Marrying for Money: Evidence from Changes in Marital Property Laws in the U.S. South, 1840-1850.*

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Abstract

One way in which marriage generates value is by allowing couples to pool property for the purposes of risk sharing and investment. This dimension of marriage has received little attention in the literature, in part because it is difficult to separate this effect from the gains from division of labor within the household. We measure the impact of a class of married women's property laws introduced in the American South during the 1840s on family investment and assortative matching in the marriage market. These laws did not grant married women autonomy over their separate property; they merely shielded this property from seizure by their husbands' creditors. This had the dual effect of mitigating downside risk while restricting a husband's ability to borrow against his wife's property; it also preserved the bulk of the wife's property as an inheritance for the couple's children. As such, these laws affected a couple's ability to pool property and access credit without affecting the relative bargaining position of husbands and wives; this allows us to shed light on the importance of property in the marriage market. Using a newly compiled database of linked marriage and census records, we show that these property laws increased investment when the bulk of a couple's property was owned by the husband; however, they had the inverse effect when most of a couple's property was owned by the wife. In addition, we show that assortative matching on wealth declined after the passage of these laws, while assortative matching on age increased.

*Preliminary and incomplete.

1 Introduction

Do people marry for money? It's a crude way of asking a more nuanced question: what role does the ability to pool property for risk sharing, investment, and increased access to credit play in the marriage decision? The fact that people are more likely to marry within their own socio-economic circles suggests that wealth is an important determinant of attractiveness in the marriage market. However, wealth may be correlated with other attributes, such as health, culture, taste or human capital, all of which are important to marriage decisions. Moreover, assortative matching on socioeconomic status may simply be a product of search frictions, if people mainly interact with others from their own socioeconomic circles.

To pin down the importance of wealth in the marriage market, one would ideally like to observe a legal change that affects how property can be used within the marriage, for example by enabling or restricting the use of spousal wealth as collateral for loans. Such an institutional change is particularly informative because changes in the legal treatment of marital property should not affect the matching technology. If there is an impact on marriage markets, it must be that people are attracted to each other's wealth and that assortative matching on socioeconomic status is not simply driven by search frictions. To isolate the gains from marriage that can be attributed to the pooling of property, it is crucial to identify a legal change that leaves property rights, and therefore bargaining power, within a marriage unchanged. Any institutional change that affects bargaining power will also affect the division of labor between partners, or the productivity of individual spouses – something that has received ample attention in the literature Such a legal chance is, of course, difficult to find.

In this paper, we exploit a unique institutional development in the American South during the 1840s – the introduction of a specific class of married women's property laws – that affected the allocation of property and married couples' interaction with credit markets, while keeping bargaining power between partners unchanged. Prior to the introduction of these laws, a woman's property became her husband's property upon marriage. These laws altered this default, but in a very limited way. They did not give a married woman the right to determine how her property was used, but, instead, shielded her assets from seizure by her husband's

creditors. In addition, the husband could not spend his wife's wealth, unless his own income and wealth were insufficient to provide for the family. The consequences were twofold: the laws shifted the wife's property from consumption to saving and children's inheritance; and they removed the possibility of using the wife's property as collateral for loans, while guaranteeing a minimum standard of living in the event of default. Because these laws predated modern divorce laws and did not allocate economic power to women, they altered the way in which marital property could be pooled while effectively keeping each partner's bargaining position unchanged.

This study is not just of historical relevance. If a potential spouse's property matters for marriage decisions, and if marriage markets respond to policy interventions affecting the use of spousal wealth, this has interesting implications for the marriage market effects of contemporary institutions and the evolution of marriage markets over time. For example, if pooling property for risk sharing is an important motive for marriage, then marriage markets may be influenced by bankruptcy protection regimes. Similarly, if pooling property to access credit is an important motive for marriage, then marriage markets may be influenced by innovations in the credit market that make loans – especially home loans – easier to come by. The way in which the marriage market interacts with these types of institutions is informative about how marriage rates and assortative matching have evolved over time. These issues are virtually unstudied. The paper tries to fill this gap by proposing a theoretical framework for analyzing the impact of such policies on marriage markets and by offering empirical evidence for this impact.

