Women's Liberation: What Was in It for Men?*

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February 2007

Abstract

Women's rights are closely related to economic development. This is true both across countries, where women have most rights in the richest countries, and in time series data: women have slowly improved their legal position in parallel with fast improvements in the standard of living. In most cases, the initial 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. 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 how they would ideally like to treat their own wives and how they want other women to be treated. While men might want little rights for their own wives, they may prefer their daughters to have a better bargaining position with future husbands. In addition, a wife's education matters for producing high-quality children. A husband prefers his children to find high-quality mates, and therefore stands to gain from increasing the power of his children's mothers-in-law.

*Preliminary and incomplete. Financial support by the National Science Foundation (grants SES-0217051 and SES-0519324), the Alfred P. Sloan Foundation, and the Michelle Clayman Institute is gratefully acknowledged.

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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 had essentially no rights in the United States. In 1848, a group of women met at the famous Seneca Falls meeting. In the *Declaration of Sentiments*, Elizabeth Cadey Stanton carefully enumerated areas of life where women were treated unjustly. For example, married women had no property rights. Husbands had legal power over and responsibility for their wives to the extent that they could imprison or beat them with impunity. And women had no right to vote. Women who fought for Women's Rights during the late 19th century saw the right to vote as a means to eventually achieve other reforms benefiting women.

Similarly, in England, married women had little rights of their own until the 20th Century. In 1855, Caroline Norton published her most important pamphlet: "A Letter to the Queen on Lord Chancellor Cranworth's Marriage and Divorce Bill," in which she reviewed the position of married women under English law. A married woman had no legal existence whether or not she was living with her husband. Her property was his property, she could not make a will, and she usually could not obtain divorce.[1]

Today, women in Europe, the U.S. and many other countries have acquired the same rights as men. Gender inequality seems to be disappearing with development. It seems that as countries get richer they are gradually extending rights to their female population. This apparent connection between economic development and women's rights is also visible when comparing developed with less

[1]See also Stone (1977) for a description of the legal impotence of wives in sixteenth and seventeenth century England.

developed countries today. Cross-country data shows a strong positive correlation between several measures of "female rights" and GDP per capita in 2000, as will be discussed in Section 2 in detail.

Yet, we have little understanding of the channels and mechanisms, or even the direction of causality (if any).[2] It is sometimes argued that more rights for women lead to a more efficient allocation of resources and thereby ultimately contributes to economic development. Several papers have found such an effect in micro data from developing countries (e.g. Fortman, Antinori, and Nobane (1997), Udry (1996), and Goldstein and Udry (2005)). Other people have documented instances where development seems to be causing gender equality (e.g. Munshi and Rosenzweig (2006)). In this paper, we argue that both directions of causality happen simultaneously. The basic idea is that an increase in the return to human capital will lead men to want women to have more rights precisely because women will make the better investments in children, which will then accelerate growth.

Women's rights is a relatively broad term, and the list of rights that women have historically lacked is long: during marriage, women typically ceased to exist as a legal entity. This meant that they were not allowed to own property, that their own earnings were property of their husband, they were severely restricted in their ability to divorce and they lacked formal rights to their children. Even single women did not enjoy full rights historically. The right to vote is a particularly important right, and one that the American women's movement during the 19th century largely focused on hoping that it would pave the way to other rights. The frontrunner in granting women the right to vote was Sweden who granted municipal suffrage to tax-paying widows and spinsters in 1863 (Ray 1918). The first country that extended full suffrage to all women was New Zealand in 1893. Australia joined them in 1902, and for the most part, this trend then moved around Europe, eventually including the United States in 1920. Many more countries joined after the second world war. Most recently, Kuwait granted the right to vote to its women in 2005. Several countries in the Middle East still do not allow

[2] Duflo (2005) provides an excellent survey of various hypothesis brought forth in the literature.

women to vote.[3] Despite trends and influence from other countries, however, each country pro-actively extended a right to women that had the capacity to alter the dynamics of various social, political, and economic spheres. Note that it is always men who have to approve this change and thereby give up some of their political power. In this paper we examine the incentives for men to extend right to vote to women.

The channel we investigate in this paper is related to the fact that many laws that put constraints on women did so for *married* women, but not single women. This suggests that husband's were benefitting from these constraints. It seems quite plausible that a husband prefers to keep his wife's outside option low because this will give him a better bargaining position with his wife.[4] This hypothesis is supported by some of the arguments made by the anti-suffrage movement. People were concerned about the threat to families if women gained the right to vote (e.g. Orestes Brown, a prominent protestant minister, argued in 1873 that the family would fall apart as soon as women were allowed to enter the public sphere). 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 rights men want for their daughters relative to their wives. We interpret rights broadly here and model it as a bargaining parameter in marriage. That is, women without rights have no bargaining power relative to their husband, while full rights will be captured through equal bargaining power. Men ideally want their wives to have no rights, while they do want full rights for their daughters. We assume that rights are extended by law and thus will affect all women (i.e. daughters and wives) equally. If daughters have no rights, then their future husbands will treat them poorly, which fathers of daughters would like to avoid. In addition, a wife's education matters for producing high-quality children. A husband 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

[3]See Wikipedia (2006) for a time line of all countries.

[4]For the case of England, Stone (1993) documents carefully why divorce was not a meaningful 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.

women's rights, they will vote to give them rights just enough to equalize the marginal loss from rights to their wive 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 changes 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.

Arguments for women's rights based on men's personal gain from the extension of rights were mentioned in several debates about suffrage around the turn of the 19th century. In her book on child custody rights, Mason (1994, p.56) argues 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." An argument linking suffrage with women's education can be found in the an editorial from the Hearst Newspapers, written by Arthur Brisbane (not dated, but probably around 1917): "The education of a girl is important chiefly because it means the educating of a future mother. Whose brain but the mother's inspires and directs the son in the early years, when knowledge is most easily absorbed and permanently retained? If you find in history a man whose success is based on intellectual equipment, you find almost invariably that his mother was exceptionally fortunate in her opportunities for education." Southard (1993) provides an excellent summary of the suffrage campaign in Bengal, British India, in the 1920s. The link between suffrage and improved education for women was a major theme as well. The fact that men would gain from more educated women was one of the main arguments for suffrage. Southard (1993, p.400) summarizes "Professional men seeking upward mobility found that uneducated wives limited by the *parda* system could not take the lead in the education of their children nor provide wifely support for their professional careers".[5] Analyzing the debate in Japan, Nolte (1986) mentions arguments about the family on both sides of the debate around a suffrage

[5]Parda (or sometimes purdah) is the Hindu or Muslim system of sex segregation, practiced especially by keeping women in seclusion.

bill that was eventually passed in 1931. On the one hand, opponents argued that "women's political participation would have a deleterious effect on, first, home management and, second, education" (Nolte, p. 694). On the other hand, proponents stressed the importance of the nurturing mother and argued that more rights would lead to more informed homemakers.

Alternative Explanations

Clark (2005) mentions an idea that is similar to ours briefly and only verbally. Another somewhat related story is advanced in Geddes and Lueck (2002). The authors argue that as wealth increases, women's rights will expand because the incentives under "self-ownership" to use wealth efficiently are greater than when controlled by their husband.[6] 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 plausible 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.

Alternatively, the right to vote may have been given to women based on political economy reasons.[7] Assuming that women are more left wing than men, left wing parties would have an incentive to extend the voter pool to women simply to shift the median voter in their favor.[8] However, examining the party in power in various countries at the time when suffrage was extended shows that there is no clear bias towards left wing parties.

There are also several economic explanations for the general extension of suffrage from the elites to the masses which in principle might apply to the case of women suffrage as well. For example, Diaz (2000) argues that land-owners voluntarily extended the franchise to the landless because this helped them control opposing interests from the middle class. Acemoglu and Robinson (2006) proposes an explanation based on the threat of a revolution, while Lizzeri and Persico (2004)

[6] These authors have no formal model.

[7] See Jack and Lagunoff (2006) for a general model of suffrage extension.

[8] The fact that men and women vote differently is carefully documented in Lott and Kenny (1999) for the U.S. and Funk and Gathmann (2006) for Switzerland.

argue that a peaceful extension of the suffrage can happen as a broader electorate may increase the efficiency of public spending.

However, we believe that the case of women is very different. Men make about 50% of the population and are physically stronger than women which should make it relatively easy to control or give private incentives to own wives. This is very different from a situation where 1% of the population (the "elites") was trying to control the remaining 99%. The parallels between women suffrage and the end of slavery might also come to mind. Note, however, that this is also very different in the sense that all men are connected to at least one woman (their mother) and typically more (their wife, their daughters, etc.), while only a small fraction of the population where slave-owners.

A few authors have empirically analyzed who voted for women suffrage to get an idea of the underlying economic incentives. For example, Jones (1991) uses U.S. cross state data between 1915 and 1919 and finds two important factors that increase the likelihood of a state to vote in favor of federal women suffrage: a higher sex ratio and the existence of state law in favor of women. In a different context, Washington (2006) uses data from the 105th U.S. Congress 1997-98) and finds that congressmen are more likely to vote liberally on reproductive rights the higher their fraction of daughters. Oswald and Powdthavee (2006) find a similar result for the UK.

2 Data

Women's Rights are highly correlated with economic development. This is true in cross country data, in U.S. cross state data, as well in time series data. Even within a country, more educated and richer men have more positive attitudes towards women. In this section, we document these empirical facts. It should be pointed out that we do not establish a causality here, we simply intend to document a correlation.

2.1 Cross-Country Data

The United Nations publish two gender-specific indices to compare the status of women's 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 include mostly "economic outcome" variables such as female labor supply and female education. For this paper we are more interested in the legal constraints that women face. This is 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. Table 1 documents the cross-country correlations between these proxies for women's rights and three different measures of economic development. For most variables, we find correlation coefficients of 0.4 or higher, showing a strong relationship between these measures of rights and the economic progress of a country.

2.2 Gradual Extension of Rights in the U.S.

We also see a gradual extension of women's rights in the United States over the course of development. The following time line points out some of the milestones along the way to full rights for women.[9]

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

1839 Mississippi grants women the right to hold property in their own name, *with* their husband's permission.

1869 Wyoming passes the first women suffrage law.

1873 The Supreme Court rules that a state has the right to exclude a married woman from practicing law.

[9] The timeline is based on the 2002 National Women's History Project, see http://www.legacy98.org/timeline.html.

