Women’s Liberation: What’s in It for Men?∗

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Abstract

The nineteenth century witnessed dramatic changes in the legal position of women. In most countries the extension of rights to women amounted to a voluntary renouncement of power by men. In this paper, we investigate the economic incentives for men to share power with women. Assuming that there is a tight link between legal rights and the marital bargaining position of women, we show that men may want to voluntarily relinquish some of their power once technological change increases the importance of human capital. The reason is that men face a trade-off between the rights they want for their own wife (namely none) and the rights for other women in the economy. We assume that mothers care more about the well-being of children than fathers do. Thus, more rights for women leads families to devote more time to educating children and thereby to a higher growth rate in the economy. The drawback for men is that their consumption share vis-à-vis their own wife is reduced. An increase in the returns to human capital increases the gains from education and thus men may voluntarily vote for women’s rights to capture these gains.

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1 Introduction

“Once married, a bride was obliged by law and custom to obey her husband – a requirement so fundamental to the biblical idea of a wife that it remained in most Jewish and Christian wedding vows until the late twentieth century. After all, wives were considered a husband’s “property,” alongside his cattle and his slaves.”

Marilyn Yalom, A History of the Wife (2001)

Prior to 1850, married women around the world had essentially no legal rights. This is in stark contrast to the legal position of women today, where, at least in the developed world, identical laws apply to men and women. By and large, the change occurred as a voluntary extension of rights to women by men during the late 19th century. In this paper we develop a positive theory of rights for women based on the idea that better legal rights for women increase their bargaining power within the household. We analyze the incentives for men to voluntarily worsen their own bargaining power, and we argue that the ultimate driving force was an increase in the importance of human capital. We propose a mechanism through which human capital and the incentives of men to share power are linked.

Until the mid 19th century a formidable disparity between the legal rights of men and women, specifically between married men and women, existed in England. Since the foundation of American law was largely based on English common law, the situation of women in the U.S. was very similar. In both countries, upon marriage, the legal rights of a woman merged and became that of her husband.1 This meant that married women had practically no rights regarding property, child custody, nor could they obtain a divorce. Married women could not conduct business without their husband’s consent, nor did they have the rights to their own earnings. Women also did not have the right to vote. In short, women had no legal existence.2

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1The English common law makes the legal distinction between a feme sole, a single woman who had some legal rights, and a feme covert, a married woman with no rights of her own.

2This legal impotence of married women in the mid-19th century is famously summarized in Elizabeth Cady Stanton’s Seneca Falls Declaration and Caroline Norton’s important pamphlet “A
The second half of the nineteenth century marked a period of considerable shift in the legal position of married women. One of the earliest changes was a shift in child custody rules, with Iowa being the first U.S. state that allowed custody to mothers in 1838 and the *Custody of Infants Act* in England that passed in 1839 which allowed mothers to be awarded custody of children in the event of a divorce. Divorce was still rare in England because it required an Act of Parliament. Thus another significant step was the passing of the 1857 *Matrimonial Causes Act*, which permitted secular divorce in England. The same act also established divorced women as feme sole and thereby gave them legal rights identical to a single woman. The first suffrage laws came in form of school suffrage in the U.S. which allowed women to vote at school meetings. The next monumental changes in England were the *Married Women Property Acts* of 1870 and 1882. The acts enabled married women to have control over their earnings, to own separate property, and gave women the ability to write contracts. Similarly, almost all U.S. states had established some form of married women’s property rights by the end of the 19th century. Finally, women gained the right to vote in national elections in England in 1918 through the *Woman Suffrage Act* and in the U.S. in 1920 through the Nineteenth Amendment to the United States Constitution.

In short, during the latter half of the 19th century, both the United States and England pro-actively extended rights to women that had the capacity to alter the dynamics of various social, political, and economic spheres. In both countries it were men who voted for these changes and thereby voluntarily gave up some of their own power. Interestingly, most laws that originally put constraints on women did so for *married* women only. This suggests that husband’s were benefiting from these constraints. It seems quite plausible that a husband would prefer to keep his wife’s outside option low because this gives him a better bargaining position with her. This hypothesis is supported by some of the argu-

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3 A detailed time line for both England and the U.S. is given in Appendix A.
4 Note, however, that the circumstances under which men and women could apply for divorce were still very different: Men were allowed to file for a divorce on the grounds of adultery, while women could file only if adultery was coupled with incest, bigamy, cruelty or desertion.
5 For the case of England, Stone (1993) documents carefully why divorce was not a meaningful
ments made by the anti-suffrage movement. For example, Orestes Brownson, a prominent protestant minister, argued in 1873 that the family would fall apart as soon as women were allowed to enter the public sphere (Brownson 1885). Why, then, would men ever agree to grant more rights to women?

The idea put forth in this paper is that there is a trade-off between what men want for their own wife vs. for other men’s wives (e.g. their daughters). If the lack of legal rights means that husbands have all the bargaining power relative to their wife, then men ideally want their own wives to have no rights. However, they might want rights for other women, in particular their daughters. We assume that rights are extended by law and thus will affect all marriages symmetrically. We assume that women care more about the well-being of their children than men do. A better position of women will thus lead automatically to a better education of all children. A man prefers his children to find high-quality mates, and therefore stands to gain from increasing the power of his children’s mothers-in-law. If men can vote on the extent of women’s rights, they will vote to give them rights just enough to equalize the marginal loss from rights to their wife with the marginal benefit from rights to other men’s wives (daughters and mothers-in-law of own children etc.). We argue that this trade-off has changed over time, because of an increasing importance of human capital. More specifically, as returns to human capital increase, the efficiency loss from under-investment in human capital increases. Eventually, men will benefit from voting for full rights for all women.

To analyze this idea in detail, we provide a formal overlapping generations model. The core of the proposed theoretical framework consists of a model of fertility choice with a tradeoff between the quantity (i.e., number) and quality (i.e., education) of children. Our particular model is closely related to the model of altruistic parents introduced by Becker and Barro (1988) and Barro and Becker (1989), which we modify by explicitly modeling husbands and wives. Choices are to be made regarding the number and investment in children and the allocation of consumption across spouses. A disagreement between spouses arises outside option for women. Women suing for separation would almost surely bring extreme financial hardship upon themselves, they would lose control, and in many cases even contact with their children, and finally they would face extreme public embarrassment as the only grounds for divorce were extreme cruelty or adultery of which the details would be discussed in court.
because women put a higher weight on their children’s well-being relative to men. This leads families to devote more time to educating children and thereby a faster human capital accumulation when women are part of the decision-making progress. We analyze two political regimes that affect how decisions are made in the family. Under patriarchy, family decisions are made entirely by the husband while under empowerment decisions are made jointly by husband and wife. We then allow men to vote on the political regime and analyze the incentives to do so. We find that when returns to education are low, men are better off living in patriarchy, while when returns to education are high and parents want fewer but more educated children, men gain from voting for female empowerment. We show that an increase in the returns to human capital can trigger a regime switch towards more rights for women. Thus, our theory places the introduction of women’s rights in the context of the demographic transition and the increased accumulation of human capital in the second phase of the industrial revolution. To this end, our theory builds on unified models of economic and demographic change such as Galor and Weil (1996), Galor and Weil (2000), Greenwood and Seshadri (2002), Hansen and Prescott (2002), Boldrin and Jones (2002), and Doepke (2004).

To corroborate our argument, the paper contains an extensive section with historical evidence. We show how the timing of increased schooling, declining fertility, and the extension of rights in the data is consistent with the model implications. We also extensively discuss the historical debates on women’s rights by providing evidence from historical newspaper articles both for England and the United States. We document that women’s role in the education of children was indeed reflected in the arguments put forth by supporters of the reforms. The exogenous driving force which we argue led to the extension of rights to women is an increase in the returns to human capital. While direct evidence on returns to schooling for this time period is scarce, the dramatic increase in elementary enrollment rates indicates that schooling became more desirable over the course of the 19th century. Whether the increase in schooling was driven by skill-biased technological change or something else is largely irrelevant for our analysis. Factors that indirectly raised the private return to schooling around the turn of the
century include the public provision of education\(^6\) (by decreasing the private cost of schooling), laws prohibiting child labor (by decreasing the opportunity cost of schooling), as well as widespread public health campaigns such as the hookworm eradication program (around 1910) that improved children’s ability to learn (Bleakley (2007)).

A crucial assumption for our argument to work is that mothers put a higher weight on their children’s well-being than fathers do. There is a substantial literature that supports such an assumption. Several studies have used natural experiments to show that when women are in control, they tend to spend more on children (e.g. Lundberg, Pollak, and Wales (1997) for the U.K., Pitt and Khandker (1998) for Bangladesh, Case and Deaton (1998) for South Africa, and Attanasio and Lechene (2002) for Mexico). The reason for such behavior may be related to higher paternity uncertainty for men (e.g. Anderson (2006)) but also the more limited reproductive capacity of women. Another reason might be that altruism towards children increases in time spent with children, and that women typically do most of the child-rearing. The idea that female empowerment leads to higher investments in child quality (such as education, health care, and nutrition) and less in quantity is also extensively discussed in the demography literature (Federici, Mason, and Sogner (1993)). Eswaran (2002) argues that one reason for such behavior is that women bear relatively higher utility costs of child-bearing (e.g. pains and mortality associated with child-bearing) than men. In another empirical contribution, Miller (2006) analyzes the connection between women suffrage, public health spending, and child survival rates in the U.S. and argues that investment in children increased significantly in response to women having more power.

Not much economic research has focused on changes in the legal position of women. The most closely related paper is Geddes and Lueck (2002), which argues that as wealth increases, women’s rights will expand because the incentives under “self-ownership” to use wealth efficiently are greater than when controlled

\(^6\)Fishlow (1966) carefully documents the increase in education expenditures during the 19th century: public spending went from $7.6 million in 1850 to $229.6 in 2000 (these numbers are not adjusted for inflation).
by the husband. The authors also argue that as market wages increase, women’s rights will expand because the gain from shifting women’s time from homework to human-capital accumulation and market work is increasing. We do not find this idea very convincing because the timing seems wrong. Most rights were extended before women entered the labor force in large numbers. For example, only 5% of married women worked in the market in 1920 the year in which federal suffrage was extended to all women in the United States.

There is a somewhat larger literature on the extension of the franchise, both for women and more generally. Papers that analyze the general extension of franchise include Acemoglu and Robinson (2006), Lizzeri and Persico (2004), Diaz (2000), and Jack and Lagunoff (2006). While some of the arguments put for in this literature might also be relevant for women, we believe that women deserve special attention for several reasons. First, economic rights, such as the right to own property, were extended to women well before the right to vote. Secondly, there was a formidable asymmetry in the rights of single vs. married women, which suggests the importance of family interactions. Third, women are much more interconnected with men than, say, the aristocracy was with peasants. Finally, women are physically weaker than men and make only 50% of the population so that, for example, the threat of revolutions seems an improbable argument for the case of women. Bertocchi (2007) presents an argument for the extension of suffrage specifically to women. The idea is that the decline of the gender wage gap reduced disagreement about the optimal tax rate between men and women, which lowered the cost for men to include women in the franchise. While the idea is interesting, the argument does not seem to apply to the changes of the 19th century, which are the focus of this paper.

The next section sets up the formal model. In Section 3 we analyze the incentives to share power for men, and Section 4 lays out the entire transition from a regime with no education and no rights to a world where education is important and

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7These authors have no formal model.

8There are also a few empirical papers on the topic. Jones (1991) uses U.S. cross state data between 1915 and 1919 to analyze who voted for women’s suffrage. Washington (2006) uses data from the 105th U.S. Congress (1997-98) and finds that congressmen are more likely to vote in favor of women’s rights the higher their fraction of daughters. Oswald and Powdthavee (2006) find a similar result for the UK.
women have rights. Section 5 provides extensive historical evidence for England and the United States and Section 6 discusses the implications for development. Section 7 concludes. All proofs are contained in the mathematical appendix.