We write down a theoretical model of the effect of the married women's property laws of the 1840s on household borrowing and investment, as well as assortative matching in the marriage market. Our key assumption is that married women's property laws resulted in women's assets being redirected toward savings. In addition, the passage of a property law would have sheltered a wife's assets from creditors, thus removing the possibility of using it as collateral for loans, but at the same time offering a degree of downside protection. This would have generated an increase in demand for credit as well as a reduction in the supply

of credit. The predicted overall effect on borrowing depends on the fraction of family wealth belonging to the wife. Our second major prediction is that these laws should have reduced assortative matching on economic status in the marriage market. On the margin, finding a spouse with more wealth becomes less important for both men and women after the passage of one of these laws. For women, this occurs because each additional dollar a husband would bring into the marriage would go directly into current consumption, while women arguably had stronger preferences for saving. For men, this occurs because a wife's wealth could not be used for current consumption or as collateral for a loan. A corollary is that these laws should have increased assortative matching on non-market attributes, such as age, that, on the margin, became relatively more important.

We compile a new database that links records of marriages contracted in southern states between 1840 and 1850 to the censuses of 1850 and 1840. This database allows us to observe the value of real estate holdings (our proxy for family investment) of couples in 1850 who were married before and after a married women's property law. Links to the 1840 census allow us to construct a measure of pre-marriage familial assets: average slaveholdings among people with a certain surname from a certain state. Because these laws did not apply retroactively, we have within-state variation in the property regime under which couples operated. Because different states passed laws at different times, we can also exploit cross-state variation in the existence of these laws. This allows us to include both state and year of marriage fixed effects in our regression analysis. Using this identification strategy, we show that married women's property laws had a heterogeneous effect on 1850 real estate holdings: they increased investment when the bulk of a couple's property was owned by the husband; however, they had the inverse effect when most of a couple's property was owned by the wife. We also show that, consistent with our model, these laws reduced assortative matching on economic status and increased assortative matching on age.

2 Related Literature

There is an extensive body of literature on the economics of marriage, pioneered by Becker (1993, 1991) who argues that the gains from marriage stem from a couple's ability to exploit increasing returns through the division of labor. Subsequent work has built on this idea, considering bargaining and transfers between partners as components of the gains from marriage.[1]

The empirical literature points to a sharp, recent decline in marriage rates accompanied by an increase in assortative matching on economic status (Choo and Siow 2006; Greenwood et al 2014). This has sparked new interest in understanding the way economic institutions interact with marriage markets. One the goals of the current paper is to better understand how legal institutions have an impact on marriage decisions. Though our results cannot be simply extrapolated to the present, they do provide insights in the relevant trade-offs faced by couples. Most of the existing literature on legal institutions and the economics of marriage emphasizes the role of institutions in affecting bargaining power within the household. For example, Chiappori et al (2002) show that divorce laws increasing the bargaining position of women lead to a reduction in married women's labor supply. There is considerably less emphasis on the direct impact institutions have on household resource allocation, let alone the interaction with credit markets, and the way this affects marriage choice. The current paper attempts to fill this gap in the literature.

This paper also contributes to the literature on assortative matching in the marriage market. Assortative matching on any trait – such as age or economic status – can be generated by different models of marriage matching. Random matching models with search frictions posit that potential mates randomly encounter one another and choose to form a match if the utility they derive from the match exceeds a certain threshold. These models may generate assortative matching if people with similar characteristics are more likely to encounter one another in the marriage market.[2] Non-random matching models posit that people have preferences for certain traits in the marriage market. Assortative matching will occur in a frictionless setting with

[1] See Weiss (1997) for an overview.
[2] See Adachi (2003) and Hirtsch et al (2010).

stable matches if certain traits are universally preferred by both men and women – in this case, highly ranked men will pair with highly ranked women, and lower ranked men will pair with lower ranked women.[3] Alternatively, if people prefer mates with similar characteristics to themselves, assortative matching will also tend to occur when matches are stable.[4]

The fact that different marriage matching models generate assortative matching predictions makes it difficult to use the observation of assortative matching to differentiate between these models. Hirtsch et al. (2010) show that assortative matching emerges in online data – a relatively frictionless setting – and argue that this indicates that people have explicit preferences for similar mates in the dating market. Our paper takes a different approach: we show that changes in marital property regimes generate changes in assortative matching on economic status. Since these property regimes had no effect on marriage matching institutions, this only makes sense if spousal economic assets enter directly into a person's utility function.