	Measure of Development		
Measure of Women's Rights	(1)	(2)	(3)
Abortion Policy	0.41	-0.30	-0.56
Percent Seats in Parliament	0.41	-0.24	-0.22
Gender Development Index	0.76	-0.82	-0.90
Gender Empowerment Measure	0.80	-0.63	-0.49
Year of Partial Suffrage	-0.50	0.43	0.58
Year First Woman in Parliament	-0.62	0.38	0.35
Access to Land	-0.50	0.67	0.78
Access to bank loans	-0.44	0.53	0.69
Female Genital Mutilation	-0.32	0.54	0.54
Violence against Women	-0.40	0.49	0.54

Measures of Development: (1) GDP per capita, (2) Share of Agriculture, (3) Fertility Rate. 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

1900 By now, every state has passed legislation granting married women some control over their property and earnings.

1920 Nineteenth amendment granting all women right to vote.

1965 Weeks vs. Southern Bell: many restrictive labor laws lifted, opening previously male-only jobs to women.

1973 Roe v. Wade: legalization of abortion.

1974 Credit discrimination against women outlawed by Congress.

1975 States are denied the right to exclude women from juries.

1981 The Supreme Court rules that excluding women from the draft is unconstitutional.

Over the same time horizon, the nature of the family changed substantially. Fertility declined drastically, schooling increased by a large amount, and the family changed from being "a busy workplace to becoming a retreat from the demands of the competitive world" (Mason 1994). Figure A1 (in the appendix) documents that the level of schooling was roughly constant during the second half of the 19th century, and then accelerated very fast at the beginning of the 20th century.[10] At the same time, the gap in schooling achievements for men vs. women narrowed substantially. In 1850, 50% of boys were enrolled in regular schools, compared to 45% of girls. By 1890, this gap had narrowed to only a one-percentage point difference: 54 vs. 55%. At the same time, the birthrate declined from almost 200 children per 1,000 women of child-bearing age in 1850 to 130 children by 1900 and then dropped very rapidly between 1920 and 1933 (from 118 to 76). The total number of children born to a woman dropped by almost 2 children within the course of a decade (Jones and Tertilt 2006). While women born around 1865 had an average number of 5 children, women born around 1875 had on average only 3.3 children. Fertility declined even further to an average number of only 2.3 for the 1905 birth cohort of women.

2.3 Cross-State Data

Khan (1996) provides data for 3 types of state property laws for women women in the U.S., while Lott and Kenny (1999) document the year in which suffrage was introduced in different states. All of these laws were introduced earlier in the richer states (measured by GDP p.c. in 1900).[11] The correlation coefficient between GDP per capita and the year when suffrage was extended to women for state elections is -0.33, with an R^2 of 0.09. Similarly, we find that richer states introduced certain rights to own earnings as well as rights to hold property for married women earlier than poorer states (the correlation coefficients are -0.09 and -0.15 respectively). The relationship between schooling and women's rights is even stronger: We find a correlation coefficient of -0.39 between the year when suffrage was introduced and the overall high school graduation rate in 1928.[12]

[10] The data is from Carter, Gartner, Haines, Olmstead, Sutch, and Wright (2006).

[11] This relationship is also documented in Geddes and Lueck (2002).

[12] We use year 1928 because that's when the most reliable schooling data is available, see Goldin

3 The Model

In the model economy, production takes place at two different locations, the home and the market. People live in households composed of one man and one woman and potentially children. Consumption of both the market and the home good is essential, and each person can work in only one location. Thus, one member of the household will specialize in the home, while the other will work in the market. The only initial difference between men and women is that men have more physical strength. This difference has two consequences: first, we assume that strength is valuable only in market sector; thus, men will optimally choose to specialize in the market, while women work in the home. Second, the difference in strength also determines the initial distribution of power: men will be in control.

In addition to producing goods and consuming them, each couple also chooses how many children to have. We assume that each couple has an equal number of sons and daughters. People care about their own consumption of the market good c and the home good d, their spouse's consumption of c and d, their number of children n, and their children's utilities V_{Sons} and $V_{\text{Daughters}}$.

The utility function of an adult i with spouse j is given by:

$$V_{\text{Adult}} = u(c_i, c_j, d_i, d_j, n) + \gamma^i \left(\frac{V_{\text{Sons}} + V_{\text{Daughters}}}{2} \right),$$

where:

$$u(c_i, c_j, d_i, d_j, n) = \log(c_i) + \delta \log(d_i) + \sigma[\log(c_j) + \delta \log(d_j)] + \beta \log(n).$$

Thus, δ is the relative weight on home consumption, σ is the weight on spousal consumption, and β is the weight on the number of children. The only gender-specific part of the utility function is the weight γ^i attached to the welfare of the children. We assume that people care more about the welfare of children if they spend more time with them. Since children grow up in the home, the utility

(1994).

weight is a function of the fractions of time t spent working in the home and in the market:

$$\gamma(t) = \frac{t_{home}\gamma_f + t_{market}\gamma_m}{t_{home} + t_{market}},$$

where $\gamma_f > \gamma_m$. The labels already reflect the fact that women f optimally specialize in the home; thus, women attach relatively more weight to the welfare of their children than men do.[13]

Men work full time in the market and receive wage w per unit of human capital. For a family where the husband has human capital H_m, the budget constraint for market goods is given by:

$$c_m + c_f = wH_m.$$

Women generally do not work full time on home production, because some time also needs to be spent on raising and educating children at home. There is a time cost ϕ for raising each child. In addition, the couple can decide to educate their children. The time spend educating the daughters is given by e_f, and the time spent on educating sons is e_m. The home-goods budget constraint for a household with female human capital H_f is:

$$d_m + d_f = H_f(1 - (\phi + e_m + e_f)n).$$

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

$$H'_m = \max\{1, BH_f e_m^\theta\},$$
$$H'_f = \max\{1, BH_f e_f^\theta\}.$$

Two features are noteworthy here. First, the human capital of the parent educating the children has a positive effect on the productivity of education. Since it is the wife who raises the children, only female human capital H_f enters the laws of motion. Second, even without education ($e_m = e + f = 0$) the children receive one unit of "basic" human capital. If the education technology is relatively un-

[13] This has been well-documented in the micro development literature (e.g. Case and Deaton (1998) for South Africa, Doss (2006) for Ghana).

productive (i.e., B is low) this opens the possibility of a corner solution in which parents do not educate their children.

The decision problem of a household can be formulated recursively. 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[14], this state variable is given by the economywide average of female human capital.

The recursive formulation of the decision problem is then:

$$V_m(H_m, H_f, \bar{H}_f) = \max \left\{ u(c_m, d_m, c_f, d_f, n) + \gamma_m \left(\frac{V_m(H'_m, \bar{H}'_f, \bar{H}'_f) + V_f(\bar{H}_m, H'_f, \bar{H}'_f)}{2} \right) \right\}$$

subject to the constraints above. 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 economywide 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 human capital:

$$\bar{H}'_m = g_m(\bar{H}_f),$$
$$\bar{H}'_f = g_f(\bar{H}_f).$$

The max operator in the above Bellman equation reflects that, at least initially, the husbands make all the decisions. Female consumption is still going to be positive because of the positive weight $\sigma > 0$ that people attach to their spouse's

[14]The key assumptions are that only women raise children and that consumption is separable in market and home consumption.

well-being. Female utility is given by:

$$V_f(H_m, H_f, \bar{H}_f) = u(c_f, d_f, c_m, d_m, n) + \gamma_f \left(\frac{V_m(H'_m, \bar{H}'_f, \bar{H}'_f) + V_f(\bar{H}_m, H'_f, \bar{H}'_f)}{2} \right),$$

where all consumption values etc. are the ones chosen by the husband above. Notice that there is no maximization operator in this expression.

The fact that men make all decisions in this economy is at first sight to their advantage: given that $\sigma < 1$, they will assign a disproportionate share of consumption to themselves. However, there are also a several frictions in this economy that could make an uneven distribution of power problematic. First, men care about their daughters, and may not want their sons in law to have too much power over them. Second, the welfare of their sons will depend in part on the human capital of their daughters in law. If a lopsided distribution of power reduces incentives to invest in daughters in general, this will also be perceived as a negative. In what follows, we examine the model in more detail, and derive conditions under which men prefer to share power with their wives.

4 Incentives for Power Sharing in the Two Regimes

From a man's perspective, there are two mechanisms that can lead to an equilibrium allocation that is less than optimal. First, there is disagreement between a man and future decision-makers (his sons-in-law) about the allocation of resources between the son-in-law and his children. This is similar to a mechanism first pointed out by Phelps and Pollak (1968). Second, the model features a general human capital externality brought by the assumption that investing in children will benefit also the spouse (and the spouse's parents).[15] A very similar mechanism is explored in Echevarria and Merlo (1999). Both mechanisms will lead to under-investment in human capital when men make all choices. Giving

[15] Laitner (1991) argues that this externality can be resolved in the marriage market. However, note that his argument rests on the assumption that consumption goods are pure public goods in marriage, while in our set-up the disagreement between spouses on the allocation of resources is crucial.

women some power, will alleviate this under-investment to some extent, but not fully resolve it. We will explore these mechanisms in more details below.

