

Weakness in Numbers? Female Wellbeing and the Scarcity of Women in the American West

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Abstract: The American West was a bastion of women's rights in the late 19th and early 20th Centuries, a fact that is perhaps surprising given the region's predominantly male population early in its history. Is it possible that improvements in women's legal status in the early American West may have arisen not in spite of, but rather *because of* imbalance in these states' gender composition? Primary evidence shows that frontier policymakers proposed the expansion of women's rights as a solution to the scarcity of women in the early American West. By providing women rights elusive elsewhere in the U.S., they argued, they could entice the female settlers necessary for sustainable communities. To examine whether these stated intentions in fact manifested in policy, we test whether states that were more heavily male-skewed in the marriage-age population granted women greater rights to political participation. Despite their professed motivations for conceding rights to women, we find little quantitative evidence—whether at the state or local level, or differentially by access to polity—that these policymakers' desire to attract female settlers drove expansion in women's suffrage or in women's participation as elected representatives.

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1. INTRODUCTION

If the Northeast was the cradle of American feminism, home to activists like Elizabeth Cady Stanton and Susan B. Anthony, why was it less permissive on women's rights than states west of the Mississippi—states that were, for example, the first to enfranchise women? The American frontier's early progressive stance is especially striking considering its predominantly male population. What explains this apparent paradox? In this paper, we use several approaches to test the evolving relationship between the demand for female settlement and women's wellbeing in the United States. We hypothesize that states where the sex ratio in the prime marriage-age population skewed strongly male—like the frontier states of the West—fostered an egalitarian environment to attract the female migrants necessary for long-term settlement and population growth.

To test the drivers and consequences of women's empowerment, we leverage a new state-level panel dataset on American women's economic, social, and legal standing over the years 1870-1970. Early results suggest that a female-friendly institutional climate at the state level, particularly in matters of suffrage and political representation, was indeed effective at drawing female settlement. However, we find limited evidence that a state's sex ratio drove policy change, whether by itself or heterogeneously by degree of access to polity. Taking a more local approach, we use repeated votes on female suffrage over the period 1860-1920 to test whether U.S. congressmen from districts with more heavily male-skewed sex ratios were likelier to vote for female suffrage, particularly following exogenous shocks to the district's gender composition. However, despite the qualitative data indicating that politicians were sensitive to the needs of local bachelors and viewed rights concessions as a possible means of incentivizing female settlement, we do not find that local marriage market conditions drove progress in women's rights. Through this study, we contribute to an understanding of the forces which motivate—or in fact, fail to motivate—improvements in women's rights.

2. HISTORICAL BACKGROUND

The States and Women's Rights

Under the United States' federal system, the states have considerable discretion in determining policy. For instance, states have the autonomy to set many policies central to everyday life, including those pertaining to education, labor, and the family (Friedman, 2005). Of particular relevance to women's status, states have historically had discretion over a host of rights including female suffrage, a married woman's right to property, and legal access to contraception. Accordingly in this system, each of the 50 states holds a distinct set of policies pertaining to women, some more progressive than others.

This is especially apparent in history: despite the East Coast being the bastion of the American feminist movement (Cady Stanton, 1896), it was the Western states of the U.S. that were the early adopters of policies empowering women. For instance, several of these frontier states granted women full suffrage well before the Nineteenth Amendment made a woman's right to vote in national elections the law of the land (Mead, 2004). Still others made divorce easier than it was in the East, giving women greater freedom and power within marriage (Somerville Jones, 1987; Stevenson & Wolfers, 2006), and founded a greater proportion of higher education institutions as coeducational, expanding women's access to and improving the quality of women's education (Goldin & Katz, 2011).

What accounts for the early progressive stance of these Western states---and what factors, more generally, drive the adoption of female-friendly policies?

Drivers of Progress in Women's Wellbeing

The consequences of women's legal and economic empowerment have been well studied, both in historical and in modern developing-country contexts. For instance, in the U.S., full women's enfranchisement resulted in higher state government revenue and expenditure, especially on public goods such as education and hygiene campaigns (Lott & Kenny, 1999; Miller, 2008; Carruthers & Wanamaker, 2015).¹ Improvements in access to contraception lowered women's costs of attaining professional qualifications and led to increases in the age at first marriage and decreases in marital fertility (Goldin & Katz, 2002; Bailey, 2010). The enactment of married women's property rights fostered women's patenting and commercial activity (Khan, 1996). The provision of welfare benefits in the form of army pensions prompted Union Army widows to defer remarriage (Salisbury, 2014). Liberalization of divorce laws raised rates of divorce and female labor force participation while reducing domestic violence rates, female suicide rates, and levels of investment in marriage-specific capital (Friedberg, 1998; Stevenson & Wolfers, 2006; Stevenson, 2007; Stevenson 2008).² While developing-country research on women's empowerment has often focused on the individual-level, household-level, and society-wide effects of improvements in women's autonomy and bargaining power within the household—such as those associated with greater women's income share or education (e.g. review in Duflo, 2012; Doepke & Tertilt, 2014)—it has also addressed the beneficial effects of policy change targeting women, such as land reform (e.g. Allendorf, 2007) and the introduction of gender quotas in local leadership (e.g. Pande & Ford, 2011; Beaman et al., 2012).