This paper is also related to the literature on the consequences of bankruptcy protection laws on household investment decisions. In principle, bankruptcy protection encourages people to take greater financial risks but limits access to credit. There is an extensive literature on this topic, pioneered by Gropp et al (1997), who find that larger homestead exemptions tend to redirect credit to those with high assets to begin with. Most related studies make of use cross-state variation in exemptions or state-level regime changes (see Severino et al 2013, Cerqueiro et al 2013, Lin and White 2001, Fan and White 2003, Cerqueiro and Pena 2011). In this study, we use a different identification strategy that allows us to observe individuals in the same state at the same time under different legal regimes. These laws did not apply retroactively, so couples married before the passage of a law were treated differently from those married after. This way, we can keep many potentially confounding factors constant.

Our paper is also related to studies examining the impact of changes in creditor rights on firms' access to credit. For example, Lilienfeld-Toal et al. (2012) show that an increase in creditor rights leads to a shift in credit from small to large firms. Vig (2013) shows that firms rely less on secured debt if creditors can more easily liquidate assets. In this paper

[3]See Chen et al (2013) and Olivetti et al (2015) for examples of such models.
[4]Gale and Shapely (1962); Hirtsch et al (2010); Weiss (1997).

we emphasize the trade-off between credit constraints and insurance. Our simple model of bankruptcy protection predicts that credit constraints dominate if a larger share of assets are protected. We find strong support for this prediction.

Finally, this paper adds to the literature on married women's property laws in the United States. This is a topic that has received much attention from economists and economic historians; however, it has been difficult to introduce pre-marriage characteristics into any empirical analysis of these laws due to data limitations. In particular, it is difficult to observe pre- and post-marriage socioeconomic characteristics of both halves of a couple, and to know whether a couple was married before or after the passage of a married women's property law. Most examinations of the consequences of these laws have focused on their effect on women's economic activity or wealth holding, typically looking at state-level changes in these outcomes following the passage of a property law. Kahn (1996) explores the effect of married women's property laws on women's patenting, examining changes in the rate of patenting among women at the state level. Inwood and Van Sligtenhorst (2004) look at changes in women's property holding that occurred after the passage of a married women's property law in Ontario, Canada. Geddes et al (2012) analyze the effect of property laws on children's school attendance at the state level.

Other work has discussed the decision by male-controlled state legislatures to enact married women's property laws; this work implicitly models their theoretical consequences. Geddes and Lueck (2002) argue that allocating formal property rights to women makes them more invested in the household's financial position, thus creating a greater incentive for them to efficiently allocate their time and labor in service of bettering this position. They claim that married women's property laws were passed when wealth levels and rates of female school attendance increased, which raised the value of aligning women's incentives with this goal. Doepke and Tertlit (2009) argue that the passage of married women's property acts reflects fathers' investment in their daughters' martial bargaining position. As an increase in women's bargaining position tends to increase children's educational attainment, increasing daughters' bargaining position became more important to fathers as technological change increased the

value of human capital. Hamilton (1999) analyzes choices of property regimes by married couples in 19^{th} century Quebec, who could opt for separate or community of property through prenuptial contracts.

3 Historical Background

Prior to the introduction of married women's property acts, married women's property was governed by American common law, which dictated that virtually all property owned by a woman before marriage or acquired after marriage belonged to her husband. The exception was real estate. Although the fruits derived from real estate belonged to the husband (who could use this revenue as collateral for a loan), the property itself was inalienable and was held in trust by the husband for his wife. It was supposed to pass on to their children or otherwise would revert back to the wife's family (Warbasse 1987, p.9). In most of the states we consider in our empirical analysis prenuptial agreements were problematic to enforce and therefore rare (Salmon 1986, p. xv). The key difficulty lay in the dual legal system in the U.S. at the time. The dominant legal framework was American common law. Under this system prenuptial agreements were not valid. To 'fix' some of the inequities of common law, a seperate body of equity law had evolved. This branch of the law did support prenups, but it was less well establihed and was administered in seperate chancery courts. This created two problems. First, as many southern states did not structurally report equity cases, chancery judges often knew little of the equity jurisprudence. Second, there were few courts that solely administered equity law. Usually, a judge mixed equity and common law cases. As a result, decisions were rife with inconsistencies (Warbasse 1987, p. 165-6).

Warbasse (1987) suggests that the problems associated with equity law and prenuptial agreements spurred the passing of State statutes modifying the common law to better protect women's assets within a marriage. These laws were introduced at different times in different states.[5] The acts can be broadly separated into four categories: debt relief, or acts that

[5]Information on married women's property acts is compiled from a number of sources, including Kahn (1996), Geddes and Lueck (2002), Warbasse (1987), Kelly (1882), Wells (1878), Chused (1983) and Salmon (1982).

shielded women's property from seizure by husbands' creditors but did not allow women to control their separate property; property laws, or laws that allowed women to independently own and dispose of real and personal property; earnings laws, which allowed women to control their own labour earnings; and sole trader laws, which allowed women to engage in contracts and business without their husbands' consent.