2 A Model of Women’s Rights

Our model economy is populated by overlapping generations of men and women who are joined in marriage. Each household is composed of a husband, a wife, and their children. Couples have to decide on fertility, the education of their children, and the allocation of consumption between the husband and the wife. Women’s rights are represented as the relative bargaining power of the husband and the wife. Women’s rights are endogenous; in particular, men can vote on whether to extend rights to women. The focus of our analysis is to determine how the economic environment affects men’s incentives to support women’s rights.

2.1 Preferences and Constraints

Each couple in our economy has an equal number of sons and daughters. We use \( i \in \{ m, f \} \) to denote gender (male or female), and \(-i\) denotes the gender opposite to \(i\). People care about their own consumption \( c_i \), their spouse’s consumption \( c_{-i} \), their number of children of each gender \( n \) (i.e., \( n \) sons and \( n \) daughters), and the average of the utilities of their sons \( U'_m \) and daughters \( U'_f \). The utility function of an adult \( i \) with spouse \(-i\) is given by:

\[
U_i(c_i, c_{-i}, n, U'_m, U'_f) = u(c_i, c_{-i}, n) + \gamma_i \left( \frac{U'_m + U'_f}{2} \right),
\]  

(1)

where:

\[
u(c_i, c_{-i}, n) = \log(c_i) + \sigma \log(c_{-i}) + \delta \log(n).
\]

Echevarria and Merlo (1999) use a related two-parent dynastic model to analyze gender differences in education. There is no voting on women’s rights, but men can increase the position of their daughters by choosing a higher education level which increases the daughter’s outside option and hence her bargaining position in marriage.
Thus, $\sigma$ is the weight on spousal consumption, and $\delta$ is the weight on the number of children. We assume that $0 < \sigma < 1$ (people value their spouse’s consumption less than their own) and $\delta > 0$ (people like children). The only gender-specific part of the utility function is the weight $\gamma_i > 0$ attached to the welfare of the children. A central assumption of our model is that women attach relatively more weight to the welfare of their children than men do, i.e., $\gamma_f > \gamma_m$. This assumption is crucial for our results, and we will elaborate on it more below.

Both spouses have one unit of time available. Men use all of their time for work $t_m = 1$, while women split their time between working, $t_f$, and raising and educating children. The assumption that women bear the entire burden of caring for children is not crucial, but is made for simplicity and realism.\footnote{One reason why women have historically done most of the child-rearing is their ability to breast-feed and the fact that high-quality breast milk substitutes were only developed in the mid 20th century, as documented in Albanesi and Olivetti (2006).} Weakening or even reversing this assumption would not alter the main results.

The labor effort of men and women is combined by a Cobb-Douglas household production function to produce the consumption good. For a family where the husband and the wife have human capital $H_m$ and $H_f$, respectively, the budget constraint for consumption is given by:

$$c_m + c_f = A(t_f H_f)^\alpha (t_m H_m)^{1-\alpha}$$

(2)

There is a time cost $\phi$ for raising each boy-girl pair. In addition, the couple can decide to educate their children. The time spent educating the daughters is given by $e_f$ per daughter, and the time spent on educating each son is $e_m$. The time constraint for women is thus

$$t_f + (\phi + e_m + e_f)n \leq 1.$$  

(3)

The point of education is to increase the children’s human capital, which im-
proves their welfare. The laws of motion for human capital are given by:

\[ H'_m = \max \{1, (B e_m)^\theta H_f^2 H_m^{1-\beta}\}, \]
\[ H'_f = \max \{1, (B e_f)^\theta H_f^2 H_m^{1-\beta}\}, \]

where \( H'_m \) and \( H'_f \) denote the human capital of sons and daughters, and the parameters satisfy \( B \geq 0, \theta \geq 0, \) and \( 0 < \beta < 1. \) Two features are noteworthy here. First, the human capital of both parents has a positive effect on the productivity of education. Second, even without education \((e_m = e_f = 0)\) children receive one unit of human capital, which can be interpreted as the basic productive capacity of an uneducated person (such as the ability to perform unskilled physical tasks). If the education technology is relatively unproductive (i.e., \( B \) or \( \theta \) is low) the individual choice problem will yield a corner solution in which parents do not educate their children. While this possibility is not crucial for our results, analyzing the no-education case will help illuminate the extent to which human capital accumulation is a necessary prerequisite for female empowerment.

The elasticity parameter \( \theta \) in the production function for human capital plays an important role in our analysis. In particular, \( \theta \) pins down the return to education, i.e., the percentage increase in children’s earnings for a given increase in education time \( e_m \) or \( e_f. \) We will see below that the level of \( \theta \) is a key determinant of men’s incentives for supporting women’s rights.

### 2.2 Determination of Economic Choices

Decision-making in a household depends on the political regime. Under either political regime, the current generation only sets current economic choices. That is, there is no possibility of committing future family members to particular decisions. There are two possible political regimes. Under the **patriarchy regime**, men make all decisions. Economic choices are therefore determined by maximizing male utility:

\[ \{c_m, c_f, n, e_m, e_f\} = \argmax \{U_m(c_m, c_f, n, U'_m, U'_f)\}, \]
where the maximization is subject to the constraints (2) to (5) above. In the alternative regime, decisions are made through efficient bargaining between the husband and the wife with equal weights. We call this the *empowerment regime*. Under this regime, economic choices are given by:

\[
\{c_m, c_f, n, e_m, e_f\} = \arg\max \left\{ \frac{U_m(c_m, c_f, n, U'_m, U'_f) + U_f(c_f, c_m, n, U'_m, U'_f)}{2} \right\},
\]

(7)

where once again the maximization is subject to (2) to (5). Implicitly, we assume that the government can set the relative bargaining power of the spouses (with women receiving zero weight under patriarchy and equal weight under empowerment). The political regime is determined through a vote of the male population, to be described in more detail below.

To solve the maximization problems in (6) and (7), we first need to determine how the children’s utilities are affected by parental choices in each regime. This can be done by formulating the decision problem of a household recursively, so that all utilities become functions of the state variables. Clearly, the human capital of husband and wife \(H_m\) and \(H_f\) are state variables for a family. However, these state variables are not sufficient to describe the decision problem. Parents care about the welfare of the children, which in turn depends on the human capital of the children’s future spouses. We assume (realistically, one would hope) that the sons and daughters of a given family do not marry each other, but rather draw a spouse at random from other families. We therefore also need a state variable that summarizes the family’s expectations regarding the human capital of their children’s future spouses. Given our setup, these state variables are given by the economy-wide averages of male and female human capital, denoted \(\bar{H}_m\) and \(\bar{H}_f\).

The aggregate state vector is written as \(\bar{H} = \{\bar{H}_m, \bar{H}_f\}\).

We use \(V^P_m\) and \(V^P_f\) to denote the male and female value functions under pa-

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11The exact weighting is not essential for the qualitative results, what matters is that the weight of the wife increases relative to patriarchy.

12One interpretation of this mechanism is that legal rules on child custody, divorce, and marital property affect the outside option of women, and thereby affect their bargaining weight.

13We focus on equilibria in which all dynasties start out with the same initial human capital, in which case individual and aggregate human capital are always equal, \(H = \bar{H}\). Nevertheless, the distinction between individual and aggregate variables is essential, because individuals do not internalize their impact on aggregate human capital.
triarchy, and \( V^E_m \) and \( V^E_f \) denote the value functions under empowerment. For either gender \( i \in \{ m, f \} \) and under either political regime \( j \in \{ P, E \} \), the value functions satisfy the recursive relationship:

\[
V^j_i(H_m, H_f, \bar{H}) = u(c_i, c_{-i}, n) + \gamma_i \left[ \frac{V^j_m(H'_m, H'_f, \bar{H}') + V^j_f(H'_m, H'_f, \bar{H}')}{2} \right],
\]

where the economic choices are given by (6) and (7), respectively. The children’s utilities in (6) and (7) as a function of the political regime \( j \) are thus given by:

\[
U'_m = V^j_m(H'_m, \bar{H}'_f, \bar{H}'), \quad (9) \\
U'_f = V^j_f(\bar{H}'_m, H'_f, \bar{H}'). \quad (10)
\]

Notice that the family has direct control only over the human capital \( H'_m \) of their sons and the human capital \( H'_f \) of their daughters. In contrast, the human capital of their daughters-in-law and sons-in-law is given by economy-wide averages \( \bar{H}'_f \) and \( \bar{H}'_m \). These quantities, in turn, are determined by equilibrium laws of motion as a function of current average female and male human capital:

\[
\bar{H}'_m = G^j_m(\bar{H}_f, \bar{H}_m), \quad (11) \\
\bar{H}'_f = G^j_f(\bar{H}_f, \bar{H}_m), \quad (12)
\]

which have to be consistent with the individual laws of motion (4) and (5). The recursive system (6) to (12) can be solved to yield the welfare of men and women under either political regime.

### 2.3 Determination of the Political Regime

The political regime is determined by a once-and-for-all vote among the male population.\(^{14}\) Before economic decisions are made in the initial period, men can

\(^{14}\)Our focus on a once-and-for-all vote is consistent with the finding below that in the relevant cases the tradeoff between the political regimes depends only on parameters, and not on state variables. If there are changes in parameters over time, on the other hand, dynamic voting would be a more natural concept. We will address this issue in Section 4.
vote on which political regime should be adopted. Men are utility maximizers in their voting decisions as well. Under the assumption that men will vote for patriarchy when both regimes yield the same utility, the empowerment regime will be adopted if and only if:

\[ V^E_m(H_m, H_f, \bar{H}) > V^P_m(H_m, H_f, \bar{H}). \]

At first sight, it may appear that the patriarchy regime is advantageous for men. Given that \( \sigma < 1 \), men would like to claim a disproportionate share of consumption for themselves, and patriarchy allows them do exactly that. However, there are also frictions in this economy that could make a lopsided distribution of power unattractive to men. First, men care about their daughters, and may not want their sons-in-law to have too much power over them. Second, the political regime also affects the accumulation of human capital, which may provide additional motives for men to support women’s rights. In what follows, we examine these tradeoffs in more detail, and derive conditions under which men prefer to share power with their wives.

3 Men’s Incentives for Voting for Empowerment

To determine how men’s utility is affected by women’s rights, we need to solve the recursive system (6) to (12) and then compare the male value functions under each political regime. It will be useful to carry out this analysis separately depending on whether parents invest in the education of their children. We will see that even if parents do not educate their children, men have an incentive to support women’s rights due to their concern for their daughters. However, we argue that this motive is unlikely to be strong enough to explain female empowerment. In contrast, we show that if parents educate their children and the return to human capital is sufficiently high, additional motives for supporting women’s rights will arise, and men will vote to expand power to women.
3.1 Incentives when Parents Do Not Invest in Education

Consider an economy where everyone starts out with the basic level of human capital $H_m = H_f = 1$. If the human capital technology is sufficiently unproductive for zero education to be optimal, $e_m = e_f = 0$, the economy will behave as if $B = 0$, i.e., there is no human capital technology at all. Human capital will therefore remain at the basic level in all future generations. Since in this regime parents do not influence the human capital of their children, the children’s utility is exogenous from the parents’ perspective, and the decision problem is static.