4.1 The No-Education Regime

Let us first consider the case in which 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. Since in this regime parents do not influence the human capital of their children, the children's utility is exogenous, and the decision problem is static. The simplified problem can be written as:

$$\max \{\log(c_m) + \delta \log(d_m) + \sigma[\log(c_f) + \delta \log(d_f)] + \beta \log(n)\}$$

subject to:

$$\begin{aligned} c_m + c_f &= w, \\ d_m + d_f &= (1 - \phi n). \end{aligned}$$

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

$$\begin{aligned} c_m &= \frac{w}{1+\sigma}, \\ c_f &= \frac{\sigma w}{1+\sigma}, \\ d_m &= \frac{\delta}{\delta(1+\sigma)+\beta}, \\ d_f &= \frac{\delta\sigma}{\delta(1+\sigma)+\beta}, \\ n &= \frac{\beta}{\phi(\delta(1+\sigma)+\beta)}. \end{aligned}$$

Let us now consider whether it might be in the interest of the men to share power with the women. The political mechanism that we have in mind is a one-time referendum on granting equal rights to women. If the referendum is passed and the equal-rights policy is subsequently perfectly enforced, household decisions will no longer be made by the husband alone. Rather, we assume that the new outcome is determined by efficient household bargaining with equal weight on the wife's and the husband's utility.[16] Taking the average of the two utility functions, the new household welfare function to be maximized is given by:

$$\frac{1+\sigma}{2}\left[\log(c_m)+\log(c_f)+\delta(\log(d_m)+\log(d_f))\right]+\beta\log(n).$$

The optimal value of fertility is unchanged. The consumption choices now become:

$$c_m = c_f = \frac{w}{2},$$
$$d_m = d_f = \frac{\delta(1+\sigma)}{2(\delta(1+\sigma)+\beta)}.$$

Not surprisingly, female consumption increases and male consumption decreases after such a referendum. One might think that this implies that men would never favor sharing power. This is however not necessarily true, since men also value the utility of their daughters (and granddaughters etc.), which induces a taste for gender equality. This effect does not depend on discount factor heterogeneity; let us therefore for simplicity consider the case $\gamma_m = \gamma_f = \gamma$. Lifetime utility for a man can be written as:

$$V_m = \log(c_m)+\delta\log(d_m)+\sigma[\log(c_f)+\delta\log(d_f)]+\beta\log(n)$$
$$+\frac{\gamma}{1-\gamma}\left[\frac{1+\sigma}{2}[\log(c_m)+\log(c_f)+\delta(\log(d_m)+\delta\log(d_f))]+\beta\log(n)\right].$$

The first term is maximized by the patriarchial choices, but the utility derived from the children's generation onward is actually maximized by the emancipated choices, as men are assumed to care equally about their sons and their daughters. In principle, men could prefer emancipation in this situation, assuming that either γ is sufficiently close to one, or σ is sufficiently close to zero. However, in practice this tradeoff appears to be an unlikely explanation for emancipation,

[16] The exact weighting is not essential for the qualitative results, what matters is that the weight of the wives increases.

because it works only if men's concern for their wives and 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 applying to their (apparently much more esteemed) daughters made them prefer general power sharing.

We view this scenario as implausible, and conclude that in the no-education regime men are unlikely to support emancipation.[17] The heart of the issue is that in this regime, the power balance between genders only has a static effect on the distribution of consumption between husbands and wives. Decisions on children do not play any role here for the incentives to share power; men and women agree on the optimal fertility rate, and families do not undertake any investment in their children's human capital.

4.2 The Education Regime

We now move on to the second regime of our model in which investment in education is positive. The switch to this regime can be brought about by an increase in overall return to education, which is measured by the parameter B. The nature of the family is substantially different in this regime; whereas before the family was mostly about producing and allocating consumption goods, it now becomes a center for the accumulation of human capital. As we will see, this has a substantial effect on men's incentives for sharing power with their wives.

As in the previous section, our analytical strategy is to solve for the equilibrium value functions under male power versus power sharing, and then compare the two to determine under which conditions men have an incentive to share power with their wives. The male and female value functions in the education regime with male power are defined by:

$$V_m(H_m, H_f, \bar{H}_f) = \max \left\{ u(c_m, d_m, c_f, d_f, n) + \gamma_m \left(\frac{V_m(H'_m, \bar{H}'_f, \bar{H}'_f) + V_f(\bar{H}_m, H'_f, \bar{H}'_f)}{2} \right) \right\},$$

[17] A formal analysis of men's incentives for power sharing in the no-education regime is given in Appendix A.

$$V_f(H_m, H_f, \bar{H}_f) = u(c_f, d_f, c_m, d_m, n) + \gamma_f \left(\frac{V_m(H'_m, \bar{H}'_f, \bar{H}'_f) + V_f(\bar{H}_m, H'_f, \bar{H}'_f)}{2} \right),$$

where the maximization is subject to:

$$\begin{aligned}
c_m + c_f &= wH_m, \\
d_m + d_f &= H_f(1 - (\phi + e_m + e_f)n), \\
H'_m &= BH_f e_m^\theta, \\
H'_f &= BH_f e_f^\theta, \\
\bar{H}'_m &= g_m(\bar{H}_f), \\
\bar{H}'_f &= g_f(\bar{H}_f).
\end{aligned}$$

This recursive system can be solved analytically. As a first simplifying step, we exploit the fact that utility is separable in market and home consumption. This implies that the value functions are separable in male and female human capital. Let v^c denote the utility derived from the consumption of market goods as a function of male human capital. The value functions above can be rewritten as:

$$\begin{aligned}
V_m(H_m, H_f, \bar{H}_f) &= v_m^c(H_m) + V_m(H_f, \bar{H}_f), \\
V_f(H_m, H_f, \bar{H}_f) &= v_f^c(H_m) + V_f(H_f, \bar{H}_f).
\end{aligned}$$

The utility from market consumption is determined by:

$$v_m^c(H_m) = \max\{\log(c_m) + \sigma \log(c_f)\}$$

subject to:

$$c_m + c_f = wH_m,$$

so that we have:

$$\begin{aligned}
c_m &= \frac{wH_m}{1+\sigma}, \\
c_f &= \frac{\sigma w H_m}{1+\sigma}.
\end{aligned}$$

The market-consumption value functions are therefore given by:

$$
\begin{aligned}
v_m^c(H_m) &= \log(c_m) + \sigma \log(c_f) = (1+\sigma)[\log(wH_m) - \log(1+\sigma)] + \sigma \log(\sigma), \\
v_f^c(H_m) &= \sigma \log(c_m) + \log(c_f) = (1+\sigma)[\log(wH_m) - \log(1+\sigma)] + \log(\sigma).
\end{aligned}
$$

Using these functions, the remaining value function can be expressed as:

$$
\begin{aligned}
&V_m(H_f, \bar{H}_f) = \\
&\quad \max \left\{ u(d_m, d_f, n) + \gamma_m \left(\frac{v_m^c(H_m') + V_m(\bar{H}_f', \bar{H}_f') + v_f^c(\bar{H}_m') + V_f(H_f', \bar{H}_f')}{2} \right) \right\},
\end{aligned}
$$

$$
V_f(H_f, \bar{H}_f) = u(d_f, d_m, n) + \gamma_f \left(\frac{v_m^c(H_m') + V_m(\bar{H}_f', \bar{H}_f') + v_f^c(\bar{H}_m') + V_f(H_f', \bar{H}_f')}{2} \right),
$$

where the maximization is subject to:

$$
\begin{aligned}
d_m + d_f &= H_f(1 - (\phi + e_m + e_f)n), \\
H_m' &= BH_f e_m^\theta, \\
H_f' &= BH_f e_f^\theta, \\
\bar{H}_m' &= g_m(\bar{H}_f), \\
\bar{H}_f' &= g_f(\bar{H}_f).
\end{aligned}
$$

Just as the market-consumption value functions, the remaining value functions are log-linear, and can thus be written as:

$$
\begin{aligned}
V_m(H_f, \bar{H}_f) &= a_1 + a_2 \log(H_f) + a_3 \log(\bar{H}_f), \\
V_f(H_f, \bar{H}_f) &= a_4 + a_5 \log(H_f) + a_6 \log(\bar{H}_f).
\end{aligned}
$$

Given the parameters of the value function, the optimal decisions are:

$$
\begin{aligned}
d_m &= \frac{\delta H_f}{\delta(1+\sigma)+\beta}, \\
d_f &= \frac{\sigma\delta H_f}{\delta(1+\sigma)+\beta}, \\
n &= \frac{2\beta - \gamma_m\theta(1+\sigma+a_5)}{2\phi((1+\sigma)\delta+\beta)}, \\
e_m &= \frac{\phi\gamma_m\theta(1+\sigma)}{2\beta-\gamma_m(1+\sigma+a_5)}, \\
e_f &= \frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m(1+\sigma+a_5)}.
\end{aligned}
$$

Based on these decisions, the explicit solutions for the value function parameters are derived in Appendix B.

The power sharing regime can be analyzed following the same lines. We will use γ to denote the average of the male and female weight on children's utility,

$$
\gamma = \frac{\gamma_m + \gamma_f}{2}.
$$

This γ is the weight applied to children's utilities if decisions are made under power sharing. As above, it is useful to distinguish utility from market consumption and other utility. The value functions can be written as:

$$
\begin{aligned}
\hat{V}_m(H_m, H_f, \bar{H}_f) &= \hat{v}_m^c(H_m) + \hat{V}_m(H_f, \bar{H}_f), \\
\hat{V}_f(H_m, H_f, \bar{H}_f) &= \hat{v}_f^c(H_m) + \hat{V}_f(H_f, \bar{H}_f).
\end{aligned}
$$

Under equal power, the market consumption value functions are given by:

$$
\hat{v}^c(H_m) = \hat{v}_f^c(H_m) = (1+\sigma)\log\left(\frac{wH_m}{2}\right),
$$

and the remaining value functions can be written as:

$$
\begin{aligned}
\hat{V}_m(H_f, \bar{H}_f) &= \hat{a}_1 + a_2\log(H_f) + a_3\log(\bar{H}_f), \\
\hat{V}_f(H_f, \bar{H}_f) &= \hat{a}_4 + a_5\log(H_f) + a_6\log(\bar{H}_f).
\end{aligned}
$$

Exact expressions for the value function parameters are derived in Appendix B. Notice that a_2, a_3, a_5, and a_6 are written without hats, which reflect that these parameters do not depend on the political regime, i.e., they are identical under male power and power sharing. The optimal choices under power sharing are:

$$\begin{aligned} d_m = d_f &= \frac{\delta(1+\sigma)H_f}{2(\delta(1+\sigma)+\beta)}, \\ n &= \frac{2\beta - \gamma\theta(1+\sigma+a_5)}{2\phi(\delta(1+\sigma)+\beta)}, \\ e_m &= \frac{\phi\gamma\theta(1+\sigma)}{2\beta-\gamma(1+\sigma+a_5)}, \\ e_f &= \frac{\phi\gamma\theta a_5}{2\beta-\gamma(1+\sigma+a_5)}. \end{aligned}$$

These decisions differ from the choices under male power in two respects. First, men and women now consume both consumption goods in equal amounts. This effect was already present in the no-education regime, and, from the male perspective, present the utility loss from suffrage (at least as the consumption of their own wife is concerned). The second difference is that education is unambiguously higher under power sharing, since $\gamma > \gamma_m$. Next, we will discuss how this difference affects male incentives for power sharing.

5 Voting for Female Suffrage

Picture an economy that has just transitioned from the no-education regime to the education regime due to an increase in the return to education. We want to determine whether this regime switch can trigger an expansion of the rights of women. The process that we imagine is a vote among the male population to introduce universal suffrage. As a consequence of suffrage, the legal position of women in marriage will be equalized to that of men, and decisions will henceforth be taken by maximizing joint utility, rather than just male utility alone.