However, the causes of progress in women's legal, economic, and social status—all the more important to understand given the potential equity and development benefits of women's empowerment—have received less systematic attention. Studies in this literature have tended toward the qualitative and smaller-scale. For instance, in a state case study of Utah, Beeton (1970) suggests that women's suffrage there was granted in an effort to eradicate legal polygamy, which policymakers expected newly enfranchised women to vote down. Nearby in California, efforts to explicitly secure married women's property may have been motivated by a desire to protect women from dissipate husbands, but the passage of this provision ultimately rested on the outcome of an abstract and philosophical debate about the merits of common law versus civil law approaches (Hargis, 1955). Only a handful of studies take a national view. Somerville Jones (1978) posits that the improvements in access to divorce in Eastern states resulted from these states' sense of competition with the more liberal West. Meanwhile, assessments of the success of organized women's lobbying groups in changing policy at the national and regional levels are mixed (McCammon, et al., 2001; McCammon, 2003; Mead, 2004; King, Cornwall, & Dahlin, 2005; Geddes & Tennyson, 2013), and may help explain why East Coast activists were less effectual than may be intuitively expected. One of the few studies in economics to examine the causes of change in women's legal status ties the transition from “patriarchy” to “empowerment” rights regimes to increases in the returns to human capital (Doepke & Tertilt, 2009). At this threshold in the returns to human capital, men are incentivized to trade off their own consumption and bargaining power in order to increase that of their daughters and all other women, thus accelerating human capital accumulation (Doepke et al., 2012).

¹ For contrast, Acemoglu & Robinson (2000), taking a cross-country view, suggest that women's enfranchisement “does not have major consequences for redistribution from the rich to the poor” (p. 1186), making changing social values rather than threats of unrest a likelier explanation for expansions in female suffrage.

² Similar patterns in female suicide, given improvements in post-divorce asset division, are found in Canada (Adam, Hoddinott, & Ligon, 2011).

These studies suggest that the causes of change in women’s legal status are complex and likely to be policy- and context-specific.³ Indeed, it is possible that the early permissiveness of the American West on women’s rights is due to a combination of factors ranging from these states’ newness and relatively low institutional barriers (Schiffman, 2009)⁴, to possible selectivity in the temperament, values, and gender norms of frontier migrants.⁵ Nevertheless, it is especially puzzling that the West took this early progressive stance given the dearth of women there at the time.⁶ We might expect that women’s rights are strongest where women are relatively numerous, and where activist movements more prominent—however, both of these conditions better describe the East, which lagged behind on women’s rights for decades, than the frontier West. Is it possible, then, that improvements in women’s legal status in the early American West may have arisen not in spite of, but rather *because of* imbalance in the sex ratio?

Demand for Female Settlement

Compelling primary-source evidence suggests that this might indeed be the case: that progress on women’s rights may have been driven by a desire to attract female settlers. Indeed, the question of how to attract and retain marriageable women emerges as a chief concern among frontier politicians—with rights concessions proposed as a promising strategy to this end.⁷

The issues of the scarcity of women in the West, and the need to create sustainable, gender-balanced communities, were clearly on the minds of policymakers such as Lt. Henry W. Halleck—a delegate to the California Constitutional Convention—who stated in 1849:

“I am not wedded...as yet to a woman; but having some hopes that I may be wedded...I shall advocate [to award married women property rights], and I would call upon all the bachelors in this convention to vote for it. I do not think we can offer a greater

³ If anything, a theme that seems to emerge from this literature is that progress in women’s rights rarely stemmed from a desire to empower women per se; instead, such progress often appears to be incidental to the achievement of other policy objectives. For instance, progress in married women’s property rights was at least partially a function of post-Civil War contracting needs (Hoff, 1991), while many higher education institutions in newer, sparsely populated states were coeducational from the time of founding simply for reasons of cost effectiveness (Goldin & Katz, 2011, pp. 383-384).

⁴ A state’s proportion male and its earliest date of founding (whether as a state or as a territory) are indeed highly correlated, beginning at 0.71 in 1870, remaining at roughly this level until 1900, and largely declining thereafter. Following a particularly sharp drop-off between 1950 and 1960, the correlation is 0.13 in 1970.

⁵ Recent scholarship has challenged the notion that improvements in women’s legal status in the early American West arose, as was popularly thought, from a frontier spirit of egalitarianism, or as an act of benevolence in recognition of pioneer women’s contributions (Kulba & Lamont, 2006). Rather, Kulba & Lamont (2006) suggest that frontier residents required as much strategic persuasion as those elsewhere on the issue of women’s rights.

⁶ Indeed, the gender imbalance dwarfs that in modern-day developing countries such as China and India. For instance, at its peak gender imbalance in our dataset in 1870, Montana was a whopping 89% male in the marriage-age population, while Wyoming, renowned for its pro-female institutional climate was over 70% male just a year after it (as a state) awarded full women’s suffrage.

⁷ Following the lead of primary sources that emphasized a need for women in the West, many contributions to the secondary historical literature classified Western women as “gentle tamers” who, in exchange for rights like the vote, “would curb less attractive appetites of strong willed and undisciplined Westerners” (Jensen & Miller, 1980; Brown, 1981). This view of women’s participation in the West only as a scarce and “civilizing” force has since been challenged by historians presenting detailed individual case studies exploring the experience of both Euro-American and Native American women. Nonetheless, the demographic imbalance of the frontier and its effects remains an active avenue of historical inquiry (Jensen & Miller, 2004).

inducement for women of fortune to come to California. It is the very best provision to get us wives” (Browne, 1850, p. 258).⁸

This need to specifically entice women to the frontier was echoed twenty-three years later in 1872 with reference to Wyoming, the first territory to grant full female suffrage (in 1869). General Edward M. Lee, who had been the Secretary of Wyoming Territory, wrote in the national periodical *The Galaxy*:

“The law in question [granting female suffrage] was not adopted in obedience to public sentiment, but because the Territorial lawgivers believed it would operate as a "first-class advertisement"; that their action in the premises would be telegraphed throughout the civilized world, and public interest thereby aroused, resulting in increased immigration and large accretions of capital to their new and comparatively unknown Territory” (Lee, 1872).

Clearly, contemporary decision-makers considered the scarcity of female residents to be a problem for new frontier settlements—and the creation of more progressive policies for women’s rights a possible solution.