We focus on the first class of married women's property acts ("debt relief"), which were enacted in most southern states during the 1840s. Interestingly, the states that did not pass these law changes had the most well developed equity law systems, such as Virginia and Georgia (Warbasse 1987, p. 167). The timing of the passing of these laws coincided with a major recession, following the Panic of 1837, which precipitated a large decline in cotton prices. This depressed land and slave prices in the southern states, where the economy and financial system was based largely around plantation agriculture (McGrane 1924). Historians argue that these laws were passed in response to the economic hardship created by this recession, and the observation that men's losses were also being borne by their wives (Kahn 1996). At the time all loans were full recourse. If a husband's assets were not sufficient to cover a mortgage, for example, creditors could lay claim on all other possesions a couple might have had, including a wife's assets. For example, an article in the 1843 Tennessee Observer states that "the reverses of the last few years have shown so much devastation of married women's property by the misfortunes of their husbands, that some new modification of the law seems the dictate of justice as well as prudence." The Georgia Journal argued in the same year that there is no good reason "why property bequeathed to a daughter should go to pay debts of which she knew nothing, had no agency in creating, and the payment of which, with her means, would reduce her and her children to beggary. This has been done in hundreds of instances, and should no longer be tolerated by the laws of the land" (quoted in Warbasse 1987, p. 176-177). This seems to have been a widespread sentiment, and even states that did not succeed in passing a married women's property act during the 1840s proposed them to the state legislation. For example, Georgia failed to pass an act in 1843 by a margin of 18 out of 173 votes. Tennessee did not pass an act until 1850, even though the issue had clearly been

raised prior to this.

The first such law was passed in Mississippi in 1839, which merely sheltered a woman's slaves from seizure by her husband's creditors; an additional law was passed there in 1846, securing the income earned from her real and personal property to her separate estate. Alabama, Florida, Kentucky, North Carolina, and Tennessee all passed similar property laws during the 1840s. Virginia and Georgia did not pass laws during the period, and Louisiana and Texas were community property states which kept property owned before marriage separate prior to the 1840s. Arkansas passed a weak version of a property law in 1846, which was generally considered nothing more than a strengthening of the equity tradition, which governs premarital contracts (Warbasse 1987). Table 1 contains a list of important legislative dates for each state that we use in our analysis. In all cases, the statutes did not grant women the right to control their separate property; it was kept in a trust administered by their husbands. As Kahn (1996) writes, "control remained with the husband, and courts interpreted the legislation narrowly to ensure that ownership did not signify independence from the family" (p. 361).

While the married women's property acts passed in the South during the 1840s did not grant women economic independence, they did place real constraints on the way in which this property was used. As said, wifes' assets were protected from from husbands' creditors. At the same time, a wife could not contract debt in her own name. Under common law a married women (or 'feme covert') was legally unable to sign contracts; common law assumed that a family was a single legal entity, led by the husband. The early married women's property acts did not (yet) change this feature of American common law. This put a wife's assets in a special position: neither husband nor wife could use them as collateral to obtain credit. In some states an exception was made to furnish the household with "common law necessaries," which included food and shelter.

In general, husbands and wifes were allowed to jointly sell wife's assets. However, this did not mean that the ownership changed or that proceeds could be consumed. The proceeds from the sale had to be reinvested as part of the wife's seperate estate. For example, an Alabama

decision from 1857 maintains that, even if a wife's property can be sold by a husband and wife jointly, the proceeds "are to be reinvested in 'the purchase of other property' – not sold for money" (31 Ala. 39). The statute was interpreted to protect a wife's property "not only against third persons, but against the husband himself." This principle seems to have been broadly upheld in court.

A secondary motive for passing the married women's property acts was the legislatures' concerns with the 'character' of certain men. In 1846 the Alabama legislature commented that the passing of a law would not only protect a women against a husband's insolvency, but also against his "intemperance or improvidence". In 1839, a newspaper from Vicksburg, Mississippi argued, somewhat less eloquently, that "the property of ladies should be guarded against the squandering habits of a drunken and gambling husband. The ladies are virtuous and prudent creatures – they never gamble, they never drink, and there is no good reason why the strong arm of legislation should not be extended to the protection of the property they bring into the marriage bargain" (quoted in Warbasse 1987, p. 150 and 170).

