A.11, we find that the our results continue to hold even after we drop these three queens from the sample. This reinforces the idea that even among queens who were willing and able to serve as decision makers, married queens pursued war more aggressively.

We also consider the possibility that married queens may have pursued aggressive war policies not because of capacity, but rather, because they were more likely to have had legitimate male heirs to whom they could bequeath their kingdom. However, columns 5-8 of Table A.11 show that the results are unaffected if we control for the interaction of queens with whether the monarchs had a legitimate male child.

Since there are only 10 unmarried queen reigns and 24 married queen reigns in our sample, this raises the concern that our overall effects on marital interactions are driven by a particular queen or a particular reign. To verify this is not the case, Figure 4 plots the coefficients and confidence intervals on the marital interaction terms, from specifications with queens who were sole regents, including all relevant controls such as the spousal military experience controls. This figure shows that the effects on aggressive war participation are

[32]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.

also insensitive to the exclusion of each queen.

It is also worth noting that the results pattern we observe in Tables 8 and A.11 make it seem unlikely that our results are driven by bias in the 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 reign relative to male monarchs who had spouses during their reign; and under-attribution of aggression to female monarchs who were unmarried during their reign 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.

Next, we examine the second way in which married queens may have had greater capacity to carry out war — through more alliances. We were able to track whether each polity fought in wars alone, or alongside another polity fighting on its side, for 73 percent of the balance of wars in our sample.[33] From this coding effort, we generated an indicator of whether the polity fought with at least one ally. This serves as the dependent variable in columns (7)-(8) of Table 8. By construction, it is only defined for the years in which a polity was participating in a war. The table shows heterogenous effects based on martial status. Married kings were more likely to fight alongside an ally (relative to unmarried kings). Moreover, the tendency to fight with an ally was even greater among married queens (relative to married kings, unmarried kings and unmarried queens). For example, the effect is .117 larger for married queens than married kings in column (7), and .266 larger for married queens than kings in column (8), which are 18% and 42% above the mean, respectively. These results suggest that marriage brought alliances for all monarchs, but disproportionately so for queens. This is consistent with the idea that male spouses may have been better positioned to forge alliances because they were typically more tied to military matters in their home polities, compared to female spouses.

Overall, the results from Table 8 are consistent with the idea that asymmetries in the

[33]This coding required us to have detailed descriptions of each war, to discern which polities fought on which side. This information is not available from Wright, and had to be constructed from various sources.

division of labor, and more alliance formation in queenly reigns relative to kingly reigns served to strengthen the relative capacity of queens, facilitating their greater participation in external wars. They also corroborate the idea that spouses were unique in being able to provide this support: They did not directly pose a threat since they typically could not serve as the monarch, and could bring in an alliances, particularly if they originated from other polities.[34]

5.5 Addressing Alternative Accounts

In this section we consider and present evidence against three alternative accounts. One alternative account posits that queens may have chosen to fight 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 more aggressive war participation earlier in their reign. In Table 9, 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. For balance of power war participation, as well as the polity attacked variable, the interaction term is statistically insignificant and also positive in sign (suggesting, if anything, more war later). This suggests that the queen effects on war do not arise from signaling, specifically.

A second alternate account suggests that aggressive actions undertaken during a queen's reign may reflect the actions a foreign minister, rather than the queen herself. This conjecture is based on two assumptions – that foreign ministers are more aggressive than monarchs, and that women rulers are more easily influenced by ministers than male rulers.

[34] In fact, in our sample, all spouses of queens did originate from other polities.

Scholars throughout history have questioned the second assumption. In 1630, Gregorio Leti, who produced a biography of Elizabeth I, wrote:

> I do not know why men have conceived such a strange and evil opinion of women so as to consider them incapable of conducting important business . . . if men see a person of that sex govern a state with prudence and success they will inevitably take the glory away from her and attribute it to her favorites and ministers. [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 the most impressionable, and may not have developed clear policy positions of their own. To test this idea, we introduce interactions of age at accession with the queen variable. Columns (7)-(9) of Table 9 indicate that there are no differential effects of queens on war based on the age at which they came to power. The queen effect on war is similar regardless of the age at which monarchs acceded. This seems inconsistent with the idea that ministers were the main force in making war-related decisions.

Rather, these results are more consistent with qualitative accounts that queens did not always passively receive the advice of ministers. For example, when Frederick invaded Silesia, Maria Theresa's elderly ministers advised her to make concessions— yet she refuted their advice and fought back as she wanted retain all of her territory [Beales, 2014, p.133].

Finally, we examine the account 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]. Table 10 shows that having a queen did not affect participation in civil war, or differentially impact the length of a monarch's reign.[35] Moreover, it had no significant impact on the likelihood that a monarch died of unnatural causes including regicide. In addition, having a queen did not bring about the demise of the kingdom: Table 10

[35]It is possible that the distinction between external wars ad civil wars may be unclear in cases where a civil war results in the creation of a new unit. Column (10) of Table A.5 verifies that queens lead to greater war participation under an alternate measure of war that aggregates together participation in any war — external or internal.

shows that were no significant effects on whether a kingdom ended, either through partition, unification or capture with another kingdom, or by becoming a republic. This suggests that greater internal instability was unlikely to be a key motivating factor for why queens pursued external war.

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 terms of conflict 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 participated more in inter-state wars relative to kingly reigns, and these effects arise from greater participation in Balance of Power wars, which took place among European actors. Queens were also more likely to gain territory over the course of their reigns, but were no more likely than kings to experience civil wars or other internal conflicts.

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, and were also more likely to fight alongside allies. 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 both alliances and a willingness to use their spouses to help them rule.

These effects suggest that war policy differed under female leaders than male leaders, in part because women tended to organize their rule differently than their male counterparts. These different tendencies themselves reflected prevailing gender norms of the day. 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-regent; but under prevailing gender norms, kings were less inclined to do the same with female spouses. In addition, queens were more likely to benefit from alliances based on marriage, since male spouses could hold positions in the militaries of their home countries, and were therefore better positioned to cement alliances. In contrast, direct military involvement remained taboo for women. In this regard, gender norms ultimately played a role in why female rule led to greater participation in war of aggression, and in shaping the conflict trajectories of states under male and female rule.

While we cannot extrapolate directly from these results to the current era, we can consider a few potential implications for today's rulers. These conjectures seem relevant since existing work has already documented a positive correlation between female executives and a state's conflict behavior in the modern period [Koch and Fulton, 2011]. Broadly speaking, we may expect to observe systematic differences in war policy based on a ruler's gender if male and female leaders continue organizing their rules differently, including 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 perhaps the largest gender-based effects today arise in weakly institutionalized settings, where families continue to play a role in solving the challenge of who to trust in leading. This should be the subject of future research, in further study of gender and conflict.

References

Ran Abramitzky, Adeline Delavande, and Luis Vasconcelos. Marrying up: The role of sex ratio in assortative matching. *American Economic Journal: Applied Economics*, 3(3):124–57, 2011.

Scott F Abramson and Carles Boix. The roots of the industrial revolution: Political institutions or (socially embedded) know-how? Working Paper, November 2012.

Avidit Acharya and Alexander Lee. Medieval state building and contemporary european development: Evidence from a natural experiment. Working Paper, 2015.

Kenneth R. Ahern and Amy K. Dittmar. The changing of the boards: The impact on firm valuation of mandated female board representation. *The Quarterly Journal of Economics*, 127(1):137–197, 2012.

Daniel Alves. Ferdinand ii of portugal: A conciliator king in a turmoil kingdom. In Charles Beem and Miles Taylor, editors, *The Man behind the Queen: Male Consorts in History*, pages 163–176. Palgrave Macmillan, 2014.