In the patriarchy regime, the maximization problem in (6) simplifies to:

$$\{c_m, c_f, n\} = \arg \max \{u(c_m, c_f, n)\}$$

subject to:

$$c_m + c_f = A(1 - \phi n)^\alpha. \quad (13)$$

The optimal choices (i.e., optimal from the husband’s perspective) are given by:

$$c_m^P = \frac{1}{1 + \sigma} A \left( \frac{\alpha(1 + \sigma)}{\alpha(1 + \sigma) + \delta} \right)^\alpha, \quad (14)$$

$$c_f^P = \frac{\sigma}{1 + \sigma} A \left( \frac{\alpha(1 + \sigma)}{\alpha(1 + \sigma) + \delta} \right)^\alpha,$$

$$n^P = \frac{\delta}{\phi(\alpha(1 + \sigma) + \delta)}.$$

Under empowerment, the maximization problem in (7) can be written as:

$$\{c_m, c_f, n\} = \arg \max \left\{ \frac{u(c_m, c_f, n) + u(c_f, c_m, n)}{2} \right\}$$

subject to (13). The optimal value of fertility is unchanged, $n^E = n^P$. The consumption choices now become:

$$c_m^E = c_f^E = \frac{1}{2} A \left( \frac{\alpha(1 + \sigma)}{\alpha(1 + \sigma) + \delta} \right)^\alpha.$$

Not surprisingly, female consumption is higher and male consumption is lower.
under empowerment than under patriarchy. One might think that this implies that men would never favor women’s rights. This is however not necessarily true, since men also value the utility of their daughters (and granddaughters etc.). Life-time utility for a man in political regime $j \in \{P, E\}$ can be written as:

$$V_j = u(c_j^m, c_f^j, n_j^j) + \frac{\gamma_m}{1 - \gamma_m + \gamma_f} \left[ u(c_j^m, c_f^j, n_j^j) + u(c_f^j, c_j^m, n_j^j) \right].$$

(15)

The first term is maximized by the patriarchal choices, but the utility derived from the children’s generation onward is actually maximized by the choices under empowerment. The reason is that men care equally about their sons and their daughters, which induces a preference for gender equality in the future. Given this taste for equality effect, men prefer empowerment if they either care sufficiently much about their children ($\gamma_m$ high) or if they care sufficiently little about their wives ($\sigma$ low). A low $\sigma$ increases the incentive to support empowerment because it implies low utility for daughters, granddaughters etc., which men would like to avoid.

**Proposition 1 (Optimal Empowerment in No-Education Case)** Consider an economy in which positive education is never optimal, so that $e_m = e_f = 0$ and $H_m = H_f = 1$ in all generations. For any remaining parameters, there exists a threshold $\bar{\gamma}_m < 1$ such that $V^E_m > V^P_m$ (men vote for empowerment) for all $\gamma_m > \bar{\gamma}_m$. Similarly, for any remaining parameters there exists a threshold $\bar{\sigma} > 0$ such that $V^E_m > V^P_m$ for all $\sigma < \bar{\sigma}$.

We therefore conclude that even in an economy in which parents do not invest into the education of their children, men have a motive for supporting gender equality. At the same time, the taste for equality effect alone is unlikely to be strong. From a theoretical perspective, the effect is strong only if men’s concern for their wives and their daughters is highly asymmetric: men would have to care so little for their wives and treat them so poorly that the prospect of the same treatment being applied to their daughters made them prefer empowerment. More importantly, the historical evidence suggests that women had very limited legal rights until the age of mass education started less than 200 years ago. This observation suggests that additional benefits from supporting women’s
rights had to arise before political support for reform reached the critical threshold.

3.2 Incentives when Education Investment is Positive

We now move on to the second regime of our model in which investment in education is positive. The nature of the family is substantially different in this regime; whereas before the family was mostly about producing and allocating consumption goods, here it becomes a center for the accumulation of human capital. As we will see, human capital investment generates additional motives which may lead men to support women’s rights. Thus, an expanded role of human capital may act as a trigger of political reform.

As in the previous section, our strategy is to solve for the equilibrium value functions under patriarchy versus empowerment, and then compare the two to determine under which conditions men have an incentive to share power with their wives. The following lemma establishes that the value functions are log-linear.

**Lemma 1 (Characterization of Value Functions under Positive Education)** Consider an economy in which it is always optimal to educate, so that $e_m, e_f > 0$ in all generations. The male and female value functions under either political regime (as defined by the recursive system (6) to (12)) can then be solved analytically, and take the form:

\[
V^P_m(H_m, H_f, \bar{H}) = a^P_1 + a^P_2 \log(H_m) + a^P_3 \log(H_f) + a^P_4 \log(\bar{H}_m) + a^P_5 \log(\bar{H}_f),
\]

\[
V^P_f(H_m, H_f, \bar{H}) = b^P_1 + b^P_2 \log(H_m) + b^P_3 \log(H_f) + b^P_4 \log(\bar{H}_m) + b^P_5 \log(\bar{H}_f),
\]

\[
V^E_m(H_m, H_f, \bar{H}) = a^E_1 + a^E_2 \log(H_m) + a^E_3 \log(H_f) + a^E_4 \log(\bar{H}_m) + a^E_5 \log(\bar{H}_f),
\]

\[
V^E_f(H_m, H_f, \bar{H}) = b^E_1 + b^E_2 \log(H_m) + b^E_3 \log(H_f) + b^E_4 \log(\bar{H}_m) + b^E_5 \log(\bar{H}_f).
\]

The solutions for the value function coefficients are given in the proof of the lemma (see Appendix B). Notice that when comparing the value functions for a given gender across political regimes, only the constant terms are regime-specific ($a^P_1, b^P_1, a^E_1,$ and $b^E_1$), whereas the slope coefficients ($a_2$ to $a_5$ and $b_2$ to $b_5$) are the same across regimes. To determine political preferences, we therefore merely
need to compare the constant terms in the male value function across political regimes. It will be more instructive, however, to first consider how the political regime affects education choices in our economy. Given the explicit solutions for the value functions, the choice problems (6) and (7) under patriarchy and empowerment can be easily solved. Under patriarchy, the optimal decisions are:

\[
c_P^m = \frac{1}{1 + \sigma} A \left( \frac{\alpha(1 + \sigma)}{\alpha(1 + \sigma) + \delta} H_f \right)^\alpha H_m^{1-\alpha},
\]
\[
c_P^f = \frac{\sigma}{1 + \sigma} A \left( \frac{\alpha(1 + \sigma)}{\alpha(1 + \sigma) + \delta} H_f \right)^\alpha H_m^{1-\alpha},
\]
\[
n_P = \frac{\delta - \frac{\gamma_m}{2}(a_2 + b_3)\theta}{\phi(\alpha(1 + \sigma) + \delta)},
\]
\[
e_P^m = \frac{\phi\frac{\gamma_m}{2}a_2\theta}{\delta - \frac{\gamma_m}{2}(a_2 + b_3)\theta},
\]
\[
e_P^f = \frac{\phi\frac{\gamma_m}{2}b_3\theta}{\delta - \frac{\gamma_m}{2}(a_2 + b_3)\theta}.
\]

For analyzing the empowerment regime, it will be useful to define \(\gamma\) as the average of the male and female weight on children’s utility,

\[
\gamma = \frac{\gamma_m + \gamma_f}{2}.
\]

Writing out the right-hand side of (7) (the function to be maximized under empowerment) yields:

\[
\frac{u(c_m, c_f, n)}{2} + u(c_f, c_m, n) + \gamma \left( \frac{U_m' + U_f'}{2} \right).
\]

Thus, \(\gamma\) is the weight applied to children’s utilities if decisions are made under empowerment. The optimal choices are:

\[
c_E^m = c_E^f = \frac{1}{2} A \left( \frac{\alpha(1 + \sigma)}{\alpha(1 + \sigma) + \delta} H_f \right)^\alpha H_m^{1-\alpha},
\]
\[
n_E = \frac{\delta - \frac{\gamma}{2}(a_2 + b_3)\theta}{\phi(\alpha(1 + \sigma) + \delta)},
\]
\[
e_E^m = \frac{\phi\frac{\gamma}{2}a_2\theta}{\delta - \frac{\gamma}{2}(a_2 + b_3)\theta}.
\]
Comparing (16) and (17), two key differences between the regimes become apparent. First, under patriarchy women consume less than men \( (c_f^P / c_m^P = \sigma) \), whereas under empowerment consumption is equalized across the genders \( (c_m^E = c_f^E) \). This effect also arose in the no-education case. Second, under empowerment couples invest more in education \( (e_m^E > e_m^P, e_f^E > e_f^P) \) but have fewer children \( (n_E < n_P) \) than under patriarchy. The only difference between the expressions for fertility and education is that the weight \( \gamma_m \) under patriarchy is replaced by the larger weight \( \gamma \) under empowerment, which reflects that women place greater weight on the welfare of children than men do. Put differently, empowerment increase the influence of those family decision-makers who care more about their children’s education (i.e., mothers). The following proposition summarizes the economic implications of the two regimes.

**Proposition 2 (Economic Implications of the Political Regimes)** For given state variables, aggregate consumption is identical under the patriarchy and empowerment regimes. Women’s time allocation between production and raising children (including basic time cost and education time) is also independent of the political regime. However, the tradeoff between the number of children and their education does depend on the regime, with fertility being lower and education being higher under the empowerment regime. In either regime, fertility and education are independent of the state variables. The ratio of female to male education \( e_f / e_m \) is independent of both the political regime and the state variables. The growth rate of the economy (in terms of output, human capital, and consumption) is higher under empowerment than under patriarchy.

To summarize, we find that the key implication of the empowerment regime (other than equalizing consumption between men and women) is that it leads to faster accumulation of human capital and consequently to faster growth. For the political tradeoff, we now need to determine whether the effects of empowerment on education and growth could induce men to politically support female empowerment. In a model without frictions (where the welfare theorems apply),
men would always prefer patriarchy. In our model, however, there are frictions which may lead to a different outcome.

The first friction is the lack of commitment across generations. Men can decide on consumption and education choices only for their own generation, but they are not able to impose decisions on their future family members. Lack of commitment across generations matters only if there is a conflict of interest between current and future decision makers, i.e., if intertemporal preferences are time-inconsistent. In our model, such a conflict arises, because men turn out to have quasi-hyperbolic preferences with regards to the utility of current and future generations.\footnote{The quasi-hyperbolic structure of intertemporal preferences was first introduced by Phelps and Pollak (1968) in an intergenerational context. Recently, following Laibson (1997), a number of authors have applied the hyperbolic discounting model to intragenerational choice problems as well.}

Iterating forward on (1) and using $t$ to index generations (with 0 being the current generation) results in the following expression for male utility:

$$U_m = u(c_{m,0}, c_{f,0}, n_0) + \gamma_m \sum_{t=1}^{\infty} \gamma^{t-1} \left( \frac{u(c_{m,t}, c_{f,t}, n_t) + u(c_{f,t}, c_{m,t}, n_t)}{2} \right),$$

where, as before, $\gamma > \gamma_m$ is the average of male and female utility, $\gamma = (\gamma_m + \gamma_f)/2$. Thus, men use discount factor $\gamma_m$ when comparing their own period utility to that of their children, but they use the higher discount factor $\gamma$ when evaluating the relative welfare of future generations, such as that of their children versus their grandchildren. The reason for this discrepancy is that in our altruistic preference structure, grandchildren enter the grandparents’ utility through the utility of the children. That is, men look at their children through their own (male) eyes, whereas they look at half of their grandchildren through the (female) eyes of their daughters. As a consequence, grandfathers prefer a higher level of education for these grandchildren than what would be chosen by the sons-in-law.

This \textit{dynastic time-inconsistency} effect may lead men to prefer empowerment if they care sufficiently much about the education of their descendants in the future relative to the allocation of consumption between them and their wives in the
present. The strength of the effect therefore depends on the importance of human capital.

The second friction which may lead men to support empowerment in the model with education is an externality created by the marriage market. When a father invests into the education of his children, he creates a positive externality on the future spouses of his children (his children-in-law), as well as on the parents of those spouses (who care about their own children). This externality is not taken into account when maximizing individual utility.\textsuperscript{16} Put differently, men stand to gain from forcing all other men in the economy to invest more into the education of their children, because that would improve the quality of their own children’s spouses. In our model, one way to increase overall investment in education is to vote for female empowerment. Thus, the \textit{marriage market externality} effect can also lead men to support women’s rights. Once again, this effect becomes more powerful as the importance of human capital and education in the economy increases.