Of course, the extent to which these laws had any meaningful impact depends on the degree to which women held property during this period. As women's labor force participation was very low, women's property would have to come from family. The historical evidence suggests that women frequently received real estate and personal wealth from their family. The first channel was dowry. Though there is a serious lack in research on dowry in the Antebellum South, historical anecdotes suggest that dowry was a frequent phenomenon. Thomas Jefferson's wife, for example, received a dowry of 132 slaves and many thousands of acres of land (Gikandi 2011). Auslander (2011) gives numerous examples from Antebellum Greenwood county, Georgia of the transfer of slave property in the form of dowry. The second channel was inheritance. After the American Revolution the United States had done away with the British standard of primogeniture. In 1792 most US states (including the South) had passed so-called intestacy laws that guaranteed that in the absence of a will, sons and daughters would receive equal shares in the inheritance from their parents (Salmon et al. 1987, p. 64-65; 83). There is very little evidence on the exact shares stipulated in actual wills, but anecdotal evidence

suggests that women could receive sizable inheritances, often in the form of slaves (Warbasse 1987, p. 143-144; Brown 2006).[6]

4 Theory

4.1 Basics

In this section, we develop a simple model that is useful for thinking about how married women's property laws should affect our outcomes of interest, namely household borrowing and investment, and assortative matching in the marriage market.

Husbands and wives enter a marriage with assets w_M and w_F, respectively. Upon marriage, the husband becomes solely responsible for the allocation of these assets. The husband allocates these assets between consumption today (c_0) and investment, the proceeds of which will be consumed "tomorrow" (c_1). We can think of c_1 as an amalgam of the couple's future consumption and a bequest to children. In addition to assets, husbands and wives care about a partner's non-market attribute, which is denoted a_M for men and a_F for women. This non-market attribute captures "attractiveness" that is not related to consumption. Men's preferences over c_0, c_1, and a_F are represented by the following utility function:

$$U_M(c_0, c_1, a_F) = \psi_M\Big(\log c_0 + \theta_M E[\log(c_1)]\Big) + (1 - \psi_M)\log a_F$$

Women's preferences are represented by the following utility function:

$$U_F(c_0, c_1, a_M) = \psi_F\Big(\log c_0 + \theta_F E[\log(c_1)]\Big) + (1 - \psi_F)\log a_M$$

We assume that $\theta_F > \theta_M$, which means that women either value precautionary saving more than men, or they value their children's consumption more than men. The former possibility can be justified by the fact that women had poorer labor market alternatives outside of marriage than men: should a woman outlive her husband, or should the husband turn out to

[6]The tendency to will real estate to men seems to have been a national phenomenon in the first half of the 19^{th} c.: see Salmon et al. (1987, p. 111) on the case of Bucks county in Pennsylvania.

be "intemperate or improvident", it would have been more difficult for her to supplement her savings with labor income. The latter possibility is justified by empirical work in economic development, which tends to find that women allocate more resources to their children than men (see Duflo 2003 for an example). If fathers influence marriage market outcomes, this further supports our assumption: fathers are likely to value their grandchildren's consumption over the consumption of their sons-in-law. Potential differences between ψ_M and ψ_F do not play an important role in the model.

Husbands save $w_M + w_F - c_0$ in cash, and they can borrow an amount l to invest in a risky project. This project has a return R if successful, and a return of 0 if unsuccessful. The probability of success is π (we use $\pi = 0.5$ in what follows). We assume that the project has a positive expected return, so $R > \frac{1}{\pi} = 2$. Lenders are risk neutral, and they will charge a premium, ρ, if l is greater than the amount that the lender will recover if the project is unsuccessful. While lenders are risk neutral, they do impose a "collateral constraint" on loans. Specifically, they impose that the amount they will recover if the project is successful ($(1+\rho)l$) cannot be greater than some multiple $\alpha > 1$ of the amount they will recover if the project is unsuccessful ($w_M - c_0$). This assumption follows Holmstrom and Tirole (1997), and is meant to capture the idea that borrowers may have some discretion over the probability of a project's failure. For example, the project may have a 50% chance of success if the borrower exerts effort, but a 0% chance of success if the borrower does not. If lenders make it relatively too costly for borrowers in the event of project success, this may yield poor borrowers' incentives, leading to certain project failure. We do not explicitly model α.

We analyze this problem in two parts. First, we look at how consumption and investment change after the passage of a married women's property law, conditional on w_M and w_F. Second, we consider how these changes in consumption and investment, conditional on w_M and w_F, affect the value of spousal economic assets in the marriage market, and how this in turn affects assortative matching.