Derek Beales. Francis stephen: Duke, regent and emperor. In Charles Beem and Miles Taylor, editors, *The Man behind the Queen: Male Consorts in History*, pages 125–144. Palgrave Macmillan, 2014.

Lori Beaman, Esther Duflo, Rohini Pande, and Petia Topalova. Female leadership raises aspirations and educational attainment for girls: A policy experiment in india. *Science*, 335(6068):582–586, 2012.

Richard Bean. War and the birth of the nation state. *The Journal of Economic History*, 33(1): 203–21, 1973.

Charles Beem and Miles Taylor, editors. *The Man behind the Queen: Male Consorts in History*. Palgrave Macmillan, 2014.

Marianne Bertrand, Sandra E. Black, Sissel Jensen, and Adriana Lleras-Muney. Breaking the glass ceiling? the effect of board quotas on female labor market outcomes in norway. *Working Paper*, 2015a.

Marianne Bertrand, Emir Kamenica, and Jessica Pan. Gender identity and relative income within households. *The Quarterly Journal of Economics*, 130(2):571–614, 2015b.

Timothy Besley and Torsten Persson. The origins of state capacity: Property rights, taxation, and politics. *American Economic Review*, 99(4):1218–44, 2009.

Timothy Besley and Marta Reynal-Querol. The logic of hereditary rule: Theory and evidence. Working Paper, February 2015.

Lisa Blaydes and Eric Chaney. The feudal revolution and europes rise: Political divergence of the christian west and the muslim world before 1500 ce. *American Political Science Review*, 107(1):16–34, 2013.

Marijke Breuning. Women's representation and development assistance. *Women & Politics*, 23(3):35–55, 2001.

Fernanda Brollo and Ugo Troiano. What happens when a woman wins an election? evidence from close races in brazil. *Journal of Development Economics*, 122:28–45, 2016.

Colin A. Cameron, Jonah B. Gelbach, and Douglas L. Miller. Bootstrap-based improvements for inference with clustered errors. *The Review of Economics and Statistics*, 90(3):414–427, 2008.

Mary Caprioli. Gendered conflict. *Journal of Peace Research*, 37(1):51–68, 2000.

Mary Caprioli and Mark A. Boyer. Gender, violence, and international crisis. *Journal of Conflict Resolution*, 45(4):503–518, 2001.

David Chambers. *Discours de la legitime succession des femmes aux possessions de leurs parens et du gouvernement des princesses aux Empires et Royaumes*. Paris, 1579.

Raghabendra Chattopadhyay and Esther Duflo. Women as policy makers: Evidence from a randomized policy experiment in india. *Econometrica*, 72(5):1409–1443, 2004.

Irma Clots-Figueras. Are female leaders good for education? evidence from india. *American Economic Journal: Applied Economics*, 4(1):212–44, 2012.

Pamela Johnston Conover and Virginia Sapiro. Gender, feminist consciousness, and war. *American Journal of Political Science*, 37(4):1079–1099, 1993.

Dale C. Copeland. *Economic Interdependence and War*. Princeton University Press, Princeton and Oxford, 2015.

Christine Alice Corcos. From agnatic succession to absolute primogeniture: The shift to equal rights of succession to thrones and titles in the modern european constitutional monarchy. *Mich.St.L.Rev*, pages 1587–1670, 2012.

Mark Dincecco and Mauricio Prado. Warfare, fiscal capacity, and performance. *Journal of Economic Growth*, 17(3):171–203, 2012.

Barbara Ehrenreich and Katha Pollitt. Fukuyama's follies: So what if women ruled the world? *Foreign Affairs*, 1999.

Richard C. Eichenberg. Gender differences in public attitudes toward the use of force by the united states, 1990-2003. *International Security*, 28(1):110–141, 2003.

Manuel Eisner. Killing kings: Patterns of regicide in europe, ad 600-1800. *The British Journal of Criminology*, 51(3):556–577, 2011.

James D. Fearon. Rationalist explanations of war. *International Organization*, 49(3):379–414, 1995.

James D. Fearon. Governance and civil war onset. World Development Report, Background Paper, 2010.

Raquel Fernández, Alessandra Fogli, and Claudia Olivetti. Mothers and sons: Preference formation and female labor force dynamics. *The Quarterly Journal of Economics*, 119(4): 1249–1299, 2004.

Francis Fukuyama. Women and the evolution of world politics. *Foreign Affairs*, 77(5):24–40, 1998.

Nicola Gennaioli and Hans-Joachim Voth. State capacity and military conflict. *The Review of Economic Studies*, 82(4):1409–1448, 2015.

Adam N. Glynn and Maya Sen. Identifying judicial empathy: Does having daughters cause judges to rule for womens issues? *American Journal of Political Science*, 59(1):37–54, 2015.

Gary Goertz and Paul F. Diehl. *Territorial Changes and International Conflict*. Routledge, London and New York, 2002.

Victor Grech, Charles Savona-Ventura, and P Vassallo-Agius. Unexplained differences in sex ratios at birth in europe and north america. *BMJ (Clinical research ed.) (BMJ, NCBI/National Institutes of Health)*, 324(7344):1010–1, 2002.

Andrew Healy and Neil Malhotra. Childhood socialization and political attitudes: Evidence from a natural experiment. *The Journal of Politics*, 75(4):1023–1037, 2013.

Philip Hoffman. Prices, the military revolution, and western europes comparative advantage in violence. *Economic History Review*, 64(S1):39–59, 2011.

Murat Iyigun. Lessons from the ottoman harem on ethnicity, religion and war. *Economic Development and Cultural Change*, 61(4):693–730, 2013.

Murat Iyigun, Nathan Nunn, and Nancy Qian. Winter is coming: The long-run effects of climate change on conflict, 1400-1900. *NBER Working Paper*, (23033), 2017.

Sharon L. Jansen. *The Monstrous Regiment of Women: Female Rulers in Early Modern Europe*. Palgrave Macmillan, 2002.

Ted Jelen, Sue Thomas, and Clyde Wilcox. The gender gap in comparative perspective. gender differences in abstract ideology and concrete issues in western europe. *European Journal of Political Research*, 25(2):171–86, 1994.

Benjamin F. Jones and Benjamin A. Olken. Do leaders matter? national leadership and growth since world war ii. *The Quarterly Journal of Economics*, 120(3):835–864, 2005.

Kivanç Karaman and Şevket Pamuk. Ottoman state finances in european perspective, 15001914. *The Journal of Economic History*, 70(3):593–629, 2010.

Kivanç Karaman and Şevket Pamuk. Different paths to the modern state in europe: The interaction between warfare, economic structure, and political regime. *American Political Science Review*, 107(3):603–626, 2013.

Michael T. Koch and Sarah A. Fulton. In the defense of women: Gender, office holding, and national security policy in established democracies. *The Journal of Politics*, 73(1):1–16, 2011.

Andrej Kokkonen and Anders Sundell. Delivering stability - primogeniture and autocratic survival in european monarchies 1000-1800. *American Political Science Review*, 108(2):438–453, 2014.

Jennifer L. Lawless. Women, war, and winning elections: Gender stereotyping in the post-september 11th era. *Political Research Quarterly*, 57(3):479–490, 2004.

David A. Matsa and Amalia R. Miller. A female style in corporate leadership? evidence from quotas. *American Economic Journal: Applied Economics*, 5(3):136–69, 2013.

Rose McDermott, Dustin Tingley, Jonathan Cowden, Giovanni Frazzetto, and Dominic D. P. Johnson. Monoamine oxidase a gene (maoa) predicts behavioral aggression following provocation. *Proceedings of the National Academy of Sciences of the United States of America*, 106(7):2118–2123, 2009.

John J. Mearsheimer. *The Tragedy of Great Power Politics*. Norton, New York, 2001.