The dynastic time-inconsistency and marriage market externality effects generate the main result of our theoretical analysis: if human capital is sufficiently important (as measured by the parameter \( \theta \)), men will be willing to vote for empowerment.

Proposition 3 (Optimal Empowerment under Positive Education) Consider an economy in which parents choose to provide positive education to their children. If \( \gamma_f > \gamma_m \), then there exists a \( \bar{\theta} \) such that for all \( \theta \) that satisfy \( \theta > \bar{\theta} \) men prefer empowerment to patriarchy, i.e.:

\[
V^E_m(H_m, H_f, \bar{H}) > V^P_m(H_m, H_f, \bar{H}).
\]

We conclude our theoretical analysis with a proposition that highlights how our main result is related to the underlying model assumptions. In particular, the proposition establishes that both the assumption that women put a higher weight

\textsuperscript{16}More formally, note that on the right-hand side of the (8) parents control only their children’s own human capital, but not the human capital of the children’s spouses or the average human capital in the society. The private and social returns of investing in education therefore differ.
on the welfare of children as well as the presence of a marriage-market externality are essential. Moreover, the proposition shows that the incentives for voting for empowerment are not influenced by the productive role of women, that is, political incentives are independent of the weight $\alpha$ of female labor in the production of final output.

**Proposition 4 (Economic Forces Underlying Main Result)** If $\gamma_m = \gamma_f$ then the optimal regime does not depend on $\theta$. If there is no human capital externality across dynasties (which is formally equivalent to assuming that sons and daughters marry each other), then, if $\gamma_m < \gamma_f$, there exists a $\bar{\theta}$ such that for all $\theta$ that satisfy $\theta > \bar{\theta}$ men prefer patriarchy to empowerment, i.e.:

$$V_m^E(H_m, H_f, \bar{H}) < V_m^P(H_m, H_f, \bar{H}).$$

That is, unlike in the case with the externality, a high return to education does not lead men to support empowerment. Finally, the optimal regime choice is independent of $\alpha$.

The gender difference in the appreciation of children is essential because it drives the positive effect of women’s rights on education. If husbands and wives valued children equally, but the marriage-market externality were still present, men would still like to impose higher education choices on other families, but extending rights to women would no longer achieve that purpose. Conversely, if the gender difference in preferences were present but the marriage-market externality were absent, men would still like to impose higher education choices on their descendants due to the time-inconsistency in preferences. However, without the externality, ceding control over the family’s current decisions is too high a price to pay from the men’s perspective for committing future generations to higher human-capital investment.

### 3.3 Are There Alternatives to Female Empowerment?

We argue that men’s main motive for supporting women’s rights is to induce other families (in particular, the parents of their future children-in-law and the
families of their daughters and granddaughters) to invest more in children’s education. A natural question to ask is whether there aren’t any other measures that men could implement to achieve the same objective, without the cost of sharing power with their wives. This question is especially relevant given that extending rights to women does not provide a perfect fix for the underlying frictions. If the return to education is sufficiently high, we know that sharing power with women will improve men’s welfare, but in general empowerment will not implement the efficient level of education.

In principle, it is indeed possible to imagine contracts that would offset the underlying frictions and implement the level of education that is optimal from the perspective of the initial generation of men. However, these contracts are of a kind that would be difficult or impossible to implement in the real world. Within dynasties, what would be required is the ability to commit all future descendants to particular choices regarding the investment into their children. Such contracts would be illegal under the legal systems of most countries, and even if they were feasible in principle it is hard to see how they could be enforced. We do observe some legal constructs (such as education trust funds for grandchildren that exclude access by the grandchildren’s parents) that serve a similar purpose, but such instruments do not fully resolve the underlying commitment problem.

Similarly, bride prices or dowries that are conditional on the bride and groom’s education could help overcoming the marriage market externality. In modern times, a perhaps more important mechanism is assortative mating (see Laitner (1991)). If well-educated children attract higher-quality spouses, the marriage-market externality will be at least partially internalized. Nevertheless, it appears unlikely that such mechanisms could remove the underlying efficiency entirely. This would not only require highly assortative matching, but also a high degree of heterogeneity in realized education levels. For example, if all families are homogeneous (as in our theoretical framework), assortative matching cannot arise at all. Similarly, it is hard to imagine a contractual solution for the marriage-market externality. This would require writing contracts involving all families who will be linked at any future date through intermarriage, which cannot be done in the absence of perfect foresight regarding future marriages. The
marriage-market externality is thus difficult to overcome privately by individual families, which is one reason why extending women’s rights is done at a political level.\footnote{Laitner (1991) presents a 2-period example where assortative mating exactly offsets the marriage market externality. However, the example requires several special assumptions, in particular that there is no joint production in marriage and that all consumption is shared equally. Another special case where the public nature of premarital investments is perfectly internalized through the marriage market is analyzed by Peters and Siow (2002). Here, there are no gender differences and all consumption in marriage is perfectly public. In more general settings (like ours) it seems unlikely that similar results would hold. Finally, Iyigun and Walsh (2007) derive efficiency of premarital investments for more general household production functions. Here, however, the key is the endogenous sharing rule between spouses. However, sharing between spouses is unlikely to change endogenously in a world where women have no rights.}

A final potential counterargument is that, rather than changing bargaining power within families, men could have addressed the problem of a lack of investment in children more directly through measures such as public schooling and compulsory education laws. In England and the United States, such laws were indeed introduced or expanded during the first major phase of the expansion of women’s rights. We believe that both areas of political reform (women’s rights and education laws) were driven by the same underlying economic change, namely an expanded role for human capital. However, education reforms would be an alternative to women’s rights only if public and private inputs (i.e., schools versus education within the family) acted as substitutes in the production of human capital. The evidence suggests, however, that public education and family-based investments are complements.\footnote{See, for example, Leibowitz (1974), Behrman, Foster, Rosenzweig, and Vashishtha (1999), and Cunha, Heckman, Lochner, and Masterov (2005) for the importance of home schooling (and the role of mothers) in human capital development.} Reforms in the areas of education and women’s rights are therefore mutually reinforcing.

4 The Transition to Female Empowerment

Up to this point, we have focused on the determination of women’s rights in a stable environment: the parameters of the model economy were assumed to be constant, and in the initial period men made a once-and-for-all choice of the political regime. In this section, we expand our analysis to an economy that is
subject to technological change, and in which the political regime can change over time. In particular, we envision an economy that starts out with a low return to human capital investment, so that parents do not invest into the education of their children and men choose the patriarchy regime. Over time, the return to education increases (i.e., the return-to-education parameter $\theta$ shifts upward), which induces parents to invest into their children’s education. Ultimately, the return to education is sufficiently high for men to vote for female empowerment.

As a first pass, we can apply the results derived in the previous section to such a transition. This requires us to assume that all shifts in the return to education are unanticipated (because we analyzed incentives for constant parameter values) and that people vote as if there was once-and-for-all voting (even though votes are repeated). Below, we will use a dynamic-voting framework to examine the extent to which these assumptions affect our results. Consider, then, an economy that starts out with parents not educating their children (so that $e_m = e_f = 0$ and $H_m = H_f = 1$), but in which the return-to-education parameter $\theta$ trends upwards over time.\(^{19}\) The economy starts out in the patriarchy regime. We also assume that the conditions of Proposition 1 are not satisfied; that is, the taste-for-equality effect alone is not strong enough to induce men to vote for female empowerment.

At some point, the return to education $\theta$ will be sufficiently high for parents to prefer educating their children, $e_m, e_f > 0$, so that human capital starts to rise over time. Comparing (14) to (16), we see that the fertility rate drops once parents educate their children. Intuitively, families economize on their number of children to devote more time to raising and educating each child. Subsequently, as $\theta$ keeps increasing fertility will continue to fall, education levels $e_m$ and $e_f$ will continue to rise, and growth in human capital and output will accelerate. Ultimately, the return to education $\theta$ will reach the threshold $\bar{\theta}$ at which men vote to introduce the empowerment regime (see Proposition 3).\(^{20}\) At this time, according to Proposition 2 and equations (16) and (17) there will be a further drop in fertility, a further rise in education, and a further acceleration of economic growth.

\(^{19}\)We also impose $B > 1$, so that an increase in $\theta$ always increases the overall productivity of the education technology.

\(^{20}\)Depending on parameters, it is possible that men will vote for female empowerment immediately once the switch to education occurs. Empirically, the relevant case is where there is a gap in the switch to education and the extension of women’s rights.
Thus, our theory implies that the vote for female empowerment is preceded by the onset of the demographic transition (i.e., fertility decline) and a rise in education. Moreover, the expansion of women’s rights further amplifies the existing trends towards lower fertility and increased human-capital investment. In contrast to existing explanations for rising female rights, our model does not imply that the introduction of power sharing should coincide with or be followed by increased female labor force participation: the fraction of time that women devote to production is unchanged throughout the entire transition. Indeed, Proposition 4 implies that women’s role of the production of goods has no bearing at all on the expansion of women’s rights.

As a final step in our analysis, we now provide a numerical example to demonstrate that the dynamic implications of our theory remain intact (at least qualitatively) if we allow agents to anticipate parameter changes as well as future political decisions. More precisely, we introduce perfect foresight regarding the time path for $\theta$ as well as dynamic voting. In every period, before any other economic decisions are taken, men can vote on whether to introduce female empowerment. To keep the analysis tractable, we impose that the expansion of women’s rights is irreversible, i.e., there are no further referendums once men first vote in favor of empowerment.

The complications that arise from dynamic voting prevent a full analytic characterization of this case, but it is still possible to solve for equilibria numerically. Given that the expansion of women’s rights is irreversible, potential equilibria can be enumerated by the period $T$ in which female empowerment is introduced. For a given political regime switch time $T$, it is straightforward to compute the time paths of individual decisions and utilities. We also need to determine at which time $T$ men would indeed vote for introducing female empowerment. For time $T$ to be an equilibrium switching time, men should prefer the introduction of empowerment at time $T$ over the alternative of one more period of patriarchy and a political regime switch at time $T + 1$.

\[21\] Here we rely on the assumption that $\theta$ is monotonically increasing over time, which implies that men’s incentives to vote for empowerment also increase. In other words, if men at time $T$ would vote for empowerment, \textit{a fortiori} they would do so also at time $T + 1$. When checking the conditions for a political equilibrium, the relevant counterfactual is therefore to expect the
men do not vote for female empowerment already at time $T - 1$.

In general, there is no guarantee that a unique equilibrium regime switch time $T$ exists. A particular concern in our application is that men might always prefer to leave the introduction of empowerment to the next generation. In fact, as far as the taste-for-equality and the dynastic-time-inconsistency effects are concerned, men would ideally like to pass laws that bind only from the following generation on. Given that we assume that a vote for empowerment affects all (current and future) marriages equally, men might therefore prefer their sons to introduce empowerment rather than voting for women’s rights themselves.\footnote{It would be difficult to enforce laws that apply only to future marriages, and indeed actual laws generally applied to all marriages equally. For example, the British Married Women’s Property Act of 1870 stated that “The wages and earnings of any married woman acquired or gained by her after the passing of this Act in any employment, occupation, or trade … shall be deemed and be taken to be property held and settled to her separate use, independent of any husband to whom she may be married.” The only exception is that the law did not apply retroactively to married women’s earlier inheritances that had already passed into their husbands’ possession. See Holcombe (1983) for the original text of the law.}

The situation is different in the case of the marriage-market externality effect; here men would like to introduce the law immediately to improve the quality of their children’s future spouses. Our numerical results indicate that this effect is sufficiently strong to generate unique political equilibria for a wide range of parameters.

We now illustrate our results with a computed example of an economy undergoing the transition from patriarchy to power sharing. We model an increase in the return to education through an upward shift in the parameter $\theta$, which governs the elasticity of children’s human capital with respect to education.