Concerns about female settlement such as Halleck’s and Lee’s were not without precedent. Indeed, government-funded programs to send women to heavily male colonies with the express purpose of encouraging settlement, family formation, and population growth, featured in the early histories of French Canada and Louisiana as well as in that of Portuguese Asia (Ardoin, 1987; Ballantyne & Burton, 2009; Smith, 2011). Furthermore, it is intuitive to link gender imbalance to the evolution of demographic patterns, norms, and institutions. For instance, extreme female skewness in the French population following World War I strengthened men’s marriage market position (Abramitzky et al., 2011), while, somewhat paradoxically, the male-heavy composition of early Australian convict settlements resulted in the replication of patriarchal gender roles (Grosjean & Khattar, 2014).

Scholars such as Bodvarsson & Van den Berg (2013) have written at length about the push and pull factors governing the international migration decision, while others like Ferrie (2005) and Jaworski & Wilson (2013) have offered perspectives on the forces driving Americans to the West.⁹ However, it is not the aim of this study to test whether the expansion of women’s rights was effective in incentivizing female settlement, as frontier policymakers might have intended. Rather, the aim of this study is to quantitatively test whether early male-skewed sex ratios of the like cited by Halleck and Lee indeed translated into pro-female policy in U.S. history. Thus, and instead of validating alternative motivations for policy proposed by the secondary literature, we focus on testing the assertion in the primary literature that attracting female migrants was an underlying cause for the passage of pro-female legislation.

Our analysis contributes to an understanding of the determinants of progress in women’s rights, a matter of continuing relevance given that women’s empowerment remains a top development priority with known and wide-ranging benefits (Duflo, 2012). By addressing the policy responses to extreme gender

⁸ Although they may not have envisioned women’s rights as a solution to their difficulty finding wives, even the average man was concerned. Levi Stowell, a miner, carpenter and early Californian wrote in his 1849 diary: “No such thing as getting breakfast & washing dishes in time to go to Church. Oh! For a woman. no clean clothes, ragged shirts, no buttons on, O!” (Thorne, 1948) There was a recognition among western men from educated military men—like Halleck—to a tradesmen—like Stowell—that women were necessary and currently lacking on the frontier.

⁹ However, few empirical studies have focused systematically and comprehensively on the migration of women, largely because women are harder to match and track over time in historical data such as censuses. De Jong (2000) and Di Giovanni (2014) stand as exceptions and largely focus on theory or on modern-day data through which women’s migration patterns are plausible to track.

imbalance in the transition from boomtowns to permanent settlements, we also add to the literature on women and the development of the American West.

The rest of the paper proceeds as follows. In Section 3, we outline the main sources of state-level data on gender composition and women's suffrage and political representation. In Section 4, we outline the empirical strategy and results for state-level analysis, followed by those for an analysis of congressional-district-level voting patterns. In Section 5, we conclude.

3. DATA

Our analysis uses data from a new historical panel of indicators of women's rights and wellbeing, which includes measures of demographics and health, education, work, legal standing, political representation and intra-household and community status. This extensive and original Gender Parity Database (GPD), compiled as part of a larger project on gender and political economy in U.S. history, includes more than 60 markers of women's status at the state-decade level over the period 1870-1970,¹⁰ disaggregated by sex and race where relevant. While some measures are consolidated from existing studies, many have been newly digitized for this dataset. In assembling decennial data for all 50 states and territories from 1870-1970, we hope to build a resource with wide-ranging applications in interdisciplinary work that facilitates research into women's economic and social lives across both space and time in American history.

In this paper, we draw primarily on the GPD's variables pertaining to gender imbalance in the marriage-age population, as well as data regarding women's legal standing with respect to voting and political representation, and we focus on the 48 contiguous states as observed in 1870-1970, inclusive. The proportion of the marriage-age population (defined as ages 15-44, inclusive) that is male in a given state-year, calculated from data in IPUMS (Ruggles et al., 2010), is the chief explanatory variable of interest. Meanwhile, the policy outcomes of interest are whether or not women enjoyed full suffrage in a given state-year (Rusk, 2002; Schuler, 1920) and the proportion of elected state representatives in a given state-year who are female (Cox, 1996).

Data about women's suffrage prior to the ratification of the Nineteenth Amendment come from two sources: Jerrold G. Rusk *A Statistical History of the American Electorate* (2002) and a descriptive map of suffrage in different states published by Marjorie Schuler in the suffragette periodical *The Woman Citizen* in 1920. Suffrage did not always take the same form. Some states chose to give women municipal or state-level suffrage while continuing to deny them the right to vote for any national representative. Therefore, the GPD includes a range of variables that mark the dates in which women received different levels of suffrage. This paper, however, focuses particularly on the date in which a state or territory granted full suffrage (the year listed in Fig. 1).

Comprehensive data about women serving as elected representatives in state and territorial legislatures is a novel contribution, and has been transcribed and aggregated from piecemeal hard-copy sources. They are, therefore, not complete samples from 1870 to 1970. Lists of the number and proportion of state and territorial legislators that were women only cover 1890 forward (Cox, 1996). What has been described above pertains to state-level analysis. In the local-level analysis, we add data on congressional voting patterns; this data is discussed in more detail in Section 4.

¹⁰ We begin data collection after the end of the U.S. Civil War, a period of significant social, economic, and political upheaval, and before which systematic and high-quality data is often unavailable.

4. EMPIRICAL STRATEGY & RESULTS

Patterns in State Suffrage & Female Representatives

Figure 1 shows the early dominance of Western states in granting full suffrage to women. In many cases, women enjoyed more limited rights of suffrage, e.g. in local elections, well before the dates listed (Schuler, 1920). Figure 3a shows a breakdown of the proportion female of elected representatives by region (color-coded regions are provided in Figure 2 to aid in interpretation). Here, as in Figure 1, it is clear that the Western states afforded women a measure of political voice and participation earlier than the East, and is only overtaken by the North Atlantic states following the passage of women’s suffrage at the federal level through the Nineteenth Amendment. Even afterwards, however, the West retains a considerable advantage over all regions but the North Atlantic. Figure 3b shows that this pattern tracks not only regionally, but also by proportion male in the marriage-age population.