Erik Melander. Gender equality and intrastate armed conflict. *International Studies Quarterly*, 49(4):695–714, 2005.

William Monter. *The Rise of Female Kings in Europe, 1300-1800*. Yale University Press, 2012.

John E. Morby. *Dynasties of the World: A Chronological and Genealogical Handbook*. Oxford University Press, 1989.

Nathan Nunn. The importance of history for economic development. *Annual Review of Economics*, 1:65–92, 2009.

Massimiliano Gaetano Onorato, Kenneth Scheve, and David Stasavage. Technology and the era of the mass army. *The Journal of Economic History*, 74(2):449–481, 2014.

Charles W. Jr. Ostrom and Brian L. Job. The president and the political use of force. *The American Political Science Review*, 80(2):541–566, 1986.

Rohini Pande. Can mandated political representation increase policy influence for disadvantaged minorities? theory and evidence from india. *American Economic Review*, 93(4): 1132–1151, 2003.

Fabian Persson. From ruler in the shadows to shadow king : Frederick i of sweden. In Charles Beem and Miles Taylor, editors, *The Man behind the Queen: Male Consorts in History*, pages 93–102. Palgrave Macmillan, 2014.

Steven Pinker. *The Better Angels of Our Nature*. Penguin Books, New York, 2011.

Patrick M. Regan and Aida Paskeviciute. Women's access to politics and peaceful states. *Journal of Peace Research*, 2003.

Michael Roberts. The military revolution, 1560-1660. Inaugural Lecture, Belfast, 1955.

Ryan Schacht, Kristin Liv Rauch, and Monique Borgerhoff Mulder. Too many men: The violence problem? *Trends in Ecology and Evolution*, 29:214–222, 2014.

Robert Y. Shapiro and Harpreet Mahajan. Gender differences in policy preferences: A summary of trends from the 1960s to the 1980s. *Public Opinion Quarterly*, 50(1):42–61, 1986.

Michael Siegfried. Research note the skewed sex ratio in a medieval population: A reinterpretation. *Social Science History*, 10(2):195–204, 1986.

Charles Tilly. *Coercion, Capital, and European States, 990-1992*. Wiley-Blackwell, 1992.

Brian Tompsett. Directory of royal genealogical data, 1994. URL `http://www.hull.ac.uk/php/cssbct/genealogy/royal/`.

Karina Urbach. Prince albert: The creative consort. In Charles Beem and Miles Taylor, editors, *The Man behind the Queen: Male Consorts in History*, pages 145–156. Palgrave Macmillan, 2014.

Nico Voigtländer and Hans-Joachim Voth. Gifts of mars: Warfare and europe's early rise to riches. *Journal of Economic Perspectives*, 27:165–86, 2013a.

Nico Voigtländer and Hans-Joachim Voth. The three horsemen of riches: Plague, war, and urbanization in early modern europe. *Review of Economic Studies*, 80(2):774–811, 2013b.

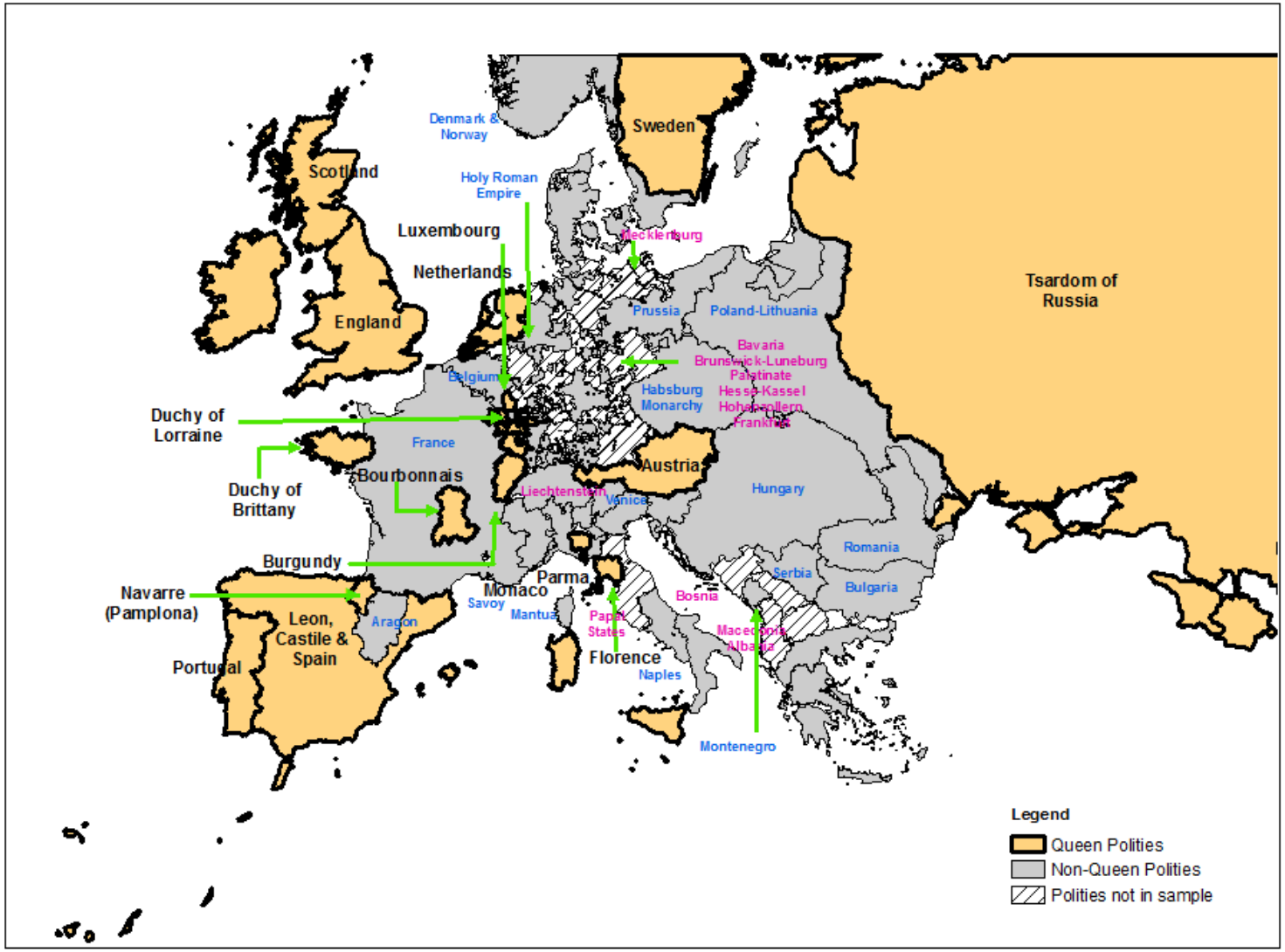
Ebonya Washington. Female socialization: How daughters affect their legislator fathers' voting on women's issues. *American Economic Review*, 98(1):311–332, 2008.

Lynn White. *Medieval Technology and Social Change*. Oxford University Press, Oxford, 1962.

Clyde Wilcox, Lara Hewitt, and Dee Allsop. The gender gap in attitudes toward the gulf war: A cross-national perspective. *Journal of Peace Research*, 33(1):67–82, 1996.