4.2 Property laws and Family Asset Allocation

Before a married women's property law is passed, husbands are at liberty to allocate any amount of $w_M + w_F$ to c_0 or c_1. Notice that they will always choose to borrow a risk-free amount $l < w_M + w_F - c_0$; otherwise, they would receive $U = -\infty$ if the project is unsuccessful. So, husbands solve the following problem:

$$\max_{c_0, l} \quad \log c_0 + \frac{1}{2}\theta_M \log\Big(w_M + w_F - c_0 + l(R-1)\Big) + \frac{1}{2}\theta_M \log\Big(w_M + w_F - c_0 - l\Big) \qquad (1)$$

The solution to this problem is the following:

$$c_0^* = \frac{w_M + w_F}{1 + \theta_M}$$
$$l^* = \left(\frac{R-2}{2(R-1)}\right)\left(\frac{\theta_M}{1+\theta_M}\right)(w_M + w_F)$$

So, husbands choose to allocate a fixed portion of total family wealth to c_0, and they borrow a fraction of their savings that is increasing in the return on the risky project but always risk-free.

After a property law is passed, husbands are constrained to save w_F: they must select $c_0 \leq w_M$. In addition, creditors are unable to seize w_F if the project is unsuccessful, so if husbands borrow an amount $l > w_M - c_0$, this loan will be considered risky and will be charged a risk premium, ρ. The loan will also be capped at $\frac{\alpha}{1+\rho}(w_M - c_0)$, due to the collateral constraint described above. If lenders are risk neutral, they will calculate the risk premium in the following way:

$$l = \frac{1}{2}(1+\rho)l + \frac{1}{2}(w_M - c_0)$$
$$\Rightarrow 1 + \rho = 2 - \frac{w_M - c_0}{l}$$

This means that the collateral constraint can be rewritten in the following way:

$$\begin{aligned}(1+\rho)l &\leq \alpha(w_M - c_0)\\ 2l - (w_M - c_0) &\leq \alpha(w_M - c_0)\\ l &\leq \frac{1+\alpha}{2}(w_M - c_0)\end{aligned}$$

So, husbands will select the better of the following two options: (i) the solution to problem (1) above, subject to the additional constraint that $l \leq w_M - c_0$; or (ii) the solution to the following problem:

$$\max_{c_0,l} \quad \log c_0 + \frac{1}{2}\theta_M \log\left(w_M + w_F - c_0 + l(R - 2 + \frac{w_M - c_0}{l})\right) + \frac{1}{2}\theta_M \log w_F \tag{2}$$

This is subject to the constraint that $c_0 \leq w_M$ and the collateral constraint above. Notice that the derivative of the above utility function with respect to l is directly proportional to $R - 2$, which is always greater than zero. So, if men choose to take risky loans, they will prefer to borrow an infinitely large amount, which means that the collateral constraint will be binding. So, we can re-write the problem, imposing $l = \frac{1+\alpha}{2}(w_M - c_0)$, which implies that $1 + \rho = \frac{2\alpha}{1+\alpha}$. After some algebra, the problem simplifies to:

$$\max_{c_0} \quad \log c_0 + \frac{1}{2}\theta_M \log\left(\frac{2 + R + \alpha(R-2)}{2}(w_M - c_0) + w_F\right) + \frac{1}{2}\theta_M \log w_F \tag{3}$$

Again, this is subject to the restriction that $c_0 \leq w_M$. The solution to this problem is the following (see appendix for details). If $c_0^* \leq w_M$:

$$\begin{aligned}c_0^* &= \frac{2}{2+\theta_M}w_M + \frac{4}{(2+\theta_M)(2+R+\alpha(R-2))}w_F\\ l^* &= \frac{1+\alpha}{2}\left(\frac{\theta_M}{2+\theta_M}w_M - \frac{4}{(2+\theta_M)(2+R+\alpha(R-2))}w_F\right)\end{aligned}$$

If the constraint $c_0 \leq w_M$ is binding, the husband will choose $c_0^* = w_M$ and $l^* = 0$. Notice that borrowing is decreasing in w_F, which may seem counterintuitive, as an increase in w_F

implies increased downside protection. This can be explained by the fact that husbands prefer to allocate a certain fraction of total wealth to c_0. So, as w_F increases, so does the quantity of assets the husband wants to allocate to c_0. Because of the law, the husband can only allocate w_M to c_0 and this means that the amount of collateral the husband can post declines in w_F. As a result, borrowing costs are increasing in w_F, which tends to reduce l. When w_F is sufficiently large that the husband wants to allocate all of w_M to c_0, borrowing will be reduced to zero.