Historical decision-makers explicitly recommended that states should consider granting certain rights to women in order to attract female settlers. Accordingly, we first test whether the demand for female settlers was, as suggested by policymakers at the time, a significant motivator of decisions to empower women. We estimate the following specification by OLS:

$$indicator_{it} = \alpha + \beta_1 \times indicator_{i,t-1} + \beta_2 \times propmale_{i,t-1} + \theta_i + \eta_t + \gamma_i + u_{it} \quad [1]$$

Here, the women’s rights indicator of interest ($indicator_{it}$, where i indexes the state and t , the year) is regressed on its own lagged value as well as on the lag of the proportion male of a state or territory’s marriage-age population ($propmale_{i,t-1}$). The regression specification also includes state (θ_i) and year (η_t) fixed effects as well as linear state trends (γ_i), and standard errors are clustered at the state level.

In alternate specifications, the second lags of the proportion male and rights indicator variables are also included. The results for the effects of the state’s gender composition on female representation and full women’s suffrage are reported in Table 1. These results are statistically insignificant and suggest that despite gender imbalance being a stated motive for the expansion in women’s rights in the American West, it was not in fact a significant driver of the female-friendly institutional climate observed there.

Nevertheless, it seems that the strategy these policymakers proposed, whether or not it was enacted, was a reasonable one: inverting the specification given in [1]¹¹ shows that a more female-friendly institutional climate is indeed associated with a significant reduction in the gender imbalance, although these effects on the state’s gender composition are small.

¹¹ We acknowledge that this approach spotlights the issue of endogeneity. In the conceptual framework implied by contemporary frontier policymakers, a highly male population should adopt pro-female policies in order to attract female settlers. If this strategy is successful, then a more pro-female institutional climate should result in a more balanced sex ratio. Accordingly, endogeneity of the sort that complicates identification is a feature of this dynamic model and makes our hypothesis regarding the scarcity of women as a driver of progress in women’s rights difficult to test. In an attempt to address this endogeneity of the sex ratio to women’s legal, economic, and social circumstances, and vice-versa, earlier analysis (not reported) pursued a dynamic panel estimation approach (Arellano & Bond, 1991) as well as an instrumental variables strategy wherein precious metal booms (an exogenous shock to male migration patterns, and constructed from commodity price data in Jacks (2013) and GIS data on gold and silver deposits in U.S. Census of Mining (1880), following Dippel (2015)) served as an instrument for the state-year sex ratio. However, we have set these approaches aside due to the sensitivity of dynamic panel estimation to regression specification (Roodman, 2009), and due to the weakness of the instrument, respectively.

Table 2 reports the results of OLS regressions that test whether a policy environment favorable to women affected the gender balance of a state or territory’s marriage-age population. The proportion male of a state or territory’s marriage-age population ($propmale_{it}$, where i indexes the state and t , the year) is regressed on its own lagged value as well as on the lag of the women’s rights indicator of interest ($indicator_{i,t-1}$). The regression specification also includes state (θ_i) and year (η_t) fixed effects as well as linear state trends (γ_i), with standard errors are clustered at the state level, as follows:

$$propmale_{it} = \alpha + \beta_1 \times propmale_{i,t-1} + \beta_2 \times indicator_{i,t-1} + \theta_i + \eta_t + \gamma_i + u_{it} \quad [2]$$

As before, alternate specifications include the second lags of the proportion male and rights indicator variables. The results concerning the effects of female representation and full women’s suffrage on the state’s gender composition are reported in Table 2.

These preliminary results provide several insights. First: inertia prevails. Intuitively, an indicator’s lagged value is consistently a significant predictor of its contemporaneous value. The lagged proportion male is significant in its effect on current proportion male. Second: it appears that female-friendly environments attracted female settlers. Suffrage in one period is associated with significant decreases in the proportion male in the next; there are similar results for female political representation and other indicators whose effects are not reported in Table 2.¹² Third, the insignificant results in the second model indicate that one cannot assert that the need for female settlers motivated policy decisions in general—despite the testimony of specific historical actors.

Perhaps the lack of association between gender imbalance and women’s rights arises from the nature of policy change across time and space. For instance, Larson (1970) suggests that popular votes on women’s suffrage were likelier to fail than less democratic approaches to pro-female policy. Indeed, the less democratic or open to popular vote the route to the passage of female suffrage, the less likely was passage and the longer suffrage took to pass (Larson, 1976). Kulba & Lamont (2006) also suggest that the average frontier resident may have been less enlightened, and needed more persuading, on the issue of women’s rights than custodians of the public good, such as those serving in constitutional conventions or similar executive and legislative forums may have been. It may be that collective action and coordination on issues such as remedying gender imbalance may have been more difficult for the electorate than for founders and early executives.

Accordingly, we test for heterogeneity among more highly male-skewed states by the degree of access to polity, or the degree to which the average citizen influenced political events. To do this, we interact the gender composition term with a measure of how democratic policymaking was in the relevant state-year. Thus, we estimate the following by OLS:

$$indicator_{it} = \alpha + \beta_1 \times accesstopolity_{i,t-1} \times propmale_{i,t-1} + \beta_2 \times accesstopolity_{i,t-1} + \beta_3 \times propmale_{i,t-1} + \theta_i + \eta_t + \gamma_i + u_{it} \quad [3]$$

Data on access to polity is taken from McCammon, et. al. (2001)¹³ and scaled from 0 to 1 for ease in interpretation; here, higher values are associated with greater popular participation in policy. Since this data is available annually for 1866-1919, we restrict our analysis to 1870-1910, inclusive. If indeed the less policy decisions were open to popular voting, the more likely the passage of women’s rights, we

¹² These include property rights, female literacy and number of coed public institutions. Results available from the authors on request.

¹³ This data was not published with the paper. However, McCammon provided the data after a personal request via email on March 29, 2015

would expect this interaction term to be negative: that is, amongst places which are more highly male, those that are also more democratic should be less likely to expand women’s rights.