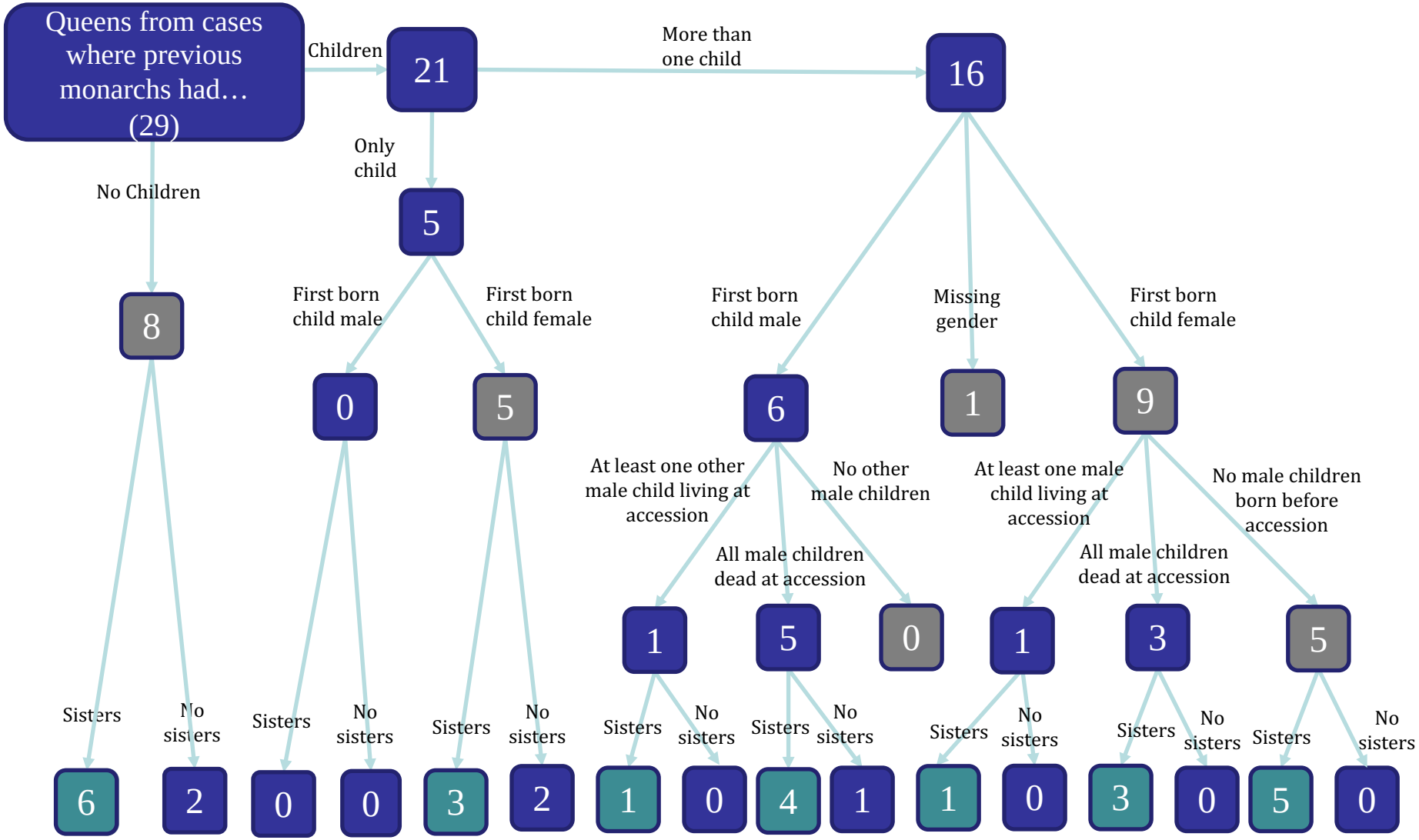
Quincy Wright. *A Study of War: Volume 1*. The University of Chicago Press, 1942.

Figure 1
Queen and Non-Queen Polities



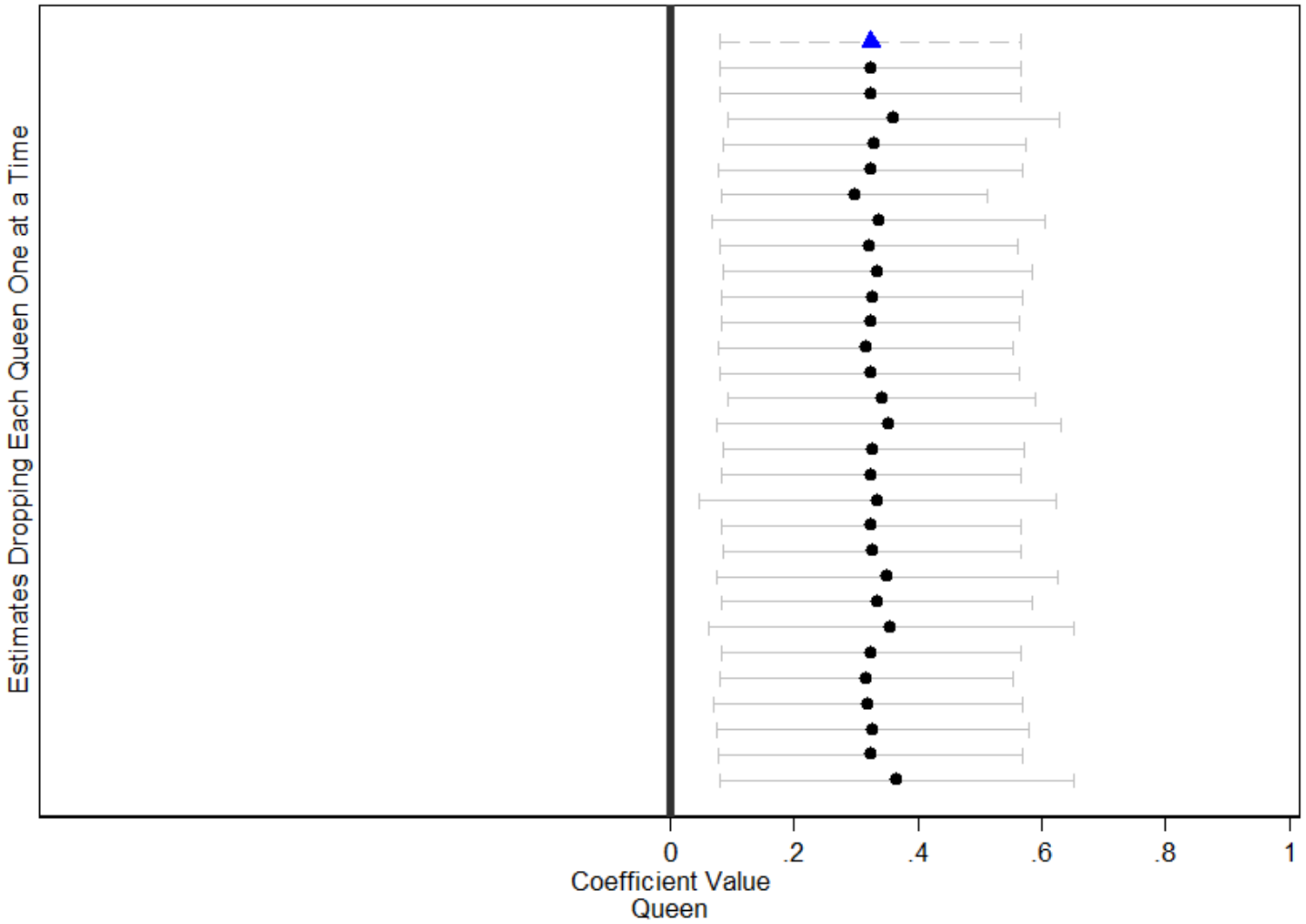
Notes. This figure shows the queen polities, non-queen polities and polities not included in our sample. It was created by overlaying six Georeferenced Historical Vector maps from Euratlas at the turn of each century between 1500-2000. Each polity was identified and chosen from one of these six maps to minimize displayed territorial overlap among polities. 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.