Men will vote for the introduction of female suffrage exactly when their utility under power sharing exceeds the utility under male dominance, i.e., if:

$$V_m(\text{Suffrage}) > V_m(\text{Male Power})$$

In the notation of the previous section, this condition is:

$$\hat{v}^c_m(H_m) + \hat{V}_m(H_f, \bar{H}_f) > v^c_m(H_m) + V_m(H_f, \bar{H}_f).$$

We have already determined that $\hat{V}_m(H_f, \bar{H}_f)$ and $V_m(H_f, \bar{H}_f)$ only differ in the constant term. The inequality can therefore be written as:

$$\hat{v}^c_m(H_m) + \hat{a}_1 > v^c_m(H_m) + a_1,$$

where $\hat{a}_1$ and are a_1 at the respective constants. Writing out this condition and simplifying gives:

$$\begin{gathered}
\frac{1}{2-\gamma_f-\gamma_m}\Big[(2-\gamma_f+\gamma_m))\left(\delta(1+\sigma)\log\left(\frac{(1+\sigma)}{2}\right)\right) - \gamma_m\big(2(1+\sigma)\log(2) \\
+ (\gamma_m(1+\sigma)+a_2+a_3+a_5+a_6)\log\left(\frac{2\gamma}{2\beta-\gamma(1+\sigma+a_5)}\right)\big)\Big] \\
> \\
(1+\sigma)[\log(2)-\log(1+\sigma)] + \sigma\log(\sigma) \\
+ \frac{1}{2-\gamma_f-\gamma_m}\Big[(2-\gamma_f\sigma+\gamma_m)\delta\log(\sigma) + \gamma_m\big((1+\sigma)\log(\sigma) - 2(1+\sigma)\log(1+\sigma) \\
+ (\gamma_m(1+\sigma)+a_2+a_3+a_5+a_6)\log\left(\frac{2\gamma_m}{2\beta-\gamma_m(1+\sigma+a_5)}\right)\big)\Big].
\end{gathered}$$

The only difference to the no-education regime is the last line on each side of the equation, which was not present before. The first terms on each side reflect the different distribution of consumption under male power and suffrage, and as we argued above, on their own these factors are unlikely to trigger the introduction of suffrage. The new terms reflect the role of education. In particular, the argument of the log at the end of each side of the inequality is proportional to the two education choices. Since $\gamma > \gamma_m$, the new term unambiguously improves the utility under suffrage relative to the utility under male power. Moreover, as the term $\gamma(1+\beta+a_5)$ approaches β, the left-hand side approaches infinity. Thus, if the difference in education choices is sufficiently large, the gain from additional education dominates, and men will prefer to share power with women.

Based on this analysis, the model predicts that the introduction of female suffrage will be preceded by an increase in the return to education and human capital. Moreover, in the model fertility falls once the switch to the education regime occurs, as women economize on their number of children in order to invest time into educating their children. Thus, the model also implies that the expansion of female rights should take place during the main phase of the demographic transition. Finally, once female rights have been introduced a further acceleration in the accumulation of human capital and the decline in fertility will occur. In contrast to existing explanations for rising female rights, our model does not imply that the introduction of suffrage should coincide with or be followed by increased female labor force participation. In our theory, the incentives for sharing power with women derive from what happens in the family, not in the market. Indeed, women continue to devote the same fraction of time to the production of home goods before and after. The tradeoff is entirely between the quantity and quality of children.

Another key feature of our explanation for the introduction of suffrage is the role played by the marriage market externality. One of the key motives for men in extending suffrage is to induce the parents of their future sons and daughters in law to invest more in the education of their children. Unless the marriage market fully internalizes the effect of a child's education on future parents in law (which is highly unlikely), there is always a tendency to underinvest in the children's education. By introducing suffrage, men can give more power to family decision-makers that care more about their children's education (i.e., mothers), which alleviates the externality. Crucially, the marriage market externality is a feature which cannot be dealt with within a given family. Consider a hypothetical scenario with full commitment, i.e., the case of a first-generation man who has the ability to impose specific choices on all his descendants. Commitment would allow this man to "fix" the unequal consumption allocations in future generations, but he still would not be able to address the marriage market externality.

This would require putting constraints on today's choices of potential in laws who will be linked to the family at a future date through intermarriage. Clearly, this problem cannot be dealt with inside the family, which is one reason why extending female rights has to be done at a political level.

6 Extensions

6.1 Narrowing of the Education Gap

It is sometimes argued that parents somewhat prefer children of their own gender. Some evidence for this claim can be found in the micro development literature. For example, Thomas (1994), using data from the U.S., Brazil, as well as Ghana, finds that mother's education has a higher impact on daughter's height while father's education has a higher impact on sons height. Duflo (2003) uses data from South Africa and finds that giving a pension to women has a large impact on weight for height and height for age of girls but not boys. Finally, Pitt and Khandker (1998) find that when credit was provided to men in Bangladesh this affected only boys' schooling but not girls, in contrast to credit provided to women affecting children of both genders.

Motivated by these findings, we introduce a child gender preference into our model. Letting ψ be the weight that parents put on children of their own gender and $1-\psi$ on children of the opposite gender, the utility of a man can be expressed as

$$V_{\text{m}} = u(c_m, c_f, d_m, d_f, n) + \gamma^i \left[(\psi V_{\text{Sons}} + (1-\psi) V_{\text{Daughters}}) \right]$$

and for women:

$$V_{\text{f}} = u(c_f, c_m, d_f, d_m, n) + \gamma^i \left[((1-\psi) V_{\text{Sons}} + \psi V_{\text{Daughters}}) \right]$$

Assuming the same functional forms for the period utility function and the technologies as before, the modified model can still be solved in closed form. This

Figure 1: Ratio of Female to Male School Enrollment Rate for Ages 5–19 in the United States, Years 1850–1950

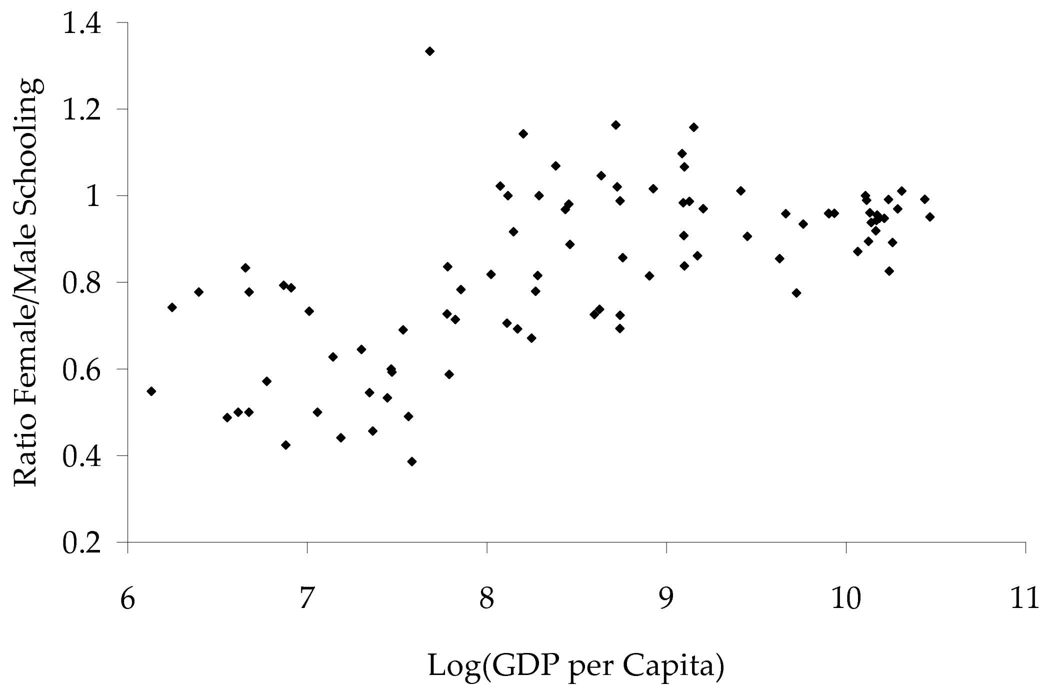

Figure 2: Ratio of Female to Male Average Years of Schooling in a Cross Section of Countries in the Year 2000

allows us to derive an explicit expression for the gender education gap. Assuming returns to human capital (B, θ) go up over time, there will again be a switch first from the patriarchal no-education regime to the patriarchal education regime, and then secondly to the power-sharing education regime. At first, there is no education gap, because investment in human capital for children of both genders is zero. In the second regime (with education but still patriarchal) the education gap is

$$\frac{e_f}{e_m} = \frac{a_5(1-\psi)}{\psi(1+\sigma)}$$

where $a_5 = \frac{\delta(1+\sigma)+\gamma_f(1-\psi)(1+\sigma)}{1-\gamma_f\psi}$

After sharing power with women, this gap narrows to

$$\frac{e_f}{e_m} = \frac{\hat{\gamma}_f a_5}{\hat{\gamma}_m(1+\sigma)} = \frac{(\gamma_m(1-\psi)+\gamma_f\psi)a_5}{(\gamma_f(1-\psi)+\gamma_m\psi)(1+\sigma))}$$

The degree of the narrowing depends on the size of ψ. In particular, if $\psi = 0.5$ (men and women value sons and daughters equally) then the gender education gap stays constant.

We think this is an interesting extension, since the gender gap in schooling has indeed narrowed over the same time horizon, see Figure 1. Similarly, Figure 2 shows that the education of girls relative to boys is positively correlated with development in cross-country data. Our model offers a potential explanation for this observation. One caveat to keep in mind is that education in the model is the time that mothers spend educating their children, while in the data we typically measure years of formal schooling. We still believe that these channels might be quite important here because, as has been documented in the empirical literature, early childhood education at home is an important prerequisite for effective learning in school (e.g. Cunha, Heckman, Lochner, and Masterov (2005)).