Results are presented in Table 3. Although the signs of the interaction coefficient are intuitive, these coefficients are insignificant and suggest that party politics may have overshadowed constituency-specific concerns at least in the case of local gender imbalance.

Congressional Voting on Full Suffrage

Given that marriage markets were likely to be highly local, and that local politicians were likelier to be better aware of and more sensitive to the needs of their specific constituents, it may be necessary to examine the policy effects of gender imbalance at the sub-state level.¹⁴ Accordingly, we test whether congressmen in districts whose populations were more highly male were likelier to vote in favor of expanding women’s rights. Specifically, we exploit repeated votes in the U.S. House of Representatives over questions of full female suffrage in the run-up to the Nineteenth Amendment to examine whether congressmen’s voting behavior changes with exogenous changes in the gender composition of their constituency.

Women’s suffrage was, in fact, voted on in the Senate and House several times before the passage of the Nineteenth Amendment (Poole, 2015). In this analysis, we match the gender composition of congressional districts calculated from Ruggles et al. (2010) and Lewis, et al. (2013) with roll call voting data on 6 federal pro-female suffrage bills before the House of Representatives in 1872, 1882, 1915, and 1918 (Poole, 2015).

To test the influence of local marriage market needs (as given by the proportion male in the marriage-age population, as before) on a congressman’s pro-suffrage voting behavior, we estimate the following regression by OLS:

$$yeavote_{ijt} = \alpha + \beta_1 \times propmale_{it} + x_{ijt} \psi + \theta_i + \eta_t + \gamma_i + u_{ijt} \quad [4]$$

Here, $yeavote_{ijt}$ is a binary variable that takes the value of 1 if the congressman j from district i in year t voted explicitly in favor of the female suffrage, and 0 if he voted against it or abstained. $propmale_{it}$ is the proportion male in the white marriage-age population in the congressman’s district in the year of the vote.¹⁵ In the main specification $propmale_{it}$ is continuous; in others, we use a binary indicator for “extreme” male-skewness, which takes the value of 1 if the district is more than 2 standard deviations from the mean proportion male. The regression specification also includes district (θ_i) and year (η_t) fixed effects as well as linear district trends (γ_i) and a vector of controls which vary with the specification, but can include fixed effects for the congressman’s party and the interaction of the congressman’s party with an indicator for “South.” Standard errors are clustered at the district level.

Results are reported in Table 4, and suggest that district-years that are more extremely male in their gender composition do not, in fact result in higher probabilities of pro-suffrage voting; similarly, results using continuous measures of gender composition and the most rigorous set of fixed effects show little influence of local marriage market conditions on congressional voting behavior. These results indicate

¹⁴ A second advantage of moving below the state level is that it allows us to increase the number of observations from 48 states to several hundred congressional districts.

¹⁵ Rather than interpolate the population between censuses, we use two alternative ways to ascribe population gender composition to the year in which a given vote takes place. First, we use the most recent known gender composition, under the logic that these might be the most recent official figures to which the congressman has access and is so responding in his voting behavior. Second, we use the gender composition in the closest census year to the vote.

that other district conditions and party concerns may have dominated any stated desire to entice female settlers by conceding rights. Perhaps the stated rationale for improving women's rights was a weak one among many others, or perhaps policymakers faced barriers to enacting their vision. We hope in ongoing analysis to better understand how and why these stated objectives failed to manifest in action.

5. CONCLUSION

It is puzzling that although frontier leaders proposed the expansion of women's rights as a means of attracting female settlers and remedying extreme gender imbalance in their constituencies, this vision did not translate systematically into policy—even where policymakers had the discretion to act without popular consensus, and even where policymakers had greater visibility into local constituents' needs. It appears, for instance, that the gender composition alone may not have driven policy change, and that cultural and informational barriers together with party concerns and coordination problems may have hampered strategic improvements in women's rights. It is possible that gender composition concerns interacted with the attractiveness of these regions to female settlers (e.g. by rates of urbanization, by suitability for arable agriculture, by access to employment opportunities for women), or that they were dominated by party politics or even by concerns these contemporaries failed to articulate but which nevertheless may have driven their decision-making (e.g., Doepke & Tertilt, 2009). In ongoing analysis we hope to apply alternate approaches (e.g. hazard models describing time to policy change) as well as to clarify some of the factors mentioned above, which may have mediated the relationship between gender composition/local marriage market needs and women's rights.