Figure 2
Circumstances under which Queens Came to Power



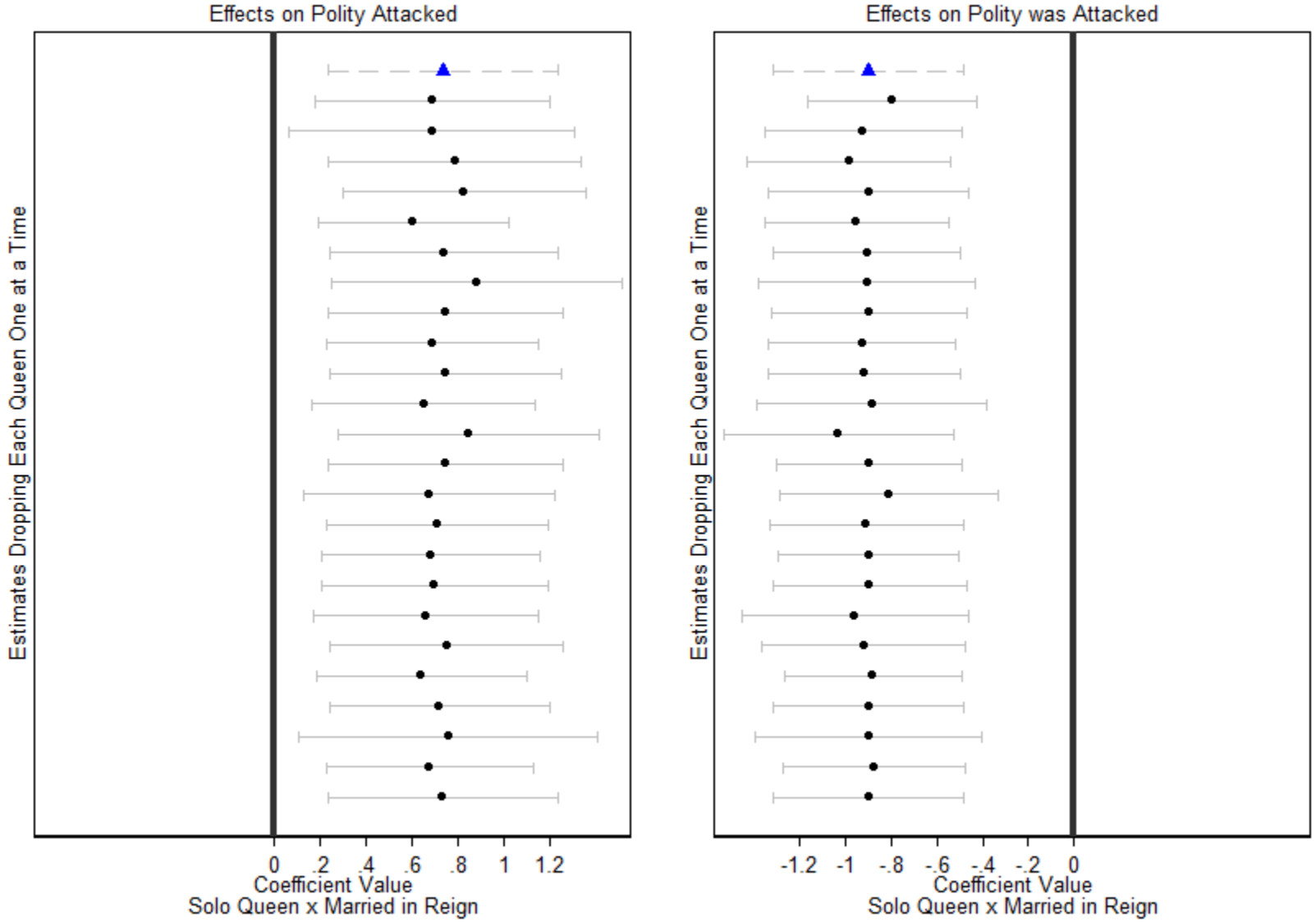
Notes. This figure shows the circumstances of the previous monarchs for the 29 queens in our sample. For example, the previous monarchs had children in 21 of 29 queen cases and lacked children in 8 cases. Among these latter 8 cases, the previous monarchs had sisters in 5 cases and had no sister in 3 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. Aqua cells show all cases in which there was at least one sister among previous monarchs. Grey 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 the coefficient and 90 percent confidence intervals after dropping each queen one at a time. The estimate in the blue triangle does not drop any queen.

Figure 4
Dropping One Solo Queen



Notes. This figure plots the coefficient and 90 percent confidence intervals after dropping each solo queen one at a time. The estimate in the blue triangle does not drop any queen.

Table 1
Summary Statistics of Key Variables

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
Dependent Variables					
In External War	3586	0.248	0.432	0	1
In Imperial War	3586	0.034	0.181	0	1
In Defensive War	3574	0.013	0.114	0	1
In Balance of Power War	3577	0.214	0.410	0	1
In Balance of Power War - Reign Entered	3577	0.164	0.370	0	1
In Balance of Power War - Reign Continued	3577	0.050	0.219	0	1
In Balance of Power War - Kingdom Attacked	3563	0.086	0.281	0	1
In Balance of Power War - Kingdom was Attacked	3563	0.124	0.330	0	1
In Civil War	3586	0.070	0.255	0	1
Reign Length	3586	30.746	15.677	1	66
Monarch Killed	3058	0.145	0.352	0	1
Polity Ends in this Reign	3586	0.085	0.279	0	1
Polity is Partitioned / Captured / Unites with Another	3559	0.067	0.250	0	1
Polity becomes a Republic	3559	0.001	0.029	0	1
Any Ally in Balance of Power War	530	0.636	0.482	0	1
Independent Variables					
Queen	3586	0.160	0.366	0	1
Solo Queen	3586	0.131	0.337	0	1
Married in Reign	3410	0.836	0.370	0	1
First-born male (of previous monarchs)	3586	0.502	0.500	0	1
Sister (of previous monarchs)	3586	0.740	0.438	0	1
Total Siblings (of previous monarchs)	3586	4.302	4.145	0	22
First-born missing gender (of previous monarchs)	3586	0.019	0.137	0	1
Missing gender sibling (of previous monarchs)	3586	0.064	0.245	0	1
At least one child with missing birth year (of previous monarchs)	3586	0.118	0.323	0	1
At least one child without missing birth year (of previous monarchs)	3586	0.821	0.383	0	1
Co-rulers unrelated (among previous monarchs)	3586	0.008	0.088	0	1

Table 2
The Instruments

Male First Born (Previous Monarchs)			Sister (Previous Monarchs)		
Yes	84	54%	Yes	138	72.0%
No	71	46%	No	55	28.0%

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 monacrchs had a sister.

Table 3
Queens and War: OLS Results

VARIABLES	(1) In External War	(2) In External War	(3) In Balance of Power War	(4) In Balance of Power War	(5) In Defensive War	(6) In Defensive War	(7) In Imperial War	(8) In Imperial War
Queen	0.081*	0.086**	0.097**	0.100**	-0.003	0.002	-0.013	-0.017
	[0.043]	[0.043]	[0.041]	[0.042]	[0.007]	[0.006]	[0.026]	[0.026]
Observations	3,586	3,586	3,577	3,577	3,574	3,574	3,586	3,586
R-squared	0.403	0.407	0.396	0.398	0.204	0.260	0.127	0.142
Specification	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Standard Controls		Y		Y		Y		Y

Notes. Variables not shown include polity and decade fixed effects. Robust standard errors clustered at the polity by century level are shown in parentheses. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table 4
Queens and War: IV Results

VARIABLES	(1) In External War	(2) In Balance of Power War	(3) In Defensive War	(4) In Imperial War
Queen	0.265*	0.299**	-0.033	0.044
	[0.155]	[0.146]	[0.053]	[0.073]
Observations	3,586	3,577	3,574	3,586
R-squared	0.390	0.375	0.251	0.131
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

First Stage:

	Queen	Queen	Queen	Queen
FBM_{r-1}	-0.212***	-0.203***	-0.213***	-0.212***
	[0.064]	[0.064]	[0.064]	[0.064]
$Sister_{r-1}$	0.190***	0.190***	0.190***	0.190***
	[0.051]	[0.051]	[0.051]	[0.051]
Observations	3,586	3,577	3,574	3,586
R-squared	0.354	0.355	0.354	0.354
Standard Controls	Y	Y	Y	Y
Kleibergen-Paap F-statistic	13.69	13.43	13.66	13.69
Hansen J-statistic	0.015	0.20	1.00	0.32
Hansen J-statistic Chi-sq(2) p-val	0.9	0.66	0.32	0.57

Notes. Variables not shown include polity and decade fixed effects. FBM $_{r-1}$ denotes previous monarchs had a First-Born Male. Sister $_{r-1}$ denotes previous monarchs had a sister. Robust standard errors clustered at the polity by century level are shown in parentheses. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level. The Hansen J-statistic and Chi-sq(2) p-val present the test of overidentifying restrictions.