Figures 3 to 5 present a computed example of the extended model. The underlying parameter values are summarized in Table 2. The parameters B and θ that define the production function for human capital are assumed to change over time due to technological change that increases the demand for skill. In particular, from period 1 to period 6 the level parameter B increase gradually from 2.9

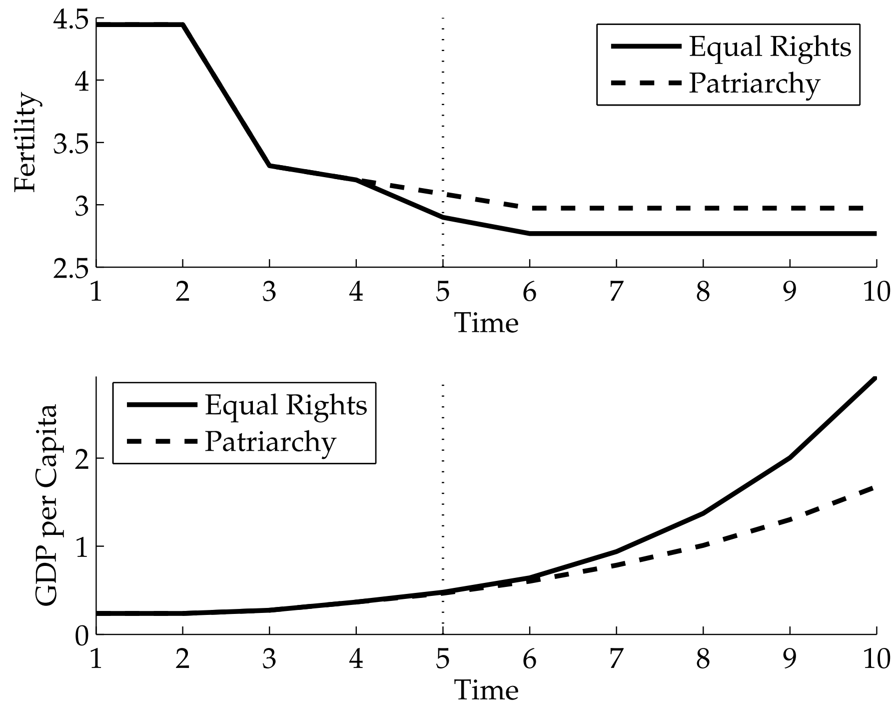

Figure 3: Fertility Rate and GDP per Capita in Model Simulation

to 4.4, whereas the curvature parameter θ increases from 0.24 to 0.39. Given these values, the economy starts out in the no-education regime, the men are in power, and they initially prefer to stay in power. In every subsequent period, we determine whether the economy switches to the education regime, and whether the men are in favor of sharing their power with women. As Figure 3 shows, for the first two periods the economy remains in the no-education regime, the fertility rate is high at about 4.5, and GDP per capita is low and constant. The switch to the education regime takes place in period 3. The fertility rate drops immediately, because now women spend some of their time on educating their children, rather than having more of them. There is also a small increase in GDP per capita. This change is due entirely to a change in the denominator. The parents' human capital is still at the no-education level of $H_m = H_f = 1$, meaning that output per family is the same as before. The lower fertility rate, however, implies that the given amount of production is shared in smaller families. In periods 3 and 4, the return to human capital is still too low for men to favor the extension of rights

Parameter	Interpretation	Value
γ_f	Female Discount Factor	0.45
γ_m	Male Discount Factor	0.35
δ	Utility Weight on Home Consumption	0.5
σ	Utility Weight on Spouse's Consumption	0.5
β	Utility Weight on Number of Children	0.6
ψ	Utility Weight on Own-Gender Children	0.55
ϕ	Time Cost for Each Child	0.2

Table 2: Parameter Values for Model Simulation

to women. This changes in period 5, when equal rights are finally introduced.[18] From here on, Figure 3 compares outcomes under 'Equal Rights' to 'Patriarchy,' i.e., a counterfactual outcome in which women's rights are never extended. The main finding is that the extension of female rights leads to a further fall in fertility and an acceleration in the growth rate of GDP per capita. That, of course, is one of the main reasons why men introduce female rights in the first place: high returns to human capital make the growth effects of female power too big to ignore.

Figure 4 displays the dynamics of education and human capital by gender. Until period 1, parents do not educate their children, and human capital remains at the basic level. In periods 3 and 4, education increases for both genders, but a sizable education gap in favor of boys opens up. Finally, from period 5 onwards the introduction of female rights narrows the gender education gap again. Figure 5 displays the gender education gap as a ratio of female to male education. Before the introduction of female rights, girls receive only about 75 percent of boys' education. After the expansion of rights, women receive more than 95 percent of the boys'education.

[18]The timing of the introduction of female rights is computed under the assumption that the parameters of the production function remain constant, i.e., men are assumed not to anticipate the future further increases in the return to human capital. Conceptually, the perfect-foresight case is similar, but more complicated to compute.

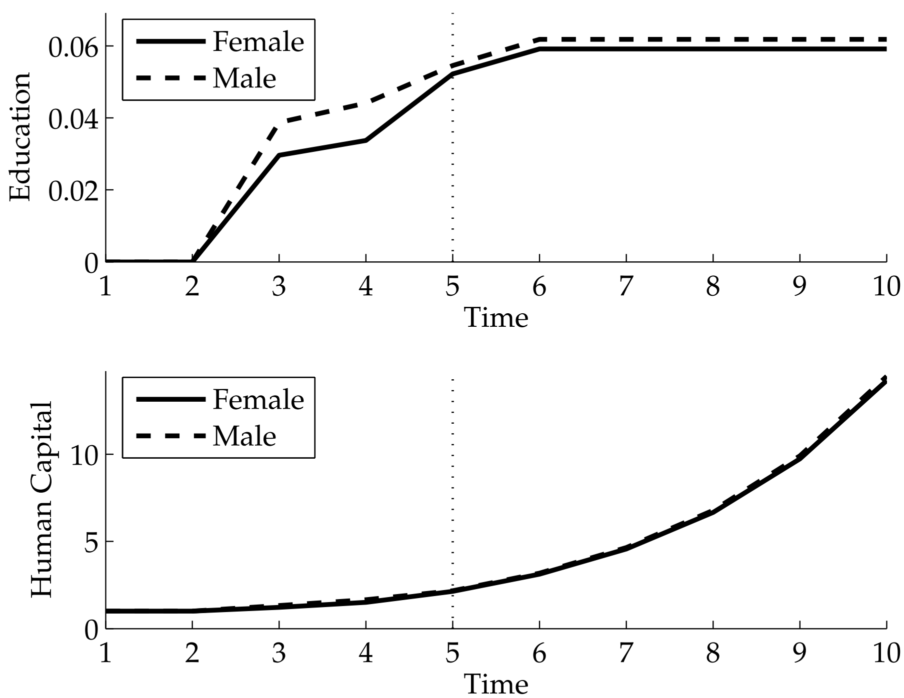

Figure 4: Education and Human Capital in Model Simulation

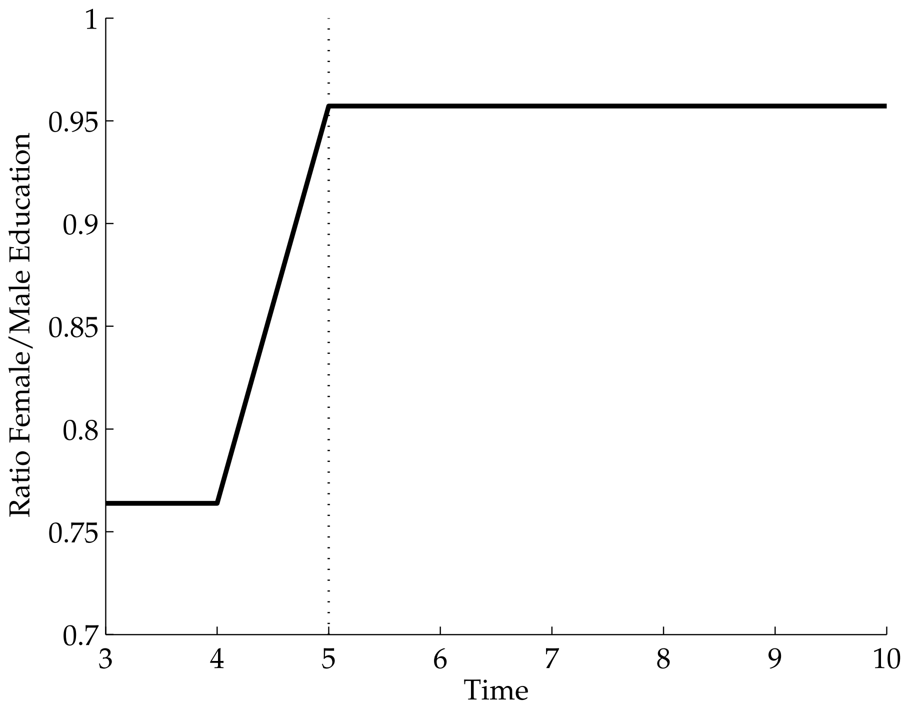

Figure 5: Ratio of Female to Male Education in Model Simulation

6.2 Gradual Power Sharing

[TO BE COMPLETED]

6.3 Heterogeneity across Families

[TO BE COMPLETED]

7 Discussion of Main Assumptions

In our analysis there are several crucial differences between men and women: both differences in preferences as well as specialization in production. In principle, all these differences can be endogenously generated through only one (plausible) underlying difference: men have the comparative advantage in market production. One justification could be the importance of strength in market production, especially in the 19th century. Another rational could be women's comparative advantage in child-rearing, for example, breast-feeding comes to mind.[19] While this seems plausible, there is also plenty of evidence on the relevance on the implied gender differences: the greater value that women put on children, the importance of mothers in children's human capital accumulation, and the fact that parents put more weight on children of their own gender. In this section, we will briefly discuss this evidence.

Several papers have made use of natural experiments where a household transfer was randomly given to one gender (or where the gender of the recipient changed over time) to analyze the implications for expenditures on goods that are considered particularly important for children. For example, Pitt and Khandker (1998) find in the context of Bangladesh that when credit was extended to women this was more likely to affect the schooling of children. Using data from Mexico, Attanasio and Lechene (2002) find that higher transfers to women lead to an increased expenditure share of children's clothing and food. Lundberg, Pollak, and

[19] See for example Echevarria and Merlo (1999) and Albanesi and Olivetti (2006) on this.

Wales (1997) find that paying child allowances to mothers increased spending on children's clothing in the UK.

In our set-up, home schooling is an important input into a child's human capital. Given the specialization, it is mother's human capital as well as mother's time spent with children that matters for children's human capital accumulation. Several papers stress the importance of home schooling: Leibowitz (1974) is one of the first contributions in this area. In a recent paper, Behrman, Foster, Rosenzweig, and Vashishtha (1999) find a positive relationship between maternal literacy and child schooling in India and argue that this finding confirms the importance of women's schooling for the human capital accumulation of the next generation. Cunha, Heckman, Lochner, and Masterov (2005) is an excellent survey of the empirical literature on the importance of early childhood education (and the role of mothers) for human capital development.