[TO BE COMPLETED]

5 Historical Evidence from the Expansion of Women’s Rights in England and the United States

In this section, we compare the predictions of our theory to historical evidence in England and the United States. We start by examining trends of fertility and edu-
cation relative to the timing of the main political reforms. We then document that the extension of women’s rights coincided with a more general transformation of the role of families towards an increased importance of investments in children. Finally, we present evidence from the historical debates on women’s rights and show that the main arguments that were raised by the supporters of reform are closely related to the channels highlighted by our theory.

5.1 Fertility and Education

We argue that the expansion of women’s rights was triggered by a rise in the demand for human capital, as reflected by rising education levels and declining fertility rates. Moreover, once the political reforms are carried out, they should reinforce the trend towards higher education and lower fertility. Hence, in terms of aggregate time series the main prediction of our theory is that the expansion of women’s rights should take place after the onset, but before the completion, of the demographic transition, and should coincide with increasing investments in education. The data for England and the United States are consistent with these predictions.

Recall that in both England and the United States, the most important reforms of women’s rights were carried out in the second half of the nineteenth century. During this period, married women in England and most U.S. states obtained rights to own and bequeath property, to obtain divorce, and to receive custody of their children in the case of separation or divorce. Figures 1 and 2 display the aggregate trends in fertility and education during this period. In the United States, at the beginning of the nineteenth century the average woman had almost seven children. The total fertility rate\(^{23}\) (TFR) declined gradually over the course of the century, and reached about 3.5 by 1900. Throughout the same period, the United States underwent a transformation towards mass education. Primary enrollments rates increased from under 50 to more than 100 percent from 1840 to 1900,\(^{24}\) and already in 1880 almost all children received at least some primary schooling (Turner, Tamura, Mulholland, and Baier 2007).\(^{25}\) Shortly after the main

\(^{23}\)The total fertility rate in a given year is the sum of age-specific fertility rates over all ages. It can be interpreted as the total number of children an average woman will have over her lifetime if age-specific fertility rates stay constant over time.

\(^{24}\)Enrollment rates can exceed 100 percent because of grade repetition.

\(^{25}\)Even though data on elementary school attendance are constructed from Census data and the exact numbers are somewhat controversial, there is no disagreement that the transformation to mass primary education happened throughout the 19th century (Goldin 2006). See also Fishlow (1966) and Kaestle and Vinovskis (1980).
phase of the expansion of women’s rights, the “high school movement” continued the trend towards mass education at the secondary level. Whereas until 1910 fewer than 10 percent of each cohort graduated high school, by 1940 graduation rates were around 50 percent.

In England, total fertility rates reached a peak of about 5.5 during the first half of the nineteenth century. Fertility decline proceeded slowly at first, but picked up speed after 1880, right when the major reforms of women’s rights were implemented. By 1920, the total fertility rate had fallen to 2.4. Average school attendance of children aged 5–14 was still under 10 percent in 1850, but then increased dramatically to about 70 percent by the turn of the century.

In sum, we find that the data confirm the prediction that changes in women’s rights should be preceded by modest fertility decline and a rise in education, and followed by accelerated changes in the same direction.

5.2 The Changing Role of the Family

Our theory posits that the expansion of women’s rights goes hand in hand with a shift in the role and function of families. In particular, we argue that the nurturing and education of children steadily gained in importance, and that it was the mothers who carried most of the expanded responsibilities for child rearing. These changes are reflected not only in aggregate data on fertility and education, but also in observations by social historians on the reorganization of family life, changes in attitudes towards children, and shifts in the expected role of mothers.

First and foremost, the nineteenth century brought along a new view of the nature of childhood. Commenting on earlier perceptions of childhood in the United States, Kaestle and Vinovskis (1980) report that the “early Puritans had stressed that children were innately evil . . . . The only proper response for parents was to watch their children closely and to discipline them at very young ages.” In contrast, by the nineteenth century “children were viewed as innocent beings that had to be protected and nurtured” and childhood became to be regarded as a “distinct phase of human development that required special attention and training” (p. 192). Similarly, Mason (1994) argues that “children, who previously had
been viewed, at best, as miniature adults, and at worst, as small creatures possessing evil tendencies that must be firmly tamed, began to be viewed positively as innocent beings who were naturally closer to God” (p. 52). Following this change in attitudes, the nurturing of children became an increasingly important focus of family life. “Generally speaking, parents tended to bestow more economic, educational, and emotional resources on their children than ever before” (Guttormsson (2002), p. 265).

These changes in the perception of childhood lead to a heightened appreciation of motherhood. “The mood was shifting away from beating as a routine punishment (except in schools) toward the application of moral and emotional pressures developing in children a capacity for self-government. … insistence on this type of moral education, which was widely assumed to be beyond the capacity of a father-provider, contributed to valorizing the mother’s moral role” (p. 268). The improved status of motherhood soon became reflected in the child-rearing advice literature of the period. “The most striking change, centrally illustrated by the works of Pestalozzi, was the shift from father-centered to mother-centered theories of child raising” (Maynes (2002), p. 198). Kaestle and Vinovskis (1980) emphasize the role that mothers—as opposed to teachers—played in this transformation. “In the early 1820’s and 1830’s … there was a strong revival of the idea that young children should be educated at home … Accompanying the emphasis on early child development within the home was the increasing focus on the role of mothers in childhood education. The great outpouring of domestic literature in the 1820s and 1830s in the United States encouraged mothers to take a more active role in the training of children” (p. 205).

The expanded role of mothers as the educators of their children also raised the value of female education. “As long as there were few schools for very young children, their education was normally the task of mothers. Some mothers felt they had to improve their own education to be fit for the task” (Guttormsson (2002), p. 266). Among the upper classes “young girls who did attend boarding school were educated to be good mothers to England’s future rulers … [rather than to] be shaping England themselves” (Nelson (2007), p. 77). In working-class schools, girls’ education often emphasized the teaching of Christian values.
The rationale for this focus was that working-class girls would become “essential conduits of morality” in their future role as mothers (Steinbach (2004), p. 165).

The new emphasis on children and mothers was accompanied by other changes in the organization of families, in particular an increased separation between the work and home spheres, which deepened the division of labor between husbands and wives. While our model cannot speak directly to these changes (for simplicity, we do not distinguish between market and home goods), they help explain why the increased burden of nurturing and educating children largely fell on mothers. To a large extent, the increasing separation between home and work spheres was a consequence of industrialization. In the pre-industrial period, men and women would often work alongside each other. This practice not only applied to family-based agriculture, but also to many of the skilled professions. The flipside of the involvement of women in their husbands’ work was a more important role of husbands in the household: “Home and work were close together, and wife and husband participated in both” (Degler (1980), p. 5). Indeed, both mothers and fathers spent considerable amounts of time with their children and contributed to their upbringing. The nurturing of infants and the youngest children was generally the mother’s domain, but from fairly young ages many children (and especially boys) would start working with their fathers, who would then be responsible for much of their further education.

The links between working fathers and their children weakened throughout the industrialization period. “During the early nineteenth century, family roles were reorganized around the idea of sexual difference, with men and women increasingly occupying separate spheres . . . Many middle-class women began to define themselves consciously as nurturers and full-time mothers, whereas the father was viewed as protector, provider and the representative of public authority.” (Ross (2006), p. 18). Similarly, Ehmer (2002) documents that “new form of labor division between husband and wife . . . became widespread after 1850: the male breadwinner—female homemaker model” (p. 300). The separation between the

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26 “Women have been active participants in commerce, farming, and many business pursuits, assisting their husbands, keeping books, overseeing apprentices and journeymen, and manufacturing many goods for sales. Not only artisans but also lawyers and doctors practiced in a room in their house, so women tended to have a direct relationship with their husband’s business affairs” (Ross (2006), pg 18-19).
spheres of husbands and wives was particularly pronounced for the families of middle-class men who commuted to work. A “husband might well catch an early train to a job in the city and not return until evening. Thus while pre-Victorian texts . . . show middle-class men playing an active domestic part, particularly parenting, later in the century the typical middle-class husband’s principal function was to provide economic support for the family” (Nelson (2007), p. 31).

5.3 The Political Debate on Women’s Rights

We now turn to evidence from the political debates that accompanied the expansion of women’s rights during the nineteenth century. If our view that women’s role for the education of children was central to the advance of female empowerment is correct, this should be reflected in the arguments put forward by the supporters of reform. We find that the evidence supports our hypothesis. To be sure, the campaigners for women’s rights made a variety of different arguments, not all of which are reflected in our theory. However, in both England and the United States\(^{27}\) we observe a gradual shift in the course of the nineteenth century from arguments that focus on the rights of men towards a view that gives the highest weight to the needs of children. This shift mirrors the changing role of the family towards greater emphasis on investments in children that was discussed in the previous section.

In England, the first milestone in the expansion of women’s rights was the passing of the Custody of Infants Act in 1839. Before 1839, mothers had no parental rights at all with regards to their legitimate children. In contrast, a father’s rights extended even beyond his own death: he could appoint a guardian who would be able exercise his full parental rights. Central to the impetus for change was the case of Caroline Norton, who separated from her husband and was subsequently denied all access to her three children. Norton became a major campaigner for women’s rights, and as a well-connected member of the upper class, she was able

\(^{27}\)The arguments put forward by supporters and opponents of reform in the two countries were remarkably similar, and we therefore discuss them together. Women’s role for the education of children also played an important role in the debates on women’s rights in other countries, see for example Southard (1993) and Nolte (1986).
to find allies in Parliament who could advance her cause. In 1837, Thomas Tal- 
fourd proposed a bill that would have enabled separated or divorced women to 
apply to a court for obtaining visitation rights to their children. In the discussion 
of the bill in the House of Commons, Talfourd argued that “... to deprive the 
mother of any contact was cruel and against nature both to her and the child” 
(Wroath (1998), p. 98). The central argument of the MPs opposing the bill was 
that it would undermine marriages. Much was made of the fact that given that 
the bill was to apply to divorced women, it would in particular apply to adulter-
esses. An opponent argued that “he could not conceive a more impolitic provi-
sion. If the father wished to preserve his children from contamination he should 
keep them separated from such a woman” (p. 99). In 1838, the bill was defeated 
in the House of Lords. A modified bill was brought forward again and ultimately 
passed in 1839.

From a modern perspective, the Custody of Infants Act was a rather moderate 
advance for women’s rights. It merely opened the possibility of applying to a 
court in cases of hardship; the courts still could, and often would, decide against 
awarding custody to the mother. Nevertheless, the bill marked a change in prin-
ciple: “It was a modest step in real terms but a landmark in the history of English 
law. For the first time the mother of a legitimate child was given some rights in 
respect to it” (Wroath (1998), p. 112). What is significant from our perspective is 
that this first advance in women’s right was directly related to women’s role in 
the upbringing of their children. In an 1849 landmark decision applying the Act, 
the Lord Chancellor argued that the courts should “apply a course which seems 
best for the interests of the children, without regard, so far as it interferes with 
that object, to the pain which may be inflicted on those who are authors of the dif-
ficulty” (cited in Wroath (1998), p. 115). Wroath comments that this “must be one 
of the earliest court decisions where the welfare of the children was considered 
as overriding the interests of the father.”

The continuing shift in emphasis from the rights of men to the needs of children 
can also be gleaned from the editorial pages of the Times of London. In 1864, 
commenting on a court case involving the Custody of Infants Act, the Times still 
upholds the traditional view: “We must here, as ever, adapt human laws to the
natural inequality of the sexes, and give the superiority of right to that which cannot but have the superiority of power” (London Times, April 4 1864, p. 8). In 1873, women’s child custody rights were further extended; women could apply for custody of children regardless of age, and adultery no longer led to automatic disqualification. On this occasion, the Times supported the reform: “The Court … has struggled to mitigate the harshness of the rule which rigorously denies to a mother, however great may be her claims, the care of her infant children, and gives it over, without consideration or scruple, to a father, however manifestly unfit he may be” (London Times, April 22, 1873, p. 9).