Table 5

Siblings and Wars of Succession

VARIABLES	(1) In External War	(2) In Balance of Power War	(3) In External War	(4) In Balance of Power War	(5) In External War	(6) In Balance of Power War	(7) In Defensive War	(8) In Imperial War	(9) In Defensive War	(10) In Imperial War	(11) In Defensive War	(12) In Imperial War
Queen	0.288*	0.324**	0.364**	0.398**	0.379**	0.414***	-0.028	0.076	-0.033	0.044	-0.028	0.076
	[0.151]	[0.147]	[0.168]	[0.155]	[0.168]	[0.160]	[0.058]	[0.089]	[0.053]	[0.073]	[0.058]	[0.089]
Observations	3,586	3,577	3,586	3,575	3,586	3,575	3,574	3,586	3,574	3,586	3,574	3,586
Specification	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
Standard Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Total Siblings	Y	Y			Y	Y	Y	Y			Y	Y
Sample	All wars	All wars	No Succession Wars	No Succession Wars	No Succession Wars	No Succession Wars	All wars	All wars	No Succession Wars	No Succession Wars	No Succession Wars	No Succession Wars

Notes. Variables not shown include polity and decade fixed effects. Robust standard errors clustered at the polity by century level are shown in parentheses. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table 6
Falsification Tests

VARIABLES	(1) In External War	(2) In Balance of Power War	(3) In Defensive War	(4) In Imperial War	(5) In Civil War	(6) In External War	(7) In Balance of Power War	(8) In Defensive War	(9) In Imperial War	(10) In Civil War
FBM_r	-0.032	-0.035	0.010	-0.008	-0.008	-	-	-	-	-
	[0.035]	[0.033]	[0.014]	[0.019]	[0.024]	-	-	-	-	-
$Sister_r$	0.061	0.044	0.019	0.029	0.001	-	-	-	-	-
	[0.042]	[0.039]	[0.014]	[0.028]	[0.032]	-	-	-	-	-
FBM_{r-1}	-	-	-	-	-	-0.044	-0.057	0.008	0.016	-0.017
	-	-	-	-	-	[0.072]	[0.057]	[0.035]	[0.012]	[0.027]
$Sister_{r-1}$	-	-	-	-	-	-0.030	-0.029	-0.069	0.025	0.020
	-	-	-	-	-	[0.065]	[0.052]	[0.049]	[0.018]	[0.021]
Observations	3,319	3,310	3,307	3,319	3,302	2,903	2,818	2,903	2,903	2,900
Specification	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Standard Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Total Siblings	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sample	Queen Polities	Queen Polities	Queen Polities	Queen Polities	Queen Polities	Non-Queen Polities	Non-Queen Polities	Non-Queen Polities	Non-Queen Polities	Non-Queen Polities

Notes. Variables not shown include polity and decade fixed effects. FBM_{r-1} denotes previous monarchs had a First-Born Male. $Sister_{r-1}$ denotes previous monarchs had a sister. Robust standard errors clustered at the polity by century level are shown in parentheses. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table 7
War Entry and War Aggression

VARIABLES	(1) In Balance of Power War	(2) Reign Entered	(3) Reign Continued	(4) In Balance of Power War	(5) Polity was Attacked	(6) Polity Attacked
Queen	0.324**	0.211*	0.113	0.331**	0.067	0.264*
	[0.147]	[0.116]	[0.142]	[0.149]	[0.111]	[0.149]
Sample restriction?	None	None	None	Polity Attack variables defined		
Observations	3,577	3,577	3,577	3,563	3,563	3,563
Specification	IV	IV	IV	IV	IV	IV
Standard Controls	Y	Y	Y	Y	Y	Y
Total Siblings	Y	Y	Y	Y	Y	Y

Notes. Variables not shown include polity and decade fixed effects. Robust standard errors clustered at the polity by century level are shown in parentheses. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level. Columns 5 and 6 retricts the sample to observations for which the Polity was Attacked and Polity Attacked variables are defined.

Table 8
Queens and War: Effects by Marital Status

VARIABLES	(1) Polity Attacked	(2) Polity was Attacked	(3) Polity Attacked	(4) Polity was Attacked	(5) Polity Attacked	(6) Polity was Attacked	(7) Any Ally	(8) Any Ally
Queen	-0.306	0.737***	-	-	-	-	-0.525	-
	[0.324]	[0.231]	-	-	-	-	[0.391]	-
Queen x Married in Reign	0.414*	-0.611***	-	-	-	-	0.642***	-
	[0.214]	[0.216]	-	-	-	-	[0.236]	-
Married in Reign	0.027	0.004	0.058	-0.005	0.055	-0.020	0.291*	0.314**
	[0.058]	[0.050]	[0.069]	[0.054]	[0.070]	[0.061]	[0.149]	[0.139]
Solo Queen	-	-	-0.427	0.860***	-0.384	0.879***	-	-0.522
	-	-	[0.345]	[0.265]	[0.360]	[0.312]	-	[0.409]
Solo Queen x Married in Reign	-	-	0.608**	-0.688***	0.736**	-0.899***	-	0.788***
	-	-	[0.269]	[0.223]	[0.302]	[0.252]	-	[0.259]
Observations	3,563	3,563	3,459	3,459	3,372	3,372	530	517
Specification	IV	IV	IV	IV	IV	IV	IV	IV
Standard Controls	Y	Y	Y	Y	Y	Y	Y	Y
Control Total Siblings	Y	Y	Y	Y	Y	Y	Y	Y
Control Accession Age	Y	Y	Y	Y	Y	Y	Y	Y
Control Spousal Military Experience					Y	Y	Y	Y
Sample Restriction?	None	None	No reigns with co-ruling queens	No reigns with co-ruling queens	No reigns with co-ruling queens	No reigns with co-ruling queens	No reigns with co-ruling queens	No war years & Reigns with co-ruling Queens

Notes. Variables not shown include polity and decade fixed effects. Robust standard errors clustered at the polity by century level are shown in parentheses. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level. Accession age is the average age of accession of the monarchs in the reign. Spousal military experience is one if the spouse had any military experience prior to marriage.