The key driving force in the model is an increase in the returns to human capital. For this to play a role in the extension of women's rights, we argue that the returns to schooling have been increasing at the end of the 19th century and the beginning of the 20th century. The increasing gap between wages for skilled vs. unskilled workers is carefully documented in Williamson and Lindert (1980). The authors document rising wage gaps for the periods 1839-1859 and 1869 to 1909. In particular, the average annual rate of change in the non-farm wage ratio of skilled to unskilled labor was 1.5% between 1839 and 1859, a modest 0.3% from 1869 to 1899 and then accelerated again to 1.06% for the 1899-1909 period. Other factors that indirectly raised the private return to schooling around the turn of the century include the public provision of education (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).

8 Conclusion

[TO BE WRITTEN]

A Incentives for Power Sharing in No-Education Regime

In this section, we formally analyze the incentives for power sharing in the no-education regime. If men make all decisions, male utility is given by:

$$\begin{aligned} V_m = \log(\frac{w}{1+\sigma}) + \delta \log(\frac{\delta}{\delta(1+\sigma)+\beta}) \\ + \sigma[\log(\frac{\sigma w}{1+\sigma}) + \delta \log(\frac{\sigma\delta}{\delta(1+\sigma)+\beta})] + \beta \log(n^*) \\ + \frac{\gamma}{1-\gamma}\big[\frac{1+\sigma}{2}[\log(\frac{w}{1+\sigma}) + \log(\frac{\sigma w}{1+\sigma}) + \delta \log(\frac{\delta}{\delta(1+\sigma)+\beta}) \\ + \delta \log(\sigma\frac{\delta}{\delta(1+\sigma)+\beta})] + \beta \log(n^*)\big]. \end{aligned}$$

If, on the other hand, men share power with their wives (i.e., decisions are taken by maximizing the average of male and female utility), male utility is given by:

$$\begin{aligned} \hat{V}_m = \log(\frac{w}{2}) + \delta \log(\frac{\delta(1+\sigma)}{2(\delta(1+\sigma)+\beta)}) \\ + \sigma[\log(\frac{w}{2}) + \delta \log(\frac{(1+\sigma)\delta}{2(\delta(1+\sigma)+\beta)})] + \beta \log(n^*) \\ + \frac{\gamma}{1-\gamma}\big[\frac{1+\sigma}{2}[\log(\frac{w}{2}) + \log(\frac{w}{2}) + \\ \delta \log(\frac{\delta(1+\sigma)}{2(\delta(1+\sigma)+\beta)}) + \delta \log(\frac{\delta(1+\sigma)}{2(\delta(1+\sigma)+\beta)})] + \beta \log(n^*)\big]. \end{aligned}$$

Men prefer to share power with their wives if $\hat{V}_m > V_m$. This condition can be simplified to:

$$\frac{\gamma}{1-\gamma} \log\left(\frac{1+\sigma}{2\sqrt{\sigma}}\right) > \log\left(\frac{2\sigma^{\frac{\sigma}{1+\sigma}}}{1+\sigma}\right).$$

Proposition 1 *Let $\sigma \in (0,1)$. For any $\gamma > 0.5$, power-sharing is strictly preferred. Further, for any σ there exists a $\bar{\gamma}(\sigma)$ such that for all $\gamma > \bar{\gamma}(\sigma)$, power sharing is strictly preferred. Further, $\bar{\gamma}(\sigma)$ is increasing in σ.*

Proof.
The condition $\hat{V}_m > V_m$ from above can be rewritten as

$$(1+\sigma)\log(\frac{1+\sigma}{2}) > [(1-\gamma)\sigma + \frac{1+\sigma}{2}\gamma]\log(\sigma)$$

Solving this for γ gives

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

Define $f(\sigma) = \frac{2(1+\sigma)}{(1-\sigma)\log(\sigma)}\log\left(\frac{1+\sigma}{2}\right) - \frac{2\sigma}{(1-\sigma)}$. Let's investigate the properties of $f(\sigma)$. Note that the following holds true:

1. $\lim_{\sigma\to 0} f(\sigma) = 0$
2. $\lim_{\sigma\to 1} f(\sigma) = 0.5$
3. $f(\sigma)$ is continuous in σ strictly increasing.

Proof that this actually holds:

1. The first can be shown simply by taking limits term by term, all limits exist, and the sum/product of the limits is well-defined

$$\begin{aligned}
\lim_{\sigma\to 0} f(\sigma) &= \lim_{\sigma\to 0}\left\{\frac{2(1+\sigma)}{(1-\sigma)\log(\sigma)}\log\left(\frac{1+\sigma}{2}\right) - \frac{2\sigma}{(1-\sigma)}\right\} \\
&= \lim_{\sigma\to 0}\left\{\frac{2(1+\sigma)}{(1-\sigma)\log(\sigma)}\log\left(\frac{1+\sigma}{2}\right)\right\} - \lim_{\sigma\to 0}\frac{2\sigma}{(1-\sigma)} \\
&= \left(\lim_{\sigma\to 0}\frac{1}{\log(\sigma)}\right) * \left(\lim_{\sigma\to 0}\left\{\frac{2(1+\sigma)}{1-\sigma}\log(\frac{1+\sigma}{2})\right\}\right) - \lim_{\sigma\to 0}\frac{2\sigma}{(1-\sigma)} \\
&= (-0) * 2\log(0.5) - 0 = 0
\end{aligned}$$

2. The second limit can be derived by applying L'Hopital's Rule twice.

$$\begin{aligned}
\lim_{\sigma\to 1} f(\sigma) &= \lim_{\sigma\to 1}\left\{\frac{2(1+\sigma)}{(1-\sigma)\log(\sigma)}\log\left(\frac{1+\sigma}{2}\right) - \frac{2\sigma}{(1-\sigma)}\right\} \\
&= 2\lim_{\sigma\to 1}\left\{\frac{(1+\sigma)[\log(1+\sigma)-\log(2)] - \sigma\log(\sigma)}{(1-\sigma)\log(\sigma)}\right\} \\
&= 2\lim_{\sigma\to 1}\left\{\frac{\log(1+\sigma)-\log(2)+1-\log(\sigma)-1}{-\log(\sigma)+\frac{1-\sigma}{\sigma}}\right\} \\
&= 2\lim_{\sigma\to 1}\left\{\frac{\log(1+\sigma)-\log(2)-\log(\sigma)}{\frac{1-\sigma}{\sigma}-\log(\sigma)}\right\} \\
&= 2\lim_{\sigma\to 1}\left\{\frac{\frac{1}{1+\sigma}-1/\sigma}{-2/\sigma-(1-\sigma)/\sigma^2}\right\} = 2\lim_{\sigma\to 1}\left\{\frac{\sigma-\frac{\sigma^2}{1+\sigma}}{1+\sigma}\right\} = \frac{1-0.5}{2} = 0.5
\end{aligned}$$

3. The product and sum of continuous functions is continuous and $\log(\cdot)$ is a continuous function. Further, numerical analysis shows that the function is clearly increasing.

From this, the claim follows immediately: the highest value that $f(\sigma)$ can take is 0.5, so that $\gamma > 0.5$ assures that power sharing is optimal. Further, for any σ, the cut-off value $\bar{\gamma}$ is given by $f(\sigma)$. Finally, the cut-off is strictly increasing in σ because $f(\sigma)$ is strictly increasing. q.e.d.

B Solving for the Equilibrium Value Functions in the Education Regime

In this section, we formally derive the equilibrium value functions in the education regime, both under male and shared power. Recall that we decompose the value function as:

$$V_m(H_m, H_f, \bar{H}_f) = v_m^c(H_m) + V_m(H_f, \bar{H}_f),$$
$$V_f(H_m, H_f, \bar{H}_f) = v_f^c(H_m) + V_f(H_f, \bar{H}_f),$$

where:

$$v_m^c(H_m) = \log(c_m) + \sigma \log(c_f) = (1+\sigma)[\log(wH_m) - \log(1+\sigma)] + \sigma \log(\sigma),$$
$$v_f^c(H_m) = \sigma \log(c_m) + \log(c_f) = (1+\sigma)[\log(wH_m) - \log(1+\sigma)] + \log(\sigma).$$

We also conjecture that the remaining value functions are of the form:

$$V_m(H_f, \bar{H}_f) = a_1 + a_2 \log(H_f) + a_3 \log(\bar{H}_f),$$
$$V_f(H_f, \bar{H}_f) = a_4 + a_5 \log(H_f) + a_6 \log(\bar{H}_f).$$

We want to prove that the value functions can indeed be written in this form, and we want to solve for the parameters a_1 to a_6. To start, we compute optimal choices given the conjectured form of the value function. Plugging the log-linear value functions into the male decision problem and dropping all constants gives:

$$\max \left\{ \delta \log(d_m) + \sigma\delta \log(d_f) + \beta \log(n) + \gamma_m \left[\frac{((1+\sigma)\log(H'_m) + a_5 \log(H'_f)}{2} \right] \right\}.$$

Plugging in the laws of motion gives:

$$\max \left\{ \delta \log(d_m) + \sigma\delta \log(d_f) + \beta \log(n) + \gamma_m \left[\frac{((1+\sigma)\log(BH_f e_m^{\theta}) + a_5 \log(BH_f e_f^{\theta})}{2} \right] \right\}.$$

Dropping constants once again we get:

$$\max \left\{ \delta \log(d_m) + \sigma\delta \log(d_f) + \beta \log(n) + \gamma_m \left[\frac{((1+\sigma)\theta \log(e_m) + a_5 \theta \log(e_f)}{2} \right] \right\}.$$

The first-order conditions are (with Lagrange multiplier λ):

$$\begin{aligned}
\frac{\delta}{d_m} &= \lambda, \\
\frac{\sigma\delta}{d_f} &= \lambda, \\
\frac{\beta}{n} &= \lambda H_f(\phi + e_m + e_f), \\
\frac{\gamma_m(1+\sigma)\theta}{2e_m} &= \lambda H_f n, \\
\frac{\gamma_m a_5 \theta}{2e_f} &= \lambda H_f n.
\end{aligned}$$

This yields the following optimal choices:

$$\begin{aligned}
d_m &= \frac{\delta H_f}{\delta(1+\sigma)+\beta}, \\
d_f &= \frac{\sigma\delta H_f}{\delta(1+\sigma)+\beta}, \\
n &= \frac{2\beta - \gamma_m(1+\sigma+a_5)}{2\phi((1+\sigma)\delta+\beta)}, \\
e_m &= \frac{\phi\gamma_m(1+\sigma)}{2\beta - \gamma_m(1+\sigma+a_5)}, \\
e_f &= \frac{\phi\gamma_m a_5}{2\beta - \gamma_m(1+\sigma+a_5)}.
\end{aligned}$$