After child custody, the next major area of reform was marital property law. Here, a number of U.S. states took the lead. In England, the Married Women’s Property Act was passed in 1870 and further expanded in 1874 and 1882. The reforms to property law dramatically improved the legal position of married women relative to their husbands by giving them control over their earnings and their property. In both England and the United States, the main argument of the opponents of reform was once again that extending rights to married women would endanger the institution of marriage. In an 1857 debate on a proposed reform in Oregon it was argued that “the provision would cause much domestic trouble and many divorces” (Chused 1985, p. 17). In 1868, an editorial writer for the London Times claims that “the proposed change would totally destroy the existing relation between husband and wife. That relation is at present one of authority on the one side and subordination on the other. … If a woman has her own property, and can apply to her separate use her own earnings, she is practically emancipated from the control of her husband. … what is to prevent her from going where she likes and doing what she pleases?” (London Times, April 23, 1868, p. 8).

In England, John Stuart Mill (who was an independent MP from 1865 to 1868) emerged as a major proponent of women’s rights during this period. He argued that equality would have many advantages for men, not least for their own education: “Think what it is to a boy, to grow up to manhood in the belief that

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28The first state that passed a law allowing married women to own separate property was Maine in 1844, closely followed by New York in 1848. Many states introduced similar laws in the 1860s and 1870s, so that by the end of the nineteenth century all married women in the United States had access to some form of property and/or earnings protection. See Khan (1996) for a detailed account of these laws in the United States.
without any merit or any exertion of his own, ... by the mere fact of being born a male he is by right the superior of all and every one of an entire half of the human race ... What must be the effect on his character, of this lesson?” (Mill (1869), p. 88). Mill also argued that men would benefit from women’s education, because the “influence of mothers on the early character of their sons ... have in all recorded times been important agencies of the formation of character, and have determined some of the chief steps in the progress of civilization” (p. 91).

Even though Mill’s arguments started to resonate more widely, his views were extreme for the time. The most influential pro-reform arguments were of a more practical kind. In many U.S. states, limited property rights were extended to women with the main goal of protecting women and their children from a husband’s creditor. It was thought that these provisions would be used only rarely in the case of extremely irresponsible husbands. In a debate about Oregon’s Married Women’s Property Act, a Mr. Logan argued that “If he [the husband] was prudent and thrifty she would give him control of her property. And if he was not, it was better that she should have the power to preserve her property to support herself and educate her children.” (Chused (1985), p. 18).

In England the debate proceeded along similar lines, with the effect of women’s rights on the welfare of children receiving increasing attention. In July 1868, A Select Committee in the House of Commons issued a favorable report on a proposed bill. Much of the testimony received by the committee suggests that reform would be particularly beneficial to women from the lower classes. When asked whether the bill would have “generally a good effect upon the moral condition of the women,” a witness from Belfast replied: “I think it would; and perhaps it would be even more advantageous as regards the children, for they often cannot get an education under present circumstances” (British Parliamentary Papers (1970), p. 99). The experience of the United States with women’s property laws played a considerable role in the debate. A New York merchant, serving as a witness to the Select Committee, states that one of the reasons for reforming the law in that state was “the desire to furnish mothers with power to supply the wants of their children when the husband neglects to do so” (p. 14). Asked whether he had “seen any alteration in the condition of married women of the labouring
class since the alteration of the law,” the witness replied: “I think there has been a gradual improvement ever since I have notice the women are being more educated, and are more desirous to educate their children. They send their children almost universally to school” (p. 77).

By 1869, a London Times editorial reflects many of these arguments: “It is true that theoretically [the husband] is liable to maintain her, as well as their children. But this liability is practically qualified. … As for children, no degree of neglect short of criminal maltreatment brings the father within the penalties of the law … It must, therefore, be admitted that while the Common Law makes the husband master of all his wife’s personal property, no equivalent obligation to support her or their children in tolerable comfort is imposed upon him” (London Times, March 27, 1869).

Another area in which women’s rights improved in the late nineteenth century was education politics. In England, the Elementary Education Act of 1870 created school boards with the aim of providing universal education to children up to 12 years of age. Women were given the same active and passive election rights as men; thus, in the area of education women gained political rights half a century before universal female suffrage was introduced. This expansion of rights was motivated by the increasing public recognition of women’s role in the organization of education. The Times writes: “When Mr. Mill, again, urges the election of women on the Board, he will meet with more general assent than he often finds when he pleads for the rights of the sex. Women are, in point of fact, some of the principal managers of the existing girls’ schools … and even in London women form the most active members of many School Committees. To elect them as members of the School Board would merely be to recognize their present influence” (London Times, November 12, 1870).

Women were also granted school suffrage in many U.S. states. Once again, the arguments in favor of reform centered around women’s special knowledge and expertise with children. A public letter to the Mayor of Brooklyn with the goal of increasing the number of women on the Board of Education states that “We would urge upon your consideration the fact that interest in the public schools belongs largely to women as educators and even more distinctively as mothers;
that wherever the training of children is to be considered experience with child life gives value to the judgment of intelligent women” (New York Times, September 6, 1894). Similarly, in an address to New Jersey voters the Republican Party argues that “The third proposed amendment, giving votes to women in school elections, widens the suffrage in regard to a subject which has been shown by the history of our State schools, to be one concerning which women are clearly entitled to have a voice” (New York Times, September 20, 1897).

In summary, in both England and the United States the link between women’s rights and the education and welfare of children became an increasingly important argument in the debate on women’s rights throughout the nineteenth century. In addition, several historians emphasize that the advances in women’s rights were related neither to the role of women in the labor market nor male sympathy for women’s rights. Khan (1996) documents that “legal historians have for the most part … argued that the antebellum property rights reforms increased the responsibility of women for the welfare of their families, without improving their economic status or their standing in the labor market.” Regarding men’s preferences, Mason (1994, p.56) suggests that “it was not necessarily sympathy for the cause of women’s rights that prompted men to vote for women’s property rights but rather … because they perceived plainly that their own wealth, devised to daughters, who could not control it, might be easily gambled away, or wasted through improvidence or diverted to the use of strangers.”

Clearly, the theoretical mechanisms highlighted by our model and the arguments in the historical debates do not line up in every detail. Perhaps most importantly, one feature of the historical debates is that formal women’s rights were often regarded as directly affecting only a small number of women with irresponsible husbands, whereas in our theory all families are identical and equally affected by the law. Despite these reservations, we believe that our theoretical model captures the main impetus behind the advances in the rights of women throughout the nineteenth century.
6 Women’s Rights and Economic Development

There is a small but growing literature that tries to understand the connection between female empowerment and economic development.\(^{29}\) Part of the literature argues that more rights for women lead to a more efficient allocation of resources and thereby ultimately contribute to economic development.\(^{30}\) Instances where development seems to be causing gender equality have also been documented (e.g. Munshi and Rosenzweig (2006)). Our model shows that both directions of causality may happen simultaneously and reinforce each other. We find that economic development must reach a certain level first before it becomes beneficial for men to vote for female empowerment. Empowerment then causes a further acceleration in the accumulation of human capital and thereby GDP growth.

The relationship between women’s rights and economic development implied by the model can indeed be seen in cross-country data. Assuming that countries differ in their available human capital technology, the model implies that countries with a poor technology (low \(\theta\)) will have low levels of schooling, high levels of fertility, and at the same time few rights for women. Countries with a more advanced technology (high \(\theta\)), on the other hand, should have high levels of schooling, low fertility and more rights for women.\(^{31}\)

It should be noted that in the model \(e_m\) and \(e_f\) is the time mothers spend educating sons and daughters and that \(\theta\) is the return to this maternal time investment. Note that the return on parental time investment is not only determined by the usual measures of returns to schooling as estimated from wages. Rather, it is also affected by child mortality rates, overall life expectancy, the availability of public schooling, and laws banning child labor, in addition to the conventional measures of labor market returns. Constructing a measure of returns to schooling that incorporates all these factors would be difficult. Instead, we focus on school-

\(^{29}\)See Duflo (2005) for an excellent survey of this literature.

\(^{30}\)For example, Fortman, Antinori, and Nobane (1997), Udry (1996), and Goldstein and Udry (2005) have found such effects in micro data.

\(^{31}\)Technically, the model has only two different levels of rights of women: no rights or equal rights. However, it is straightforward to extend the model to allow for intermediate values by assuming that decisions in the family are made according to \(V_{m} + \lambda V_{f}\) and that men can vote on the value for \(\lambda\). This allows for a more realistic heterogeneity in rights across countries.
ing outcomes. As shown by Cunha, Heckman, Lochner, and Masterov (2005), early childhood education by parents is an important complement for formal schooling. Hence, it would seems logical that parents find it beneficial to spend more time preparing their children for school and helping with their homework in those countries where schooling is more important, as measured by the average years of schooling.

In Table 1 we show that average years of schooling is highly negatively correlated with the lack of rights for women. Good measures of women’s rights are of course hard to find. The United Nations publish two gender-specific indices to compare the status of women across countries: the Gender Development Index (GDI) and the Gender Empowerment Measure (GEM). Both indices are highly correlated with GDP per capita. However, both of these indices are a composite index of measures of “economic outcomes” such as female labor supply and female education, relative to men. For the arguments made in this paper, legal constraints are more relevant. Legal constraints are harder to measure, but several proxies exist. In particular, the OECD Gender Statistics Data Base (2006) has collected data on the ability of women to access land and bank loans. The incidence (and acceptability) of violence against women in a society could also be interpreted as a measure of constraints imposed on women. As another measure of violence against women, we include an index on the prevalence of Female Genital Mutilation. The legality of abortion can also be interpreted as a measure of a women’s right to choose. Data on the lack of abortion rights is available from the Population Reference Bureau (2005). The most direct measure is probably the year in which women obtained the right to vote which is available through the United Nations (2004). Note that all indexes are normalized so that a higher number means fewer rights. Hence, we would expect a negative correlation between average years of schooling and these measures of the lack of women’s rights. As Table 1 shows, this is indeed the case. We find a correlation of at least -0.5 between years of schooling and all available measures of lack of rights for women.

The model also implies that women have more rights in those countries that have a lower fertility rate as well as higher per capita income. Using the same measures, we again find high negative correlations between the lack of rights for
women and GDP per capita. The total fertility rate is highly positively correlated with the constraints faced by women.

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<td>Abortion policy (PRB 05)</td>
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<td>Yr first woman in parliament (UN 04)</td>
<td>-0.62</td>
<td>0.35</td>
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<td>Partial women’s suffrage (UN 04)</td>
<td>-0.50</td>
<td>0.58</td>
<td>-0.69</td>
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<td>Women’s access to land (OECD 06)</td>
<td>-0.50</td>
<td>0.78</td>
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<td>Access to bank loans (OECD 06)</td>
<td>-0.44</td>
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<td>Female Genital Mutilation (OECD 06)</td>
<td>-0.32</td>
<td>0.54</td>
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<td>Violence against women (OECD 06)</td>
<td>-0.40</td>
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Sources: OECD Gender Statistics (2006), World Development Indicators (2003), the UN Women Indicator Statistics (1999), and the UN Human Development Report (2004).

Table 1: Correlations between Women’s Rights and Economic Development in Cross-Country Data

7 Conclusions and Outlook

In this paper we provide a new perspective on the relationship between traditional role models and the expansion of women’s rights. We show that an increase in the importance of education has the potential to alter men’s preferences towards women’s rights, even when women do not work in the formal sector. A crucial ingredient is that women place a higher weight on their children’s well-being than men do. Men then benefit from women’s rights for two reasons. Rights for daughters solve a dynamic time inconsistency problem by taking away control from sons-in-law. Secondly, improved rights for women more generally increase education for the next generation and thus lead to better future spouses of a man’s children and grand-children and so on.