Table 9
Effects based on Timing and Age

VARIABLES	(1) In Balance of Power War	(2) Polity Attacked	(3) Polity was Attacked	(4) In Balance of Power War	(5) Polity Attacked	(6) Polity was Attacked	(7) In Balance of Power War	(8) Polity Attacked	(9) Polity was Attacked
Queen	0.310**	0.257*	0.062	0.294*	0.203	0.088	0.304*	0.208	0.105
	[0.155]	[0.150]	[0.106]	[0.165]	[0.144]	[0.114]	[0.174]	[0.170]	[0.144]
Queen x After second half of reign	-	-	-	0.076	0.137	-0.038	-	-	-
	-	-	-	[0.188]	[0.156]	[0.165]	-	-	-
After second half of reign	-	-	-	0.013	-0.014	0.026	-	-	-
	-	-	-	[0.035]	[0.024]	[0.027]	-	-	-
Queen x After first two years of reign	0.089	0.099	-0.023	-	-	-	-	-	-
	[0.299]	[0.191]	[0.265]	-	-	-	-	-	-
Queen x Accession age	-	-	-	-	-	-	-0.011	0.014	-0.025
	-	-	-	-	-	-	[0.016]	[0.015]	[0.018]
Accession age	-	-	-	-	-	-	0.003	0.001	0.002
	-	-	-	-	-	-	[0.002]	[0.002]	[0.002]
Observations	3,577	3,563	3,563	3,577	3,563	3,563	3,577	3,563	3,563
Specification	IV	IV	IV	IV	IV	IV	IV	IV	IV
Standard Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Total Siblings	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. Robust standard errors clustered at the polity by century level are shown in parentheses. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table 10
Queens and Internal Instability

VARIABLES	(1) In Civil War	(2) Reign length	(3) Monarch killed	(4) Polity ends	(5) Polity unites/ partitioned/ captured	(6) Polity becomes republic
Queen	-0.024	-2.777	-0.440	0.113	0.040	-0.001
	[0.108]	[10.472]	[0.304]	[0.172]	[0.161]	[0.003]
Observations	3,586	3,586	3,058	3,586	3,559	3,559
Specification	IV	IV	IV	IV	IV	IV
Standard Controls	Y	Y	Y	Y	Y	Y
Total Siblings	Y	Y	Y	Y	Y	Y

Notes. Variables not shown include polity and decade fixed effects. Robust standard errors clustered at the polity by century level are shown in parentheses. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level. Polity ends denotes it is the last monarchy of the entity, and Polity becomes republic denotes the monarchy becomes a republic.

Table A.1

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

Table A.2
Alternate Instrument Sets

	(1)	(2)	(3)	(4)
VARIABLES	In Balance of Power War	In Balance of Power War	In Balance of Power War	In Balance of Power War
Queen	0.306**	0.326**	0.341	0.364
	[0.147]	[0.148]	[0.214]	[0.266]
Observations	3,577	3,577	3,577	4,081
Sample	Queen polities	Queen polities	Queen polities	Queen polities
Instruments	FBM_{r-1} & $Sister_{r-1}$ & FBM_{r-1} X $Sister_{r-1}$	FBM_{r-1} & $Sister_{r-1}$ & FBM_{r-1} X $Sister_{r-1}$ No $Children_{r-1}$	FBM_{r-1}	$Sister_{r-1}$
Kleibergen-Paap F-statistic	8.9	9.9	12.99	12.15
Hansen J-statistic	0.26	2.10	-	-
Hansen J-statistic Chi-sq(2) p-val	0.88	0.34	-	-

Notes. Variables not shown include polity and decade fixed effects. All specifications use Sister, First-born male and their interactions with an indicator of whether the polity ever had a queen as instruments for queen. Robust standard errors clustered at the polity by century level are shown in parentheses. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level. The Hansen J-statistic and Chi-sq(2) p-val and Chi-sq(2) p-val present the test of overidentifying restrictions for the specifications in columns (1) and (2) when there are multiple instruments.

Table A.3
Wars and Ruler Death in Previous Reign

	Examining Outcomes in Previous Reign						Controlling for Previous Reign Variables							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
VARIABLES	External War-Previous Reign	Balance of Power War-Previous Reign	Defensive War-Previous Reign	Imperial War-Previous Reign	Reign Length-Previous Reign	Monarch Killed - Previous Reign	In External War	In Balance of Power War	In Defensive War	In Imperial War	In External War	In Balance of Power War	In Defensive War	In Imperial War
Queen	-0.022	0.200	0.015	-0.015	-1.841	0.045	0.302**	0.313**	-0.028	0.089	0.349*	0.385**	-0.033	0.138
	[0.226]	[0.235]	[0.094]	[0.200]	[8.822]	[0.340]	[0.152]	[0.147]	[0.057]	[0.089]	[0.183]	[0.185]	[0.066]	[0.118]
Observations	3,515	3,515	3,515	3,515	3,515	3,125	3,515	3,506	3,503	3,515	3,125	3,116	3,123	3,125
Standard Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Total Siblings	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Previous Reign Controls:														
External War?							Y				Y	Y	Y	Y
Balance of Power War?		`						Y						
Defensive War?									Y					
Imperial War?										Y				
Reign Length?											Y	Y	Y	Y
Monarch Killed?											Y	Y	Y	Y

Notes. Variables not shown include polity and decade fixed effects. Robust standard errors clustered at the polity by century level are shown in parentheses. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level. Previous reign controls refer to whether the previous reign participated in certain types of wars, the killing of a monarch, or the average length of the previous reign, as indicated in each row.

Table A.4
Summary Statistics of Additional Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variables					
Number Participants-Balance of Power Wars	812	6.652	6.830	0	29
Number Participants - External Wars	903	6.194	6.477	0.500	29
In All Wars	3,586	0.285	0.452	0	1
Reign Level - in Balance of Power War	193	3.964	6.973	0	44
Reign Level - In External War	193	4.606	7.844	0	44
Reign Level - Polity Attacked	193	1.596	4.768	0	44
Territorial Change	166	0.0361	0.622	-1	1
Territorial Gain	166	0.211	0.409	0	1
Territorial Loss	166	0.175	0.381	0	1
Independent Variables					
Reign Years	3,586	30.75	15.68	1	66
Age at Accession	3,192	25.16	14.07	1	66
Military Experience before Marriage	3,499	0.0369	0.188	0	1
Second Half of Reign	3,586	0.486	0.500	0	1
First two years of Reign	3,586	0.104	0.305	0	1

Table A.5
Robustness Checks with Additional Controls and Outcomes

VARIABLES	(1) In Balance of Power War	(2) In Balance of Power War	(3) In Balance of Power War	(4) In Balance of Power War	(5) In Balance of Power War	(6) In Balance of Power War	(7) In Balance of Power War	(8) Number Participants - External Wars	(9) Number Participants-Balance of Power Wars	(10) In Any War
Queen	0.272**	0.306**	0.280**	0.299***	0.336**	0.314***	0.318**	-0.994	0.339	0.279**
	[0.122]	[0.149]	[0.124]	[0.111]	[0.133]	[0.115]	[0.152]	[2.715]	[2.365]	[0.120]
Observations	3,262	3,205	3,255	3,262	3,205	3,255	3,577	903	812	3,586
Specification	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
Standard Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Total Siblings				Y	Y	Y	Y	Y	Y	Y
Dead Siblings-Previous Monarchs	Y	Y	Y	Y	Y	Y				
Dead Children-Previous Monarchs		Y			Y					
Dead Siblings-Current Monarchs			Y			Y				
Age at Accession							Y			
Sample Restriction	None	None	None	None	None	None	None	War Years	War Years	None

Notes. Variables not shown include polity and decade fixed effects. Robust standard errors clustered at the polity by century level are shown in parentheses. Column (7) controls for the average age at accession of the monarchs in the reign, as well as a missing age indicator to account for missingness in this variable. The number of war participants in columns (9) and (10) is the average number of participants conditional on war. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table A.6
Robustness to Sub-Samples and Additional Samples