4.2.1 Impact of Laws on Consumption and Borrowing

The consequences for consumption and investment depend on the ratio of w_M to w_F, which can be divided into four regions based on three cutoff points: $\phi_1 > \phi_2 > \phi_3$.

Case 1: $w_M/w_F > \phi_1$

When w_M is very large relative to w_F, the solution to the husband's problem before the law is attainable after the law. Provided this yields greater utility than the husband could achieve by borrowing more than $w_M - c_0$, there will be no change in consumption and borrowing. As $w_F \to 0$, the pre-law solution is always preferable, and attainable; so, there will be some range of w_M/w_F in which the law has no impact on household decisions.

Case 2: $\phi_2 < w_M/w_F \leq \phi_1$

In this case, the pre-law solution (in which the husband chooses $c_0 = \frac{w_M+w_F}{1+\theta_M}$ and borrows $l^* < w_M - c_0^*$) is no longer possible. So, the husband solves problem (2) and borrows $l > w_M - c_0$. Over this range of w_M, this amounts to an increase in borrowing and a reduction in c_0.

Case 3: $\phi_3 < w_M/w_F \leq \phi_2$

In this case, the constraint that $c_0 \leq w_M$ is not yet binding; however, $w_M - c_0^*$ is small enough that the husband becomes credit constrained, and borrowing declines after the law. As above, c_0 also declines after the law.

Solution for ϕ_3:

$$\phi_3 = \frac{4}{\theta_M\big(2 + R + \alpha(R-2)\big)}$$

Case 4: $w_M/w_F < \phi_3$

Now the constraint that $c_0 \leq w_M$ is binding. So, $c_0 = w_M$, $l = 0$, and $c_1 = w_F$. This implies a reduction in c_0 and l.

To summarize, the law leads to a shifting of assets away from c_0. This is in part because wives' assets can no longer be consumed; however, the credit market reinforces this tendency by encouraging men to shift their own assets to c_1 to allow them to access more credit. The law only leads to an increase in borrowing when w_M is large relative to w_F. When w_M is small relative to w_F, the husband wants to allocate a greater portion of w_M to c_0, which makes borrowing against $w_M - c_0$ more costly, thus reducing the amount of borrowing. When the constraint that $c_0 \leq w_M$ is binding, borrowing will be reduced to zero.

4.3 Assortative Matching

How do these married women's property laws affect assortative matching in the marriage market? To analyze this, we consider a marriage market without frictions, in which men and women assign a rank to each member of the opposite sex, and a set of stable matches emerges via a matching algorithm like the Gale-Shapely algorithm. For example, each man proposes to his favorite woman, and each woman becomes engaged to her favorite man from whom she has received a proposal. In the next round, each man proposes to his favorite woman who has not already rejected his marriage proposal; this continues for a defined number of rounds. In the end, this produces a set of stable matches, meaning that there are no two men and women who prefer one another to their own spouses.

It is instructive for our purposes to consider a marriage market of two men and two women, all of whom have similar values of assets. In a sense, we are "zooming in" on a particular portion of a marriage market in which assortative matching on economic assets is prevalent. Positive assortative matching in this mini-marriage market will occur if the richer

man marries the richer woman and the poorer man married the poorer woman; negative assortative matching will occur if the richer man marries the poorer woman and the poorer man marries the richer woman. Whether or not this occurs will depend on the value of these individuals' non-market traits. If the poorer man (or woman) has a non-market trait that is sufficiently higher than that of the richer man (or woman), he will be ranked higher despite the fact that he is poorer. Positive assortative matching will occur if the richer man and the richer woman prefer to marry one another, or if the poorer man and the poorer woman prefer to marry one another; negative assortative matching will occur otherwise.

These laws will unambiguously lead to a decline in the probability of positive assortative matching if they reduce the probability that the richer man prefers the richer woman, and vice versa. Define $A^F \equiv \log(a_F^H/a_F^L)$, or the log ratio of the richer woman's non-market trait to the poorer woman's non-market trait, and define A^M similarly for men. Further, define A^{F^*} to be the threshold value of A^F, such that the richer man prefers the richer woman if $A^F > A^{F^*}$ but not otherwise. Define A^{M^*} to be the threshold value of A^M, such the the richer woman prefers the richer man if $A^M > A^{M^*}$ but not otherwise. Note that, because wealth matters in the marriage market, it must be that A^{M^*} and A^{F^*} are less than zero.