Several interesting extensions come to mind. While the model analyzes two stark
regimes (patriarchy vs. empowerment), reality is obviously more complex and legal rights to women were extended very gradually over a period of more than 50 years. This is actually easy to incorporate in our setup, by analyzing a family decision with arbitrary weights and letting men vote on the weight of women. In fact, the value function for this more general case can be found in the same way as the two corner cases presented in this paper. Then, one can show numerically that the optimal weight on the wife increases in the human capital parameter. This can be interpreted as a gradual extension of rights over time in response to the growing importance of human capital.

Another interesting extension might have something to say about the narrowing of the gender education gap observed historically. As Proposition 2 shows, our model implies that the boy-girl gap in education is constant over time. However, a small modification where parents put a somewhat higher weight on children of their own gender, will lead to a closing of the gap in the long run. The reason is simple: If women care relatively more about girls than boys, then an increase in the bargaining position of women will not only lead to an overall increase in education, but also to a reduction of the education asymmetry.

For ease of exposition and to highlight the main point, we have analyzed a model with a homogenous population. Obviously men differed tremendously in their opinion about women’s rights at the time. Anecdotal evidence seems to suggest that the more educated were on average more (and earlier) in favor of women’s rights than the less educated. It would be interesting to explore such diversity of opinion in an extension of our framework, by, for example, introducing heterogeneity in the ability to educate one’s children.

It would also be interesting to explore the implications of this idea for development policy. A number of studies have identified the lack of women’s rights as an important hindrance for successful economic development. Given that it is generally infeasible to impose gender equality on a country from the outside, for successful development policy it is thus essential to identify conditions under which those in political control will find it advantageous to improve the legal position of women. The mechanism identified in this paper would suggest that increasing the returns to early childhood education, by, for example, improving
the public school system, might achieve such a goal. More work along these lines is left for future research.

A  Time Lines of the Legal Position of Women

In this appendix, we give detailed time lines of the acquisition of rights for women in England and the United States. The U.S. time line is based on Hecker (1971), Salmon (1986), and Khan (1996), while the time line for England is based on Hecker (1971), Shanley (1986), and Kertzer and Barbagli (2001).

A.1 United States

1769  “The very being and legal existence of the woman is suspended during the marriage…” (from English common law)

1785  Pennsylvania was the first state to pass a statue that allowed both men and women to file for divorce under extreme circumstances (desertion of at least four years, bigamy, sexual incapacity before marriage, and cruelty). Other states followed shortly.

1838  Kentucky gave school suffrage (the right to vote at school meetings) to widows with children of school age.

1838  Iowa was first state to allow sole custody of a child to its mother in the event of a divorce.

1839  Mississippi was the first state that gave married women very limited property rights.

1844  Maine passed Sole Trader Law which granted married women the ability to engage in business without the need for her husband’s consent. Maine also passed a Property Law that granted married women separate control over property. Other states followed over the course of the 19th century.

1848  New York passed the Married Women’s Property Act, which extended separate property rights to all married women.

1857  Maine passed an Earnings Law which granted married women the rights to their own earnings without the need for the husband’s consent. Other states followed.

1859  Oregon’s state constitution contained a provision to protect married women’s separate property.

1861  Kansas gave school suffrage to all women. Many states followed before the turn of the century.

1869  Wyoming was the first state that gave women the same voting rights as men. Most states did not follow until the beginning of the 20th century.
1880 New York granted school suffrage to women.
1886 By 1886 all but six states allowed divorce on grounds of cruelty.
1895 By 1895 almost all states had passed some form of Sole Trader Laws, Property Laws, and Earnings Laws.
1920 Nineteenth amendment granting all women the right to vote.

A.2 England

From late 16th century on: Women were allowed to place personal property before marriage into a trust that could not be touched by her future husband or his creditors.

Until mid 19th century: Clear disparity between legal rights of married vs. single women. Single women were considered *feme sole* which allowed them the right to make contracts and own property in their own name. Married women were legally considered *feme covert* which meant that upon marriage the legal rights of the woman merged and became that of her husband. Married women had practically no rights regarding property, child custody, or the ability to make contracts.

1839 *Custody of Infants Act*, which for the first time granted mothers (under special circumstances) custody of children under 7 years in the event of divorce.

1857 *Matrimonial Causes Act*, which permitted secular divorce in England, allowing both men and women to file. Note though that this law allowed men to file on grounds of adultery, while women could initiate a divorce only if adultery was coupled with incest, bigamy, cruelty, or desertion. This act also gave divorced women the status of *feme sole*.

1869 England granted municipal suffrage to single women and widows.

1870 Act to provide public elementary education in England and Wales. This act created school boards and gave women the same rights as men, both regards electing and being elected.

1870 The *Married Women Property Act* granted women limited control over their earnings and modest legacies. This act did not give women the same property rights as men, rather it was intended to protect the most vulnerable women from their husband’s exploitation.

1873 Second *Custody of Infants Act* which allowed mothers to petition for child custody of children up to 16 years old.

1878 The *Matrimonial Causes Act* allowed courts to absolve a wife from her obligation to co-habit and to require her husband to pay a weekly sum to support her, if he had been convicted of aggravated assault against her and she was considered in further danger.
1882 Act to Consolidate and amend Acts relating to the Property of Married Women. Gave women the ability to hold separate property and to contract with respect to their separate estates.

1886 Married Women Act. Allowed maintenance orders to be issued against men who neglected, willfully refused to support, or deserted their wives.

1888 County Suffrage

1894 Parish and District Suffrage gave both single and married women the right to elect and be elected to parish and district councils.

1907 England made women eligible as mayors, aldermen, an county and town councilors.

1918 Women Suffrage Act

B Proofs for Propositions and Lemmas

Proof of Proposition 1: We would like to derive conditions under which $V_m^E > V_m^P$, or, writing out equation (15):

$$u(c_{m}^E, c_{f}^E, n^E) + \frac{\gamma_m}{1 - \frac{\gamma_m + \gamma_f}{2}} \left[ \frac{u(c_{m}^E, c_{f}^E, n^E) + u(c_{f}^E, c_{m}^E, n^E))}{2} \right]$$

$$> u(c_{m}^P, c_{f}^P, n^P) + \frac{\gamma_m}{1 - \frac{\gamma_m + \gamma_f}{2}} \left[ \frac{u(c_{m}^P, c_{f}^P, n^P) + u(c_{f}^P, c_{m}^P, n^P))}{2} \right].$$

Plugging in the functional form for $u(\cdot)$ and the solutions for $c_{m}^E, c_{m}^P, c_{f}^E, c_{f}^P, n^E, n^P$ yields:

$$(1 + \sigma) \log \left( \frac{1 + \sigma}{2} \right) + \gamma_m \left( \frac{1 + \sigma}{2} \right) \log \left( \frac{1 + \sigma}{2} \right)$$

$$> \sigma \log(\sigma) + \frac{\gamma_m}{1 - \frac{\gamma_m + \gamma_f}{2}} \left( \frac{1 + \sigma}{2} \right) \log(\sigma)$$

or:

$$[2 - \gamma_f + \gamma_m] (1 + \sigma) \log \left( \frac{1 + \sigma}{2} \right) > [(2 - \gamma_f)\sigma + \gamma_m] \log(\sigma).$$

Isolating the terms involving $\gamma_m$ on the left-hand side yields:

$$\gamma_m \left( (1 + \sigma) \log \left( \frac{1 + \sigma}{2} \right) - \log(\sigma) \right) > (2 - \gamma_f) \left( \sigma \log(\sigma) - (1 + \sigma) \log \left( \frac{1 + \sigma}{2} \right) \right).$$
For $\sigma = 1$, both sides are equal to zero, so that men are indifferent between the two regimes. For $0 < \sigma < 1$, both sides are strictly positive. Moreover, the left-hand side is strictly increasing in $\gamma_m$. Thus, if we define:

$$\tilde{\gamma}_m = \frac{(2 - \gamma_f) (\sigma \log(\sigma) - (1 + \sigma) \log \left( \frac{1 + \sigma}{2} \right))}{(1 + \sigma) \log \left( \frac{1 + \sigma}{2} \right) - \log(\sigma)},$$

we have that for all $\gamma_m > \tilde{\gamma}_m$ inequality (18) is satisfied, implying that men prefer the empowerment regime $E$.

Turning to the role of $\sigma$, we can see that both sides of (18) are strictly increasing in $\sigma$. However, as $\sigma$ approaches zero the left-hand side converges to $-|2 - \gamma_f + \gamma_m| \log(2)$, whereas the right-hand side approaches minus infinity. Therefore, there has to exist a $\tilde{\sigma}$ such that (18) is satisfied for all $\sigma$ satisfying $0 < \sigma < \tilde{\sigma}$. □

**Proof of Lemma 1:** We want to formally derive the equilibrium value functions in the education regime, both under the patriarchy and empowerment regimes. The proof is by guess and verify. We guess that the value functions take the form:

$$V_m^P(H_m, H_f, \bar{H}) = a_1^P + a_2 \log(H_m) + a_3 \log(H_f) + a_4 \log(\bar{H}_m) + a_5 \log(\bar{H}_f),$$

$$V_f^P(H_m, H_f, \bar{H}) = b_1^P + b_2 \log(H_m) + b_3 \log(H_f) + b_4 \log(\bar{H}_m) + b_5 \log(\bar{H}_f),$$

$$V_m^E(H_m, H_f, \bar{H}) = a_1^E + a_2 \log(H_m) + a_3 \log(H_f) + a_4 \log(\bar{H}_m) + a_5 \log(\bar{H}_f),$$

$$V_f^E(H_m, H_f, \bar{H}) = b_1^E + b_2 \log(H_m) + b_3 \log(H_f) + b_4 \log(\bar{H}_m) + b_5 \log(\bar{H}_f).$$

By plugging these parameterized value functions into the right-hand side of (6) and (7), we can derive explicit solutions for the individual choices, which are given in (16) and (17) in the text. Finally, plugging the functional forms for the value functions, the optimal choices (as a function of the value function coefficients) above, and the laws of motion for human capital into both sides of the functional equation (8) yields a system of equations that can be solved for the value-function coefficients. The solutions for the slope coefficients (which are identical in the two political regimes) are:

$$a_2 = \frac{(1 + \sigma)[2(1 - \alpha) - (1 - \alpha)\beta\gamma_f + \alpha(1 - \beta)\gamma_m]}{2 - (1 - \beta)\gamma_m - \beta\gamma_f},$$

$$a_3 = (1 + \sigma) \left( \frac{\beta\gamma_m}{2 - (1 - \beta)\gamma_m - \beta\gamma_f} \right),$$

$$a_4 = \left( \frac{1 - \beta}{1 - \gamma_m/2 - \gamma_f/2} \right) \left( \frac{(1 + \sigma)[2 + (1 - 2\beta)(\gamma_f - \gamma_m)]}{2 - (1 - \beta)\gamma_m - \beta\gamma_f} \right),$$

$$a_5 = \left( \frac{\beta\gamma_m}{2 - (1 - \beta)\gamma_m - \beta\gamma_f} \right),$$

$$b_2 = (1 + \sigma) \left( 1 - \alpha + \frac{1 - \beta}{2 - (1 - \beta)\gamma_m - \beta\gamma_f} \right).$$
where:

\[
M_i^P = \sigma \log(\sigma) + (1 + \sigma) \log \left( \frac{A}{1 + \sigma} \left( \frac{\alpha(1 + \sigma)}{\alpha(1 + \sigma) + \delta} \right)^\alpha \right) + \delta \log \left( \frac{\delta - \frac{\gamma_m}{2}(a_2 + b_3)\theta}{\phi(\alpha(1 + \sigma) + \delta)} \right),
\]

\[
M_i^E = \frac{\gamma_m}{2} \theta \log(a_2)[a_2 + a_4 + b_2 + b_4] + \frac{\gamma_m}{2} \theta \log(b_3)[a_3 + a_5 + b_3 + b_5]
+ \frac{\gamma_m}{2} \theta[a_2 + a_3 + a_4 + a_5 + b_2 + b_3 + b_4 + b_5] \log \left( B \left( \frac{\phi \gamma_m \theta}{\delta - \frac{\gamma_m}{2}(a_2 + b_3)\theta} \right) \right),
\]