We can now plug these optimal choices into the value function, and solve for the value function parameters. After plugging everything in, the value function reads:

$$
\begin{aligned}
&a_1 + a_2 \log(H_f) + a_3 \log(\bar{H}_f) = \\
&\qquad \delta \log\left(\frac{\delta H_f}{\delta(1+\sigma)+\beta}\right) + \sigma\delta \log\left(\frac{\sigma\delta H_f}{\delta(1+\sigma)+\beta}\right) + \beta \log\left(\frac{2\beta - \gamma_m\theta(1+\sigma+a_5)}{2\phi((1+\sigma)\delta+\beta)}\right) \\
&\qquad + \frac{\gamma_m}{2}\big[(1+\sigma)[\log\left(wB\left(\frac{\phi\gamma_m\theta(1+\sigma)}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta} H_f\right) - \log(1+\sigma)] + \sigma\log(\sigma) \\
&\qquad + a_1 + a_2 \log\left(B\left(\frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\bar{H}_f\right) + a_3 \log\left(B\left(\frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\bar{H}_f\right) \\
&\qquad + (1+\sigma)[\log\left(wB\left(\frac{\phi\gamma_m\theta(1+\sigma)}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\bar{H}_f\right) - \log(1+\sigma)] + \log(\sigma) \\
&\qquad + a_4 + a_5 \log\left(B\left(\frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta} H_f\right) + a_6 \log\left(B\left(\frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\bar{H}_f\right)\big],
\end{aligned}
$$

$$
\begin{aligned}
&a_4 + a_5 \log(H_f) + a_6 \log(\bar{H}_f) = \\
&\qquad \delta \log\left(\frac{\sigma\delta H_f}{\delta(1+\sigma)+\beta}\right) + \sigma\delta \log\left(\frac{\delta H_f}{\delta(1+\sigma)+\beta}\right) + \beta \log\left(\frac{2\beta - \gamma_m\theta(1+\sigma+a_5)}{2\phi((1+\sigma)\delta+\beta)}\right) \\
&\qquad + \frac{\gamma_f}{2}\big[(1+\sigma)[\log\left(wB\left(\frac{\phi\gamma_m\theta(1+\sigma)}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta} H_f\right) - \log(1+\sigma)] + \sigma\log(\sigma) \\
&\qquad + a_1 + a_2 \log\left(B\left(\frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\bar{H}_f\right) + a_3 \log\left(B\left(\frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\bar{H}_f\right) \\
&\qquad + (1+\sigma)[\log\left(wB\left(\frac{\phi\gamma_m\theta(1+\sigma)}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\bar{H}_f\right) - \log(1+\sigma)] + \log(\sigma) \\
&\qquad + a_4 + a_5 \log\left(B\left(\frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta} H_f\right) + a_6 \log\left(B\left(\frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\bar{H}_f\right)\big].
\end{aligned}
$$

These equations are identities, and we can solve for the parameters by collecting terms. For the non-constant terms, we have:

$$
\begin{aligned}
a_2 &= \delta(1+\sigma) + \frac{\gamma_m}{2}[1+\sigma+a_5], \\
a_3 &= \frac{\gamma_m}{2}[a_2+a_3+1+\sigma+a_6] \\
a_5 &= \delta(1+\sigma) + \frac{\gamma_f}{2}[1+\sigma+a_5], \\
a_6 &= \frac{\gamma_f}{2}[a_2+a_3+1+\sigma+a_6].
\end{aligned}
$$

Solving the two easy ones:

$$
\begin{aligned}
a_2 &= \frac{(2\delta+\gamma_m-\delta(\gamma_f-\gamma_m))(1+\sigma)}{2-\gamma_f}, \\
a_5 &= \frac{(2\delta+\gamma_f)(1+\sigma)}{2-\gamma_f}.
\end{aligned}
$$

The remaining system is (after plugging in a_2):

$$
\begin{aligned}
a_3 &= \frac{\gamma_m}{2}[\frac{(2\delta+\gamma_m-\delta(\gamma_f-\gamma_m))(1+\sigma)}{2-\gamma_f}+a_3+1+\sigma+a_6] \\
a_6 &= \frac{\gamma_f}{2}[\frac{(2\delta+\gamma_m-\delta(\gamma_f-\gamma_m))(1+\sigma)}{2-\gamma_f}+a_3+1+\sigma+a_6].
\end{aligned}
$$

Thus we must have:

$$a_3 = \frac{\gamma_m}{\gamma_f}a_6.$$

Using that yields:

$$a_6 = \gamma_f\frac{(1+\delta)(2-(\gamma_f-\gamma_m))(1+\sigma)}{(2-\gamma_f)(2-\gamma_m-\gamma_f)},$$

and:

$$a_3 = \gamma_m\frac{(1+\delta)(2-(\gamma_f-\gamma_m))(1+\sigma)}{(2-\gamma_f)(2-\gamma_m-\gamma_f)}.$$

The constants can be expressed as:

$$
\begin{aligned}
a_1 &= \frac{(2-\gamma_f)A+\gamma_m B+\gamma_m C}{2-\gamma_f-\gamma_m}, \\
a_4 &= \frac{(2-\gamma_m)B+\gamma_f A+\gamma_f C}{2-\gamma_f-\gamma_m}.
\end{aligned}
$$

With:

$$
A = \delta \log\left(\frac{\delta}{\delta(1+\sigma)+\beta}\right) + \sigma\delta\log\left(\frac{\sigma\delta}{\delta(1+\sigma)+\beta}\right) + \beta\log\left(\frac{2\beta-\gamma_m\theta(1+\sigma+a_5)}{2\phi((1+\sigma)\delta+\beta)}\right)
$$

$$
B = \delta \log\left(\frac{\sigma\delta}{\delta(1+\sigma)+\beta}\right) + \sigma\delta\log\left(\frac{\delta}{\delta(1+\sigma)+\beta}\right) + \beta\log\left(\frac{2\beta-\gamma_m\theta(1+\sigma+a_5)}{2\phi((1+\sigma)\delta+\beta)}\right)
$$

$$
\begin{aligned}
C =&(1+\sigma)[\log\left(wB\left(\frac{\phi\gamma_m\theta(1+\sigma)}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\right) - \log(1+\sigma)] + \sigma\log(\sigma) \\
&+ a_2\log\left(B\left(\frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\right) + a_3\log\left(B\left(\frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\right) \\
&+ (1+\sigma)[\log\left(wB\left(\frac{\phi\gamma_m\theta(1+\sigma)}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\right) - \log(1+\sigma)] + \log(\sigma) \\
&+ a_5\log\left(B\left(\frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\right) + a_6\log\left(B\left(\frac{\phi\gamma_m\theta a_5}{2\beta-\gamma_m\theta(1+\sigma+a_5)}\right)^{\theta}\right).
\end{aligned}
$$

Let us now consider the case when women have achieved equal rights. We will use γ to denote the decision weight on children, i.e.,

$$
\gamma = \frac{\gamma_m+\gamma_f}{2}.
$$

Decisions are made by maximizing:

$$
\frac{V_m(H_m,H_f,\bar{H}_f)+V_f(H_m,H_f,\bar{H}_f)}{2}.
$$

As before, it is useful to distinguish utility from market consumption and other utility. The value functions can be written as:

$$
\begin{aligned}
\hat{V}_m(H_m,H_f,\bar{H}_f) &= \hat{v}^c_m(H_m) + \hat{V}_m(H_f,\bar{H}_f), \\
\hat{V}_f(H_m,H_f,\bar{H}_f) &= \hat{v}^c_f(H_m) + \hat{V}_f(H_f,\bar{H}_f).
\end{aligned}
$$

Under equal power, the market consumption values are giving by solving:

$$
\max\{\log(c_m)+\log(c_f)\}
$$

subject to:

$$c_m + c_f = wH_m,$$

so that we have:

$$c = c_m = c_f = \frac{wH_m}{2}.$$

The market-consumption value functions are therefore given by:

$$\hat{v}^c(H_m) = \hat{v}^c_f(H_m) = (1+\sigma)\log\left(\frac{wH_m}{2}\right).$$

Using these value functions, the remaining value function can be expressed as:

$$\hat{V}_m(H_f, \bar{H}_f) \;=\; u(d_m, d_f, n) \;+\; \gamma_m \left[\frac{\hat{v}^c(H'_m) + \hat{V}_m(\bar{H}'_f, \bar{H}'_f) + \hat{v}^c(\bar{H}'_m) + \hat{V}_f(H'_f, \bar{H}'_f)}{2}\right],$$

$$\hat{V}_f(H_f, \bar{H}_f) \;=\; u(d_f, d_m, n) \;+\; \gamma_f \left[\frac{\hat{v}^c(H'_m) + \hat{V}_m(\bar{H}'_f, \bar{H}'_f) + \hat{v}^c(\bar{H}'_m) + \hat{V}_f(H'_f, \bar{H}'_f)}{2}\right].$$

Decisions are taken by solving:

$$\max\left\{\delta(1+\sigma)\log(d)+\beta\log(n)+\gamma\left[\frac{\hat{v}^c(H'_m) + \hat{V}_m(\bar{H}'_f, \bar{H}'_f) + \hat{v}^c(\bar{H}'_m) + \hat{V}_f(H'_f, \bar{H}'_f)}{2}\right]\right\},$$

where the maximization is subject to:

$$\begin{aligned}
2d &= H_f(1-(\phi+e_m+e_f)n), \\
H'_m &= BH_f e_m^\theta, \\
H'_f &= BH_f e_f^\theta, \\
\bar{H}'_m &= g_m(\bar{H}_f), \\
\bar{H}'_f &= g_f(\bar{H}_f).
\end{aligned}$$

Here the notation already reflects that we are going to get $d_m = d_f \equiv d$. Now let us assume once again that the value functions are log-linear:

$$\begin{aligned}
\hat{V}_m(H_f, \bar{H}_f) &= \hat{a}_1 + \hat{a}_2\log(H_f) + \hat{a}_3\log(\bar{H}_f), \\
\hat{V}_f(H_f, \bar{H}_f) &= \hat{a}_4 + \hat{a}_5\log(H_f) + \hat{a}_6\log(\bar{H}_f).
\end{aligned}$$

Proceeding as above yields the following optimal choices:

$$
\begin{aligned}
d &= \frac{\delta(1+\sigma)H_f}{2(\delta(1+\sigma)+\beta)}, \\
n &= \frac{2\beta - \gamma\theta(1+\sigma+\hat{a}_5)}{2\phi(\delta(1+\sigma)+\beta)}, \\
e_m &= \frac{\phi\gamma\theta(1+\sigma)}{2\beta - \gamma(1+\sigma+\hat{a}_5)}, \\
e_f &= \frac{\phi\gamma\hat{a}_5}{2\beta - \gamma\theta(1+\sigma+\hat{a}_5)}.
\end{aligned}
$$