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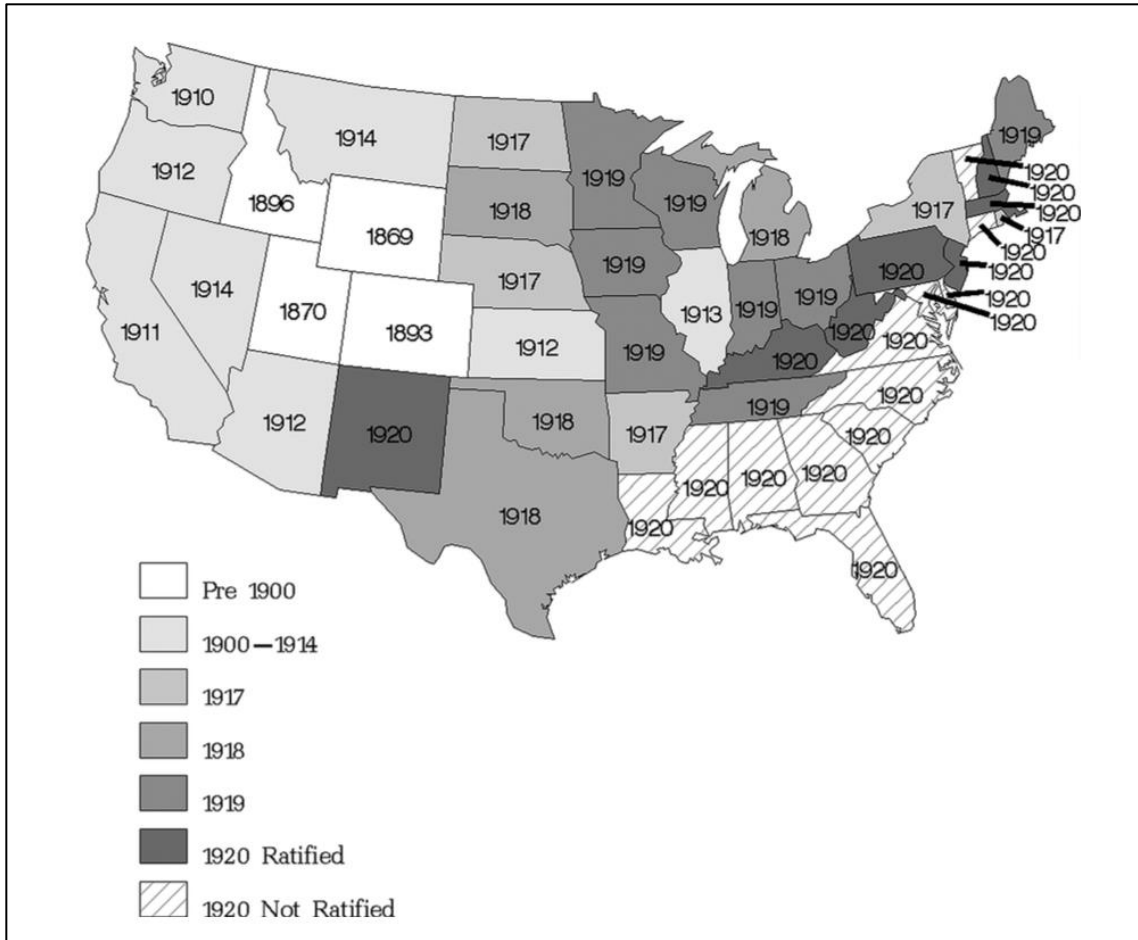


Figure 1. Year in which states granted full women’s suffrage and/or ratified the Nineteenth Amendment. Reproduced from Grant Miller, “Women’s Suffrage, Political Responsiveness, and Child Survival in American History”, *Quarterly Journal of Economics* 123, no. 3 (2008): 1287 – 1327.