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	In Balance of Power War							
Queen	0.242*	0.350**	0.328**	0.344*	0.322*	0.236*	0.542*	0.348**
	[0.125]	[0.160]	[0.148]	[0.183]	[0.165]	[0.128]	[0.285]	[0.150]
Observations	3,158	3,177	3,550	3,446	3,229	3,227	1,675	6,395
Specification	IV	IV	IV	IV	IV	IV	IV	IV
Standard Controls	Y	Y	Y	Y	Y	Y	Y	Y
Total Siblings	Y	Y	Y	Y	Y	Y	Y	Y
Sample	Queen polities - No England	Queen polities - No Russia	Queen polities - No Leon & Castile	Queen polities - No Navarre	Queen polities - No Portugal	Queen Polities - No Sweden	Drop all other Queen Polities	Queen & Non-queen polities
Instruments	FBM_{r-1} & $Sister_{r-1}$							$Sister_{r-1}$, FBM_{r-1} and interactions with indicator of Queen polity

Notes. Variables not shown include polity and decade fixed effects. Robust standard errors clustered at the polity by century level are shown in parentheses. Column (7) excludes all other queen polities except the six queen polities omitted in columns (1)-(6). In column (8), the sister and first born male indicators are interacted with an indicator of whether the polity iis one that had at least one queen during our sample period. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table A.7
Reign Level Specification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	War Outcomes						**Territorial Outcomes**					
VARIABLES	External War years	Balance of Power War years	Polity Attacked years	External War years	Balance of Power War years	Polity Attacked years	Territorial Loss	Territorial Gain	Territory Change	Territorial Loss	Territorial Gain	Territory Change
Queen	9.837**	10.487***	7.537**	11.539**	12.155**	7.615*	-0.258	0.546***	0.804**	-0.241	0.510***	0.751**
	(4.444)	(3.936)	(3.276)	(5.358)	(4.993)	(3.903)	(0.269)	(0.155)	(0.327)	(0.269)	(0.195)	(0.368)
	[0.027]	[0.008]	[0.021]	[0.031]	[0.015]	[0.051]	[0.338]	[0.000]	[0.014]	[0.370]	[0.009]	[0.041]
	[[0.0340]]	[[0.00400]]	[[0.0780]]	[[0.0400]]	[[0.00800]]	[[0.0640]]	[[0.350]]	[[0.0100]]	[[0.0300]]	[[0.378]]	[[0.0240]]	[[0.0380]]
Observations	193	193	193	193	193	193	166	166	166	166	166	166
Specification	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
Standard Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Total Siblings				Y	Y	Y				Y	Y	Y
Reign Length	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cluster	Polity	Polity	Polity	Polity	Polity	Polity	Polity	Polity	Polity	Polity	Polity	Polity
Wild Bootstrap	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes. Variables not shown include polity and century fixed effects. Standard errors are clustered on polity. Standard errors are shown in parentheses and p-values are shown in brackets. The wild bootstrapped p-values (using 1,000 replications) are shown in double brackets. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table A.8
Dyad Specification

VARIABLES	(1) In Balance of Power War	(2) In Balance of Power War	(3) In Balance of Power War	(4) In Balance of Power War
Any queen	0.104**	0.130**	0.104**	0.130***
	[0.044]	[0.051]	[0.044]	[0.050]
Observations	37,116	37,116	37,116	37,116
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
Total Siblings		Y		Y
Cluster	Dyad	Dyad	Dyad-Century	Dyad-Century
Kleibergen-Paap F-statistic	62.62	65.58	36.89	22.67

Notes. This table presents estimates from a dyadic specification. The dependent variable is one if two polities were fighting in the same balance of power war in a given year. Any queen is one if either polity in the dyad had a queen. All specifications include dyad fixed effects and decade fixed effects. Standard errors are clustered at the dyad leve in columns 1 and 2 and at the dyad by century level in columns 3 and 4. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table A.9
Solo Queens

VARIABLES	(1) In External War	(2) In Balance of Power War	(3) Polity Attacked	(4) Polity was Attacked	(5) In Defensive War	(6) In Imperial War	(7) In Civil War
Solo Queen	0.366*	0.415**	0.337*	0.086	-0.036	0.095	-0.032
	[0.193]	[0.194]	[0.196]	[0.142]	[0.074]	[0.113]	[0.136]
Observations	3,586	3,577	3,563	3,563	3,574	3,586	3,586
Specification	IV	IV	IV	IV	IV	IV	IV
Standard Controls	Y	Y	Y	Y	Y	Y	Y
Total Siblings	Y	Y	Y	Y	Y	Y	Y

Notes. Variables not shown include polity and decade fixed effects. Robust standard errors clustered at the polity by century level are shown in parentheses. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table A.10
Territorial Gain in Reigns with and without War

	(1)	(2)	(3)	(4)
VARIABLES	Territorial Gain	Territorial Gain	Territorial Gain	Territorial Gain
Queen	0.179	0.293	0.297**	0.452***
	(0.158)	(0.335)	(0.121)	(0.130)
	[0.259]	[0.382]	[0.014]	[0.001]
	[[0.226]]	[[0.268]]	[[0.0156]]	[[0.172]]
Observations	84	84	82	82
Specification	IV	IV	IV	IV
Standard Controls	Y	Y	Y	Y
Total Siblings		Y		Y
Reign Length	Y	Y	Y	Y
Cluster	Polity	Polity	Polity	Polity
Wild Bootstrapped SE	Y	Y	Y	Y
Sample restriction	No External War	No External War	External War	External War

Notes. Variables not shown include polity and century fixed effects. Standard errors are clustered on polity. Standard errors are shown in parentheses and p-values are shown in brackets. Wild bootstrapped p-values (using 1,000 replications) are shown in double brackets. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level.

Table A.11

Additional Controls and Samples: Effects by Marital Status

VARIABLES	(1) Polity Attacked	(2) Polity was Attacked	(3) Polity Attacked	(4) Polity was Attacked	(5) Polity Attacked	(6) Polity was Attacked	(7) Polity Attacked	(8) Polity was Attacked
Queen	-0.310	0.747***	-	-	-0.377	0.761***	-	-
	[0.325]	[0.239]	-	-	[0.262]	[0.222]	-	-
Queen x Married in Reign	0.410*	-0.592***	-	-	0.504**	-0.720**	-	-
	[0.212]	[0.213]	-	-	[0.235]	[0.358]	-	-
Married in Reign	0.026	0.007	0.059	-0.005	-0.052	0.063	-0.048	0.024
	[0.058]	[0.050]	[0.070]	[0.055]	[0.093]	[0.107]	[0.128]	[0.098]
Solo Queen	-	-	-0.426	0.856***	-	-	-0.498	0.770***
	-	-	[0.346]	[0.263]	-	-	[0.318]	[0.257]
Solo Queen x Married in Reign	-	-	0.611**	-0.688***	-	-	0.773*	-0.694***
	-	-	[0.272]	[0.226]	-	-	[0.411]	[0.265]
Observations	3,551	3,551	3,457	3,457	3,558	3,558	3,454	3,454
Specification	IV	IV	IV	IV	IV	IV	IV	IV
Standard Controls	Y	Y	Y	Y	Y	Y	Y	Y
Control Total Siblings	Y	Y	Y	Y	Y	Y	Y	Y
Control Accession Age	Y	Y	Y	Y	Y	Y	Y	Y
Control Male Children-Current Monarch					Y	Y	Y	Y
Sample Restriction?	No weak queens	No weak queens	No weak queens / reigns with coruling queens	No weak queens / reigns with coruling queens	None	None	No reigns with co-ruling queens	No reigns with co-ruling queens

Notes. Variables not shown include polity and decade fixed effects. Robust standard errors clustered at the polity by century level are shown in parentheses. *** is significant at the 1% level, ** is significant at the 5% level, * is significant at the 10% level. Accession age is the average age of accession of the monarchs in the reign. Spousal military experience is one if the spouse had any military experience prior to marriage.