We can now compute the value function parameters as above. As it turns out, the non-constant terms do not differ across the two political regimes, i.e.,:

$$
\begin{aligned}
\hat{a}_2 &= a_2, \\
\hat{a}_3 &= a_3, \\
\hat{a}_4 &= a_4, \\
\hat{a}_5 &= a_5.
\end{aligned}
$$

All the difference thus lies in the constant terms. These can be written as:

$$
\begin{aligned}
\hat{a}_1 &= \frac{(2-\gamma_f)\bar{A} + \gamma_m\bar{B} + \gamma_m\bar{C}}{2-\gamma_f-\gamma_m}, \\
\hat{a}_4 &= \frac{(2-\gamma_m)\bar{B} + \gamma_f\bar{A} + \gamma_f\bar{C}}{2-\gamma_f-\gamma_m}.
\end{aligned}
$$

with:

$$
\bar{A} = \delta(1+\sigma)\log\left(\frac{\delta(1+\sigma)}{2(\delta(1+\sigma)+\beta)}\right) + \beta\log\left(\frac{2\beta-\gamma\theta(1+\sigma+a_5)}{2\phi(\delta(1+\sigma)+\beta)}\right),
$$

$$
\bar{B} = \delta(1+\sigma)\log\left(\frac{\delta(1+\sigma)}{2(\delta(1+\sigma)+\beta)}\right) + \beta\log\left(\frac{2\beta-\gamma(1+\sigma+a_5)}{2\phi(\delta(1+\sigma)+\beta)}\right),
$$

$$
\begin{aligned}
\bar{C} =& (1+\sigma)\log\left(\frac{wB\left(\frac{\phi\gamma\theta(1+\sigma)}{2\beta-\gamma\theta(1+\sigma+a_5)}\right)^{\theta}}{2}\right) \\
&+ a_2 \log\left(B\left(\frac{\phi\gamma\theta a_5}{2\beta-\gamma\theta(1+\sigma+a_5)}\right)^{\theta}\right) \\
&+ a_3 \log\left(B\left(\frac{\phi\gamma\theta a_5}{2\beta-\gamma\theta(1+\sigma+a_5)}\right)^{\theta}\right) \\
&+ (1+\sigma)\log\left(\frac{wB\left(\frac{\phi\gamma\theta(1+\sigma)}{2\beta-\gamma\theta(1+\sigma+a_5)}\right)^{\theta}}{2}\right) \\
&+ a_5 \log\left(B\left(\frac{\phi\gamma\theta a_5}{2\beta-\gamma\theta(1+\sigma+a_5)}\right)^{\theta}\right) \\
&+ a_6 \log\left(B\left(\frac{\phi\gamma\theta a_5}{2\beta-\gamma\theta(1+\sigma+a_5)}\right)^{\theta}\right).
\end{aligned}
$$

References

ACEMOGLU, D., AND J. A. ROBINSON (2006): *Economic Origins of Dictatorship and Democracy*. Cambridge University Press.

ALBANESI, S., AND C. OLIVETTI (2006): "Gender Roles and Technological Progress," *Columbia University, mimeo.*

ATTANASIO, O., AND V. LECHENE (2002): "Tests of Income Pooling in Household Decisions," *Review of Economic Dynamics*, 5(4), 720–748.

BEHRMAN, J. R., A. D. FOSTER, M. R. ROSENZWEIG, AND P. VASHISHTHA (1999): "Women's Schooling, Home Teaching, and Economic Growth," *The Journal of Political Economy*, 107(4), 682–714.

BLEAKLEY, H. (2007): "Disease and Development: Evidence from Hookworm Eradication in the American South," *The Quarterly Journal of Economics*, 122 (1), 73–117.

CARTER, S. B., S. S. GARTNER, M. R. HAINES, A. L. OLMSTEAD, R. SUTCH, AND G. WRIGHT (eds.) (2006): *Historical Statistics of the United States, Millennial Edition, on-line version*. Cambridge University Press.

CASE, A., AND A. DEATON (1998): "Large Cash Transfers to the Elderly in South Africa," *Economic Journal*, 108(450), 1330–61.

CLARK, G. (2005): "Human Capital, Fertility, and the Industrial Revolution," *Journal of the European Economic Association*, 3 (2-3), 505–515.

CUNHA, F., J. J. HECKMAN, L. LOCHNER, AND D. V. MASTEROV (2005): "Interpreting the Evidence on Life Cycle Skill Formation," *NBER Working Paper*, 11331.

DIAZ, A. (2000): "On the Political Economy of Latin American Land Reforms," *Review of Economic Dynamics*, 3(3), 551–571.

DOSS, C. (2006): "The Effects of Intrahousehold Property Ownership on Expenditure Patterns in Ghana," *Journal of African Economies*, 15(1), 149–80.

DUFLO, E. (2003): "Grandmothers and Granddaughters: Old-Age Pensions and Intrahousehold Allocation in South Africa," *World Bank Economic Review*, 17(1), 1–25.

——— (2005): "Gender Equality in Development," *MIT mimeo.*

ECHEVARRIA, C., AND A. MERLO (1999): "Gender Differences in Education in a Dynamic Household Bargaining Model," *International Economic Review*, 40(2), 265–86.

FORTMAN, L., C. ANTINORI, AND N. NOBANE (1997): "Fruits of their Labor: Gender, Property Rights, and Tree Planting in Two Zimbabwe Villages," *Rural Sociology*, 62 (3), 295–314.

FUNK, P., AND C. GATHMANN (2006): "What Women Want: Suffrage, Gender Gaps in Voter Preferences and Government Expenditures," *Stanford University, mimeo.*, unpublished working paper.

GEDDES, R., AND D. LUECK (2002): "The Gains from Self-Ownership and the Expansion of Women's Rights," *The American Economic Review*, 92(4), 1079–1092.

GOLDIN, C. (1994): "Appendix To: "How America Graduated From High School, 1910 to 1960". Construction of State-Level Secondary School Data," *NBER Historical Paper*, no. 57.

GOLDSTEIN, M., AND C. UDRY (2005): "The Profits of Power: Land Rights and Agricultural Investment in Ghana," *Yale University, mimeo.*

JACK, W., AND R. LAGUNOFF (2006): "Dynamic enfranchisement," *Journal of Public Economics*, 90(4-5), 551–572.

JONES, E. B. (1991): "The Economics of Women Suffrage," *Journal of Legal Studies*, 20(2), 423–437.

JONES, L. E., AND M. TERTILT (2006): "An Economic History of Fertility in the U.S. 1826–1960," *NBER Working Paper*, 12796.

KHAN, B. Z. (1996): "Married Women's Property Laws and Female Commercial Activity: Evidence from United States Patent Records, 1790-1895," *The Journal of Economic History*, 56(2), 356–388.

LAITNER, J. (1991): "Modeling Marital Connections among Family Lines," *The Journal of Political Economy*, 99(6), 1123–1141.

LEIBOWITZ, A. (1974): "Home Investments in Children," *The Journal of Political Economy*, 82(2), S111–S131.

LIZZERI, A., AND N. PERSICO (2004): "Why Did the Elites Extend the Suffrage? Democracy and the Scope of Government, with an Application to Britain's "Age of Reform"," *The Quarterly Journal of Economics*, 119, 707765.

LOTT, J. R. J., AND L. W. KENNY (1999): "Did Women's Suffrage Change the Size and Scope of Government?," *Journal of Political Economy*, 107(6), 1163–1198.

LUNDBERG, S. J., R. A. POLLAK, AND T. J. WALES (1997): "Do Husbands and Wives Pool Their Resources? Evidence from the United Kingdom Child Benefit," *The Journal of Human Resources*, 32(3), 463–480.

MASON, M. A. (1994): *From Father's Property to Children's Rights*. Columbia University Press, New York.

MUNSHI, K., AND M. ROSENZWEIG (2006): "Traditional Institutions Meet the Modern World: Caste, Gender, and Schooling Choice in the Globalizing Economy," *American Economic Review*, 96 (4), 1225–1252.

NOLTE, S. H. (1986): "Women's Rights and Society's Nees: Japan's 1931 Suffrage Bill," *Comparative Studies in Society and History*, 28 (4), 690–714.

OSWALD, A. J., AND N. POWDTHAVEE (2006): "Daughters and Left-Wing Voting," *University of Warwick, mimeo*.

PHELPS, E., AND R. POLLAK (1968): "On Second-Best National Saving and Game-Equilibrium Growth," *The Review of Economic Studies*, 35 (2), 185–199.

PITT, M. M., AND S. R. KHANDKER (1998): "The Impact of Group-Based Credit Programs on Poor Households in Bangladesh: Does the Gender of Participants Matter?," *Journal of Political Economy*, 106(5), 958–96.

RAY, P. O. (1918): "Woman Suffrage in Foreign Countries," *The American Political Science Review, Legislative Notes and Reviews*, 12 (3), 469–474.

SOUTHARD, B. (1993): "Colonial Politics and Women's Rights: Woman Suffrage Campaigns in Bengal, British India in the 1920s," *Modern Asian Studies*, 27 (2), 397–439.

STONE, L. (1977): *The Family, Sex and Marriage in England 1500-1800*. Harper Torchbooks, Harper & Row, Publishers.

——— (1993): *Broken Lives – Separation and Divorce in England 1660 - 1857*. Oxford University Press.

THOMAS, D. (1994): "Like Father, Like Son; Like Mother, Like Daughter: Parental Resources and Child Height," *Journal of Human Resources*, 29(4), 950–88.

UDRY, C. (1996): "Gender, Agricultural Production, and the Theory of the Household," *The Journal of Political Economy*, 104 (5), 1010–1046.

WASHINGTON, E. (2006): "Female Socialization: How Daughters Affect Their Legislator Fathers' Voting on Women's Issues," *NBER Working Paper 11924*.

WIKIPEDIA (2006): "Timeline of women's suffrage — Wikipedia, The Free Encyclopedia," [Online; accessed 12-December-2006].

WILLIAMSON, J. G., AND P. H. LINDERT (1980): *American Inequality: A Macroeconomic History*. Academic Press, New York.

YALOM, M. (2001): *The History of the Wife*. Harpercollins.

Figure A1: Schooling in the United States

(Source: Claudia Goldin, 1994B)