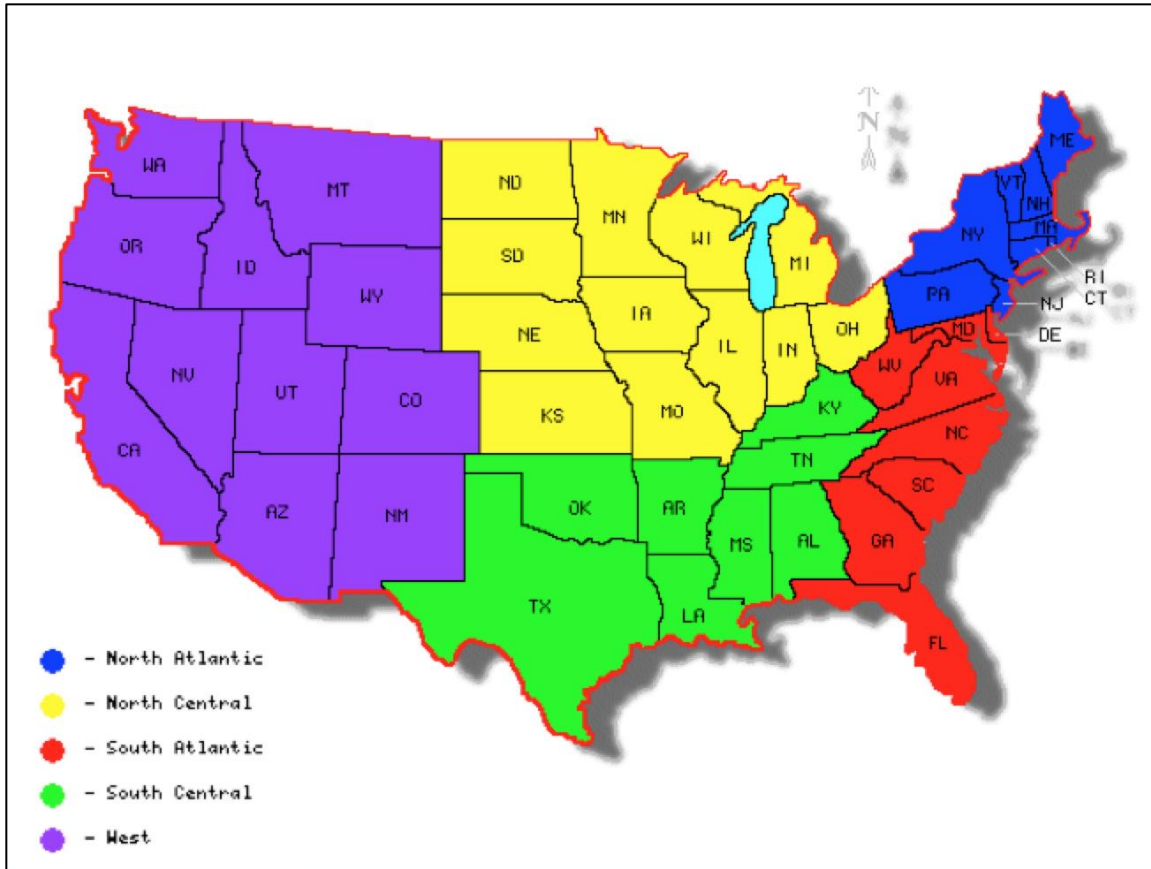
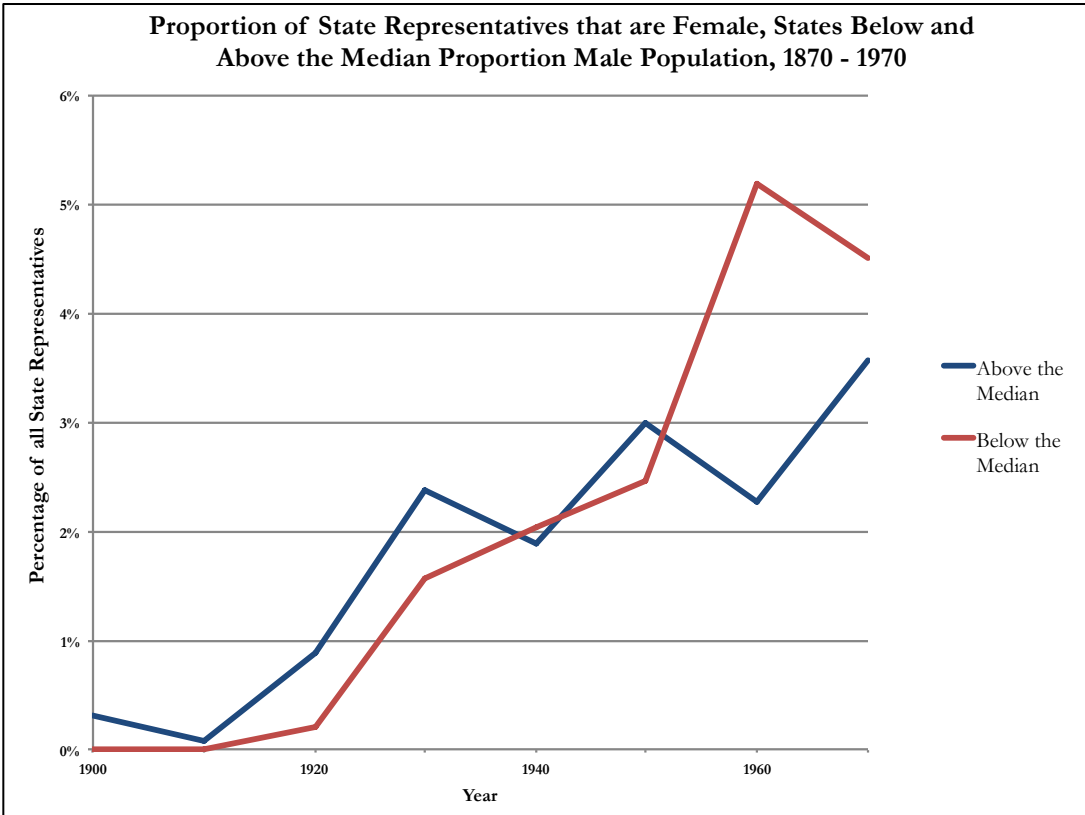
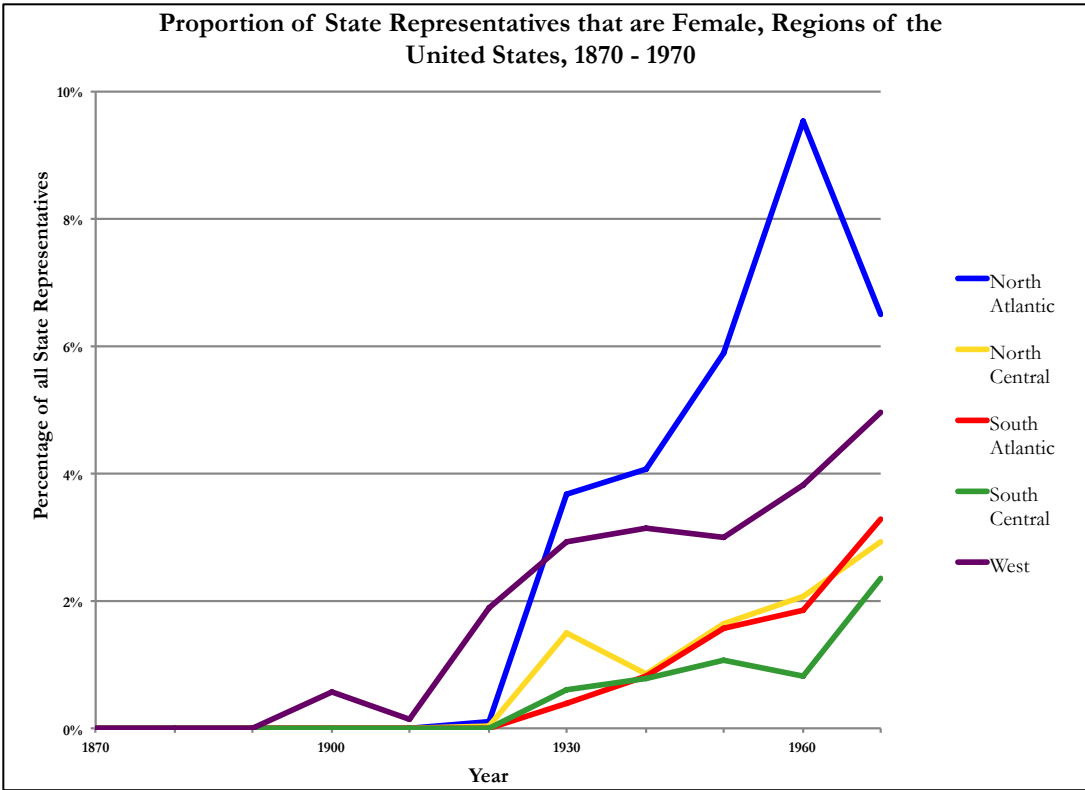


Figure 2. Census regions, 1880 – 1900. See U.S. Department of the Interior, Census Office. *Report of Vital and Social Statistics in the United States at the Tenth Census: 1880* (Washington D.C.: Government Printing Office, 1885)



Figures 3a & b. Proportion of State Representatives that are Female, Regions of the United States, 1870 – 1970 & Proportion of State Representatives that are Female, States Below and Above the Median Proportion Male Population, 1870 – 1970 (Data from U.S. Vital Statistics).