\[
P_i^F = \log(\sigma) + (1 + \sigma) \log \left( \frac{A}{1 + \sigma} \left( \frac{\alpha(1 + \sigma)}{\alpha(1 + \sigma) + \delta} \right)^\alpha \right) + \delta \log \left( \frac{\delta - \frac{\gamma_m}{2}(a_2 + b_3)\theta}{\phi(\alpha(1 + \sigma) + \delta)} \right),
\]

\[
F_i^F = \frac{\gamma_f}{2} \theta \log(a_2)[a_2 + a_4 + b_2 + b_4] + \frac{\gamma_f}{2} \theta \log(b_3)[a_3 + a_5 + b_3 + b_5]
+ \frac{\gamma_f}{2} \theta[a_2 + a_3 + a_4 + a_5 + b_2 + b_3 + b_4 + b_5] \log \left( B \left( \frac{\phi \gamma_f \theta}{\delta - \frac{\gamma_f}{2}(a_2 + b_3)\theta} \right) \right),
\]

and:

\[
M_i^E = (1 + \sigma) \log \left( \frac{A}{2} \left( \frac{\alpha(1 + \sigma)}{\alpha(1 + \sigma) + \delta} \right)^\alpha \right) + \delta \log \left( \frac{\delta - \frac{\gamma_m + \gamma_f}{4}(a_2 + b_3)\theta}{\phi(\alpha(1 + \sigma) + \delta)} \right),
\]

\[
M_i^E = \frac{\gamma_m}{2} \theta \log(a_2)[a_2 + a_4 + b_2 + b_4] + \frac{\gamma_m}{2} \theta \log(b_3)[a_3 + a_5 + b_3 + b_5]
+ \frac{\gamma_m}{2} \theta[a_2 + a_3 + a_4 + a_5 + b_2 + b_3 + b_4 + b_5] \log \left( B \left( \frac{\phi \gamma_m \theta}{\delta - \frac{\gamma_m + \gamma_f}{4}(a_2 + b_3)\theta} \right) \right),
\]

\[
P_i^F = (1 + \sigma) \log \left( \frac{A}{2} \left( \frac{\alpha(1 + \sigma)}{\alpha(1 + \sigma) + \delta} \right)^\alpha \right) + \delta \log \left( \frac{\delta - \frac{\gamma_m + \gamma_f}{4}(a_2 + b_3)\theta}{\phi(\alpha(1 + \sigma) + \delta)} \right),
\]

\[
F_i^F = \frac{\gamma_f}{2} \theta \log(a_2)[a_2 + a_4 + b_2 + b_4] + \frac{\gamma_f}{2} \theta \log(b_3)[a_3 + a_5 + b_3 + b_5]
+ \frac{\gamma_f}{2} \theta[a_2 + a_3 + a_4 + a_5 + b_2 + b_3 + b_4 + b_5] \log \left( B \left( \frac{\phi \gamma_f \theta}{\delta - \frac{\gamma_f}{4}(a_2 + b_3)\theta} \right) \right),
\]

The level coefficients in the two political regimes \( j \in \{P, E\} \) can be expressed as:

\[
a_j^1 = \frac{2 - \gamma_f}{2 - (\gamma_f + \gamma_m)}(M_j^1 + M_j^2) + \frac{\gamma_m}{2 - (\gamma_f + \gamma_m)}(F_j^1 + F_j^2),
\]

\[
b_j^1 = \frac{\gamma_f}{2 - (\gamma_f + \gamma_m)}(M_j^1 + M_j^2) + \frac{2 - \gamma_m}{2 - (\gamma_f + \gamma_m)}(F_j^1 + F_j^2),
\]
\[ + \frac{\gamma_f}{2} \theta [a_2 + a_3 + a_4 + a_5 + b_2 + b_3 + b_4 + b_5] \log \left( \frac{B \phi^{\gamma_m + \gamma_f \theta}}{\delta - \gamma_m + \gamma_f (a_2 + b_3) \theta} \right). \]

Step-by-step derivations are available on request.

**Proof of Proposition 2:** All parts of this proposition follow immediately from comparing the closed form solutions for consumption, education, and fertility given in both regimes (i.e. (17) and (16)) together with our assumption that \( \gamma_f > \gamma_m \).

Aggregate consumption is simply \( C^P = C^E = A \left( \frac{\alpha(1+\sigma)}{\alpha(1+\sigma) + \delta} H_f \right)^\alpha H_m^{1-\alpha}. \)

The fraction of time women spend on production is \( t^P_f = t^E_f = \frac{\alpha(1+\sigma)}{\alpha(1+\sigma) + \delta} \). Since the remaining time is spent on child care, total child care time is also independent of the regime. Fertility is lower and education is higher under empowerment, which follows immediately from \( \gamma_f > \gamma_m \) and the expressions for fertility and education: \( n^j = \frac{\delta - \frac{\gamma_m}{\phi(\alpha(1+\sigma) + \delta)}}{\phi(\alpha(1+\sigma) + \delta)}, \)

\[ e^j_m = \frac{\phi_j \gamma_f a_2 \theta}{\delta - \frac{\gamma_m}{\phi(\alpha(1+\sigma) + \delta)}}, \quad \text{and} \quad e^j_f = \frac{\phi_j \gamma_f b_3 \theta}{\delta - \frac{\gamma_m}{\phi(\alpha(1+\sigma) + \delta)}}, \]

where \( \gamma^P = \gamma_m \) and \( \gamma^E = \frac{\gamma_m + \gamma_f}{2} \). From these expressions it is also obvious that fertility and education are independent of the state variables.

Note that this also implies that the total time women devote to educating children is higher under empowerment (even though women have fewer children!). Total female education time under patriarchy is \( n^P (e^P_m + e^P_f) = \frac{\theta \gamma_m (1+\sigma)}{2 - (1-\beta) \gamma_m - \beta \gamma_f}, \) compared to \( n^E (e^E_m + e^E_f) = \frac{\theta \gamma_m (1+\sigma)}{2 - (1-\beta) \gamma_m - \beta \gamma_f} \) under empowerment.

The gender education gap is simply \( \frac{e^E_f}{e^E_m} = \frac{2(1+\alpha) \gamma_f - \alpha (1-\beta) \gamma_m}{2(1-\alpha) - (1-\alpha) \gamma_f + \alpha (1-\beta) \gamma_m} \) in both regimes.

Finally, it is easy to show that the growth rate of aggregate consumption (and output and human capital) is equal to \( B (e^P_f)^{\theta \beta} (e^P_m)^{\theta (1-\beta)} \). Since, as argued above, \( e^E_f > e^P_f \) and \( e^E_m > e^P_m \), it follows immediately that the growth rate is higher under empowerment.

**Proof of Proposition 3:** Men will vote for empowerment if and only if their utility under empowerment exceeds the utility under patriarchy:

\[ V^E_m (H_m, H_f, \bar{H}) > V^P_m (H_m, H_f, \bar{H}). \]

We have already determined that \( V^E_m (H_m, H_f, \bar{H}) \) and \( V^P_m (H_m, H_f, \bar{H}) \) differ only in the constant term, so that the inequality can be written as \( a^E_1 > a^P_1 \). Writing out this condition
and simplifying gives:

\[
(2 - \gamma_f + \gamma_m)(1 + \sigma) \log \left( \frac{1 + \sigma}{2} \right) - [(2 - \gamma_f)\sigma + \gamma_m] \log(\sigma) + \theta \gamma_m \frac{2(1 + \sigma)}{(1 - \gamma)} \log \left( \frac{\gamma}{\gamma_m} \right) + \left[ \theta \gamma_m \frac{2(1 + \sigma)}{(1 - \gamma)} - (2 - \gamma_f + \gamma_m)\delta \right] \times \log \left( \frac{\delta[2 - (1 - \beta)\gamma_m - \beta\gamma_f] - \gamma_m(1 + \sigma)\theta}{\delta[2 - (1 - \beta)\gamma_m - \beta\gamma_f] - \gamma(1 + \sigma)\theta} \right) > 0. \tag{19}
\]

The first line of this expression reflects the preference for equality in future generations that was already present in the no-education case (compare to inequality (18) in the proof of Proposition 1 above). The remaining terms reflect the role of education. As one would expect, setting \( \theta = 0 \) reduces the expression to the no-education case. Define \( \tilde{\theta} \) as:

\[
\tilde{\theta} = \frac{\delta[2 - (1 - \beta)\gamma_m - \beta\gamma_f]}{\gamma(1 + \sigma)}.
\]

Note that as \( \theta \) approaches \( \tilde{\theta} \) from below, the denominator in the log-term goes to zero and hence, the log term goes to infinity. Further, it is easy to show that for \( \theta \) sufficiently close to \( \tilde{\theta} \), the term in square brackets is strictly positive, so that the overall expression goes to plus infinity. Intuitively, if \( \theta = \tilde{\theta} \), parents can achieve any positive utility level by choosing a sufficiently small number of children with a sufficiently high level of education. Given that the left-hand side of (19) approaches plus infinity for \( \theta \) sufficiently close to \( \tilde{\theta} \), there has to be a threshold \( \bar{\theta} \) such that (19) is satisfied for all \( \theta \) that satisfy \( \bar{\theta} < \theta < \tilde{\theta} \). Hence, for sufficiently high \( \theta \) men will prefer empowerment over patriarchy.

**Proof of Proposition 4:** Simply plugging \( \gamma_m = \gamma_f \) into (19) the condition for preferring equal rights reduces to

\[
(2 - \gamma_f + \gamma_m)(1 + \sigma) \log \left( \frac{1 + \sigma}{2} \right) - [(2 - \gamma_f)\sigma + \gamma_m] \log(\sigma) > 0,
\]

which is independent of \( \theta \) and in fact identical to the condition for the no-education regime.

Secondly, to show that the human capital externality is crucial for our results, we solve a version of the model without this externality, which is equivalent to assuming that sons and daughters marry each other. Without interaction across dynasties, the average human capital in the economy becomes irrelevant. The male and female value functions in the two regimes \( j \in \{P, E\} \) have to satisfy the following recursive equation

\[
V_g(H_m, H_f) = \left\{ u_g(c_m, c_f, n) + \frac{\gamma_g}{2} [V_m(H'_m, H'_f) + V_f(H'_m, H'_f)] \right\},
\]

for \( g = m, f \) respectively. As before, choices are determined either by maximizing the male value function (patriarchy) or the average value function (empowerment). Again,
all value functions can be solved explicitly. The condition under which men prefer equal rights in this modified model becomes now

\[
(2 - \gamma_f + \gamma_m)(1 + \sigma) \log\left(\frac{1 + \sigma}{2}\right) - [(2 - \gamma_f)\sigma + \gamma_m] \log(\sigma)
\]

\[
+ \gamma_m \frac{2(1 + \sigma)}{1 - \gamma} \theta \log\left(\frac{\gamma}{\gamma_m}\right)
\]

\[
+ \left[\gamma_m \frac{2(1 + \sigma)}{1 - \gamma} \theta - \delta(2 - \gamma_f + \gamma_m)\right] \log\left(\frac{\delta[1 - \gamma] - \gamma_m(1 + \sigma)\theta}{\delta[1 - \gamma] - \gamma(1 + \sigma)\theta}\right) > 0
\]

The maximum \(\theta\) for which the problem is well-defined is \(\frac{\delta(1 - \gamma)}{\gamma(1 + \sigma)}\). Analogue to the proof of Proposition 3, the last logarithmic term goes to infinity in the limit. However, the expression multiplying the log term is in fact negative for all \(\theta\) less or equal to the limit. Since all other terms are finite, it follows directly, that for large enough \(\theta\), the expression becomes (and stays negative). Hence, in the limit, men prefer to stay in a patriarchal regime.

Finally, the result that the optimal regime is independent of \(\alpha\) follows directly from condition (19) in which no \(\alpha\) appears. \qed
References