Table 1: Effect of Gender Composition on Policy

	Prop Fem State Reps (1)	Prop Fem State Reps (2)	Prop Fem State Reps (3)	Prop Fem State Reps (4)	Prop Fem State Reps (5)	Full Suffrage (6)	Full Suffrage (7)	Full Suffrage (8)	Full Suffrage (9)	Full Suffrage (10)
L1.Prop Male	0.000 (0.022)	0.020 (0.028)	-0.002 (0.023)	0.012 (0.026)	0.012 (0.027)	-0.675 (0.453)	-0.249 (0.461)	-0.568 (0.393)	-0.242 (0.446)	-0.299 (0.480)
L2. Prop Male		-0.004 (0.064)		-0.005 (0.066)	-0.005 (0.060)		-1.205 (1.297)		-1.187 (1.339)	-1.505 (1.353)
L1. Prop Fem State Reps			-0.023 (0.082)	-0.105 (0.079)	-0.106 (0.089)					
L2. Prop Fem State Reps					0.005 (0.133)					
L1. Full Suffrage								0.112 (0.075)	0.011 (0.061)	0.024 (0.073)
L2. Full Suffrage										-0.146*** (0.028)
R ²	0.759	0.766	0.759	0.768	0.768	0.874	0.874	0.875	0.874	0.877
Observations	479	431	479	431	431	479	431	479	431	431

*** p<0.01, ** p<0.05, * p<0.1 Note: Table reports lagged *indicator* and *propmale* coefficients; all regressions include state and year fixed effects and state trends. Standard errors are clustered by state.

Table 2: Effect of Policy on Gender Composition

	Prop Male (1)	Prop Male (2)	Prop Male (3)	Prop Male (4)	Prop Male (5)	Prop Male (6)	Prop Male (7)	Prop Male (8)	Prop Male (9)	Prop Male (10)
L1.Prop Male			0.272*** (0.067)	0.170*** (0.054)	0.156*** (0.046)			0.273*** (0.068)	0.181*** (0.061)	0.166*** (0.052)
L2. Prop Male					0.119* (0.064)					0.128* (0.070)
L1. Prop Fem State Reps	-0.180** (0.071)	-0.060 (0.070)	-0.105 (0.063)	-0.027 (0.075)	-0.030 (0.072)					
L2. Prop Fem State Reps		-0.374*** (0.126)		-0.332** (0.134)	-0.304** (0.132)					
L1. Full Suffrage						-0.013* (0.0071)	-0.007 (0.0045)	-0.008 (0.006)	-0.005 (0.004)	-0.004 (0.004)
L2. Full Suffrage							-0.009 (0.006)		-0.007 (0.005)	-0.005 (0.005)
R ²	0.792	0.764	0.809	0.772	0.774	0.792	0.760	0.810	0.768	0.770
Observations	478	430	478	430	430	478	430	478	430	430

*** p<0.01, ** p<0.05, * p<0.1 Note: Table reports lagged *indicator* and *propmale* coefficients; all regressions include state and year fixed effects and state trends. Standard errors are clustered by state.

Table 3: Heterogeneous Effect of Gender Composition on Policy by Access to Polity

	Prop Fem State Reps (1)	Prop Fem State Reps (2)	Full Suffrage (3)	Full Suffrage (4)
L1.Access to Polity X Prop Male	-0.068 (0.073)	0.000 (0.000)	-2.912 (3.139)	0.000 (0.000)
L1. Access to Polity	0.039 (0.041)	0.000 (0.000)	1.676 (1.798)	0.000 (0.000)
L1. Prop Male	0.000 (0.060)	0.000 (0.000)	0.517 (2.454)	0.000 (0.000)
L2.Access to Polity X Prop Male		0.000 (0.000)		0.000 (0.000)
L2. Access to Polity		0.000 (0.000)		0.000 (0.000)
L2. Prop Male		0.000 (0.000)		0.000 (0.000)
R ²	0.850	1.000	0.848	1.000
Observations	183	136	183	136

*** p<0.01, ** p<0.05, * p<0.1 Note: Table reports lagged *propmale* and *accesstopolity* coefficients along with their interactions; all regressions include state and year fixed effects and state trends. Standard errors are clustered by state.

Table 4: Effect of District Gender Composition on Pro-Suffrage Congressional Voting

	Yea Vote (1)	Yea Vote (2)	Yea Vote (3)	Yea Vote (4)	Yea Vote (5)	Yea Vote (6)	Yea Vote (7)	Yea Vote (8)	Yea Vote (9)	Yea Vote (10)	Yea Vote (11)	Yea Vote (12)
<i>Prop Male</i>												
Extreme (Bin)	0.06** (0.03)	-0.11 (0.16)	-0.12 (0.16)	0.04 (0.03)	0.03 (0.03)	-0.10 (0.15)	-0.11 (0.15)	0.05 (0.04)	-0.08 (0.15)	-0.16 (0.25)	0.04 (0.04)	0.03 (0.04)
Continuous	0.71*** (0.22)	-0.45 (0.77)	-2.24 (1.79)	0.59** (0.23)	.50** (0.24)	-0.31 (0.78)	-0.30 (0.78)	.72*** (0.26)	0.13 (0.75)	-2.82 (1.86)	0.63** (0.27)	0.54** (0.27)
Population?	Most Recent	Most Recent	Most Recent	Most Recent	Most Recent	Most Recent	Most Recent	Closest	Closest	Closest	Closest	Closest
Year FE		X	X				X	X		X	X	
District FE		X	X				X	X		X	X	
District Trends			X							X		
Party FE				X	X	X	X				X	X
Party x South					X		X					X

*** p<0.01, ** p<0.05, * p<0.1 Note: Each coefficient listed in the table represents a distinct regression. The table reports coefficients for binary and continuous measures of male-skewed gender composition; fixed effects and trends are as specified. Standard errors are clustered by congressional district.