Suppose A^F and A^M are i.i.d. with mean zero, CDF $F()$, and PDF $f()$. Then, the probability that the rich man and the rich woman both prefer to marry one another is:

$$\pi = \Big(1 - F(A^{F^*})\Big)\Big(1 - F(A^{M^*})\Big)$$

If the married women's property laws change these thresholds by some small amount, then the change in this probability can be approximated at follows:

$$d\pi = -\Big(1 - F(A^{F^*})\Big) f(A^{M^*}) dA^{M^*} - \Big(1 - F(A^{M^*})\Big) f(A^{F^*}) dA^{F^*}$$

This is unambiguously negative if dA^{M^*} and dA^{F^*} are both greater than zero, or if the laws lead to a decline in the probability that the richer woman prefers the richer man, or the richer

man prefers the richer woman.[7]

Here, we will show that these laws lead to an increase in A^{M^*} and A^{F^*} if θ_M is sufficiently small and θ_F is sufficiently large. Suppose the wealthier man and woman in the marriage market have $w_i = w+\epsilon$, $i \in \{M, F\}$, and the poorer man and woman have $w_i = w$, $i \in \{M, F\}$. Before a law is passed, the utility that the richer man ($i = M$) or the richer woman ($i = F$) would get from marrying the richer woman (or man) is given by:

$$U_i^H = \log\left(\frac{2(w+\epsilon)}{1+\theta_M}\right) + \frac{\theta_i}{2}\log\left(\frac{\theta_M R(2(w+\epsilon))}{2(1+\theta_M)}\right) + \frac{\theta_i}{2}\log\left(\frac{\theta_M R(2(w+\epsilon))}{2(1+\theta_M)(R-1)}\right) + \psi_i \log a_{-i}^H$$

This is computed by substituting the equilibrium choice of c_0 and l into each person's utility function. The utility each would receive from marrying the poorer man (or woman) is:

$$U_i^L = \log\left(\frac{2w+\epsilon}{1+\theta_M}\right) + \frac{\theta_i}{2}\log\left(\frac{\theta_M R(2w+\epsilon)}{2(1+\theta_M)}\right) + \frac{\theta_i}{2}\log\left(\frac{\theta_M R(2w+\epsilon)}{2(1+\theta_M)(R-1)}\right) + \psi_i \log a_{-i}^L$$

The richer man (or woman) will prefer the richer woman (or man) if the following inequality holds:

$$\psi_i A^i > (1+\theta_i)\log\left(\frac{2w+\epsilon}{2(w+\epsilon)}\right) \equiv A_0^{i^*}$$

After the law is passed, there are two possible cases: one in which the constraint that $c_0 \leq w_M$ is binding on couples with similar wealth ($\phi_3 > 1$); and another in which this constraint is not binding on couples with similar wealth ($\phi_3 < 1$). Here, A^{M^*} and A^{F^*} will have different forms. If $\phi_3 > 1$, then, if ϵ is sufficiently small (so that $w/(w+\epsilon)$ is sufficiently close to one), the utility the rich man would derive from marrying the richer or poorer woman is:

$$U_M^H = \log(w+\epsilon) + \theta_M(w+\epsilon) + \psi_M \log a_F^H$$

$$U_M^L = \log(w+\epsilon) + \theta_M(w) + \psi_M \log a_F^L$$

[7]Note that if the laws make richer men and women less attractive, this will also increase the likelihood that the poorer man and woman prefer one another. This tends to increase the likelihood of positive assortative matching. Because A^{M^*} and A^{F^*} are below zero, the impact of the preferences of the richer man and woman should dominate (proof to follow).

Similarly, the utility the richer woman will get from marrying the richer or poorer man is:

$$U_F^H = \log(w+\epsilon) + \theta_F(w+\epsilon) + \psi_F \log a_F^M$$
$$U_F^L = \log(w) + \theta_F(w+\epsilon) + \psi_F \log a_M^L$$

Then, rich men and women will prefer one another if the following holds:

$$\psi_M A^F > \theta_M \log\left(\frac{w}{w+\epsilon}\right) \equiv A_1^{F^*}$$
$$\psi_F A^M > \log\left(\frac{w}{w+\epsilon}\right) \equiv A_1^{M^*}$$

The probability that the rich man will prefer the rich woman will increase if

$$A_1^{F^*} > A_0^{F^*}$$

After some algebra, this will hold if

$$\theta_m < \frac{\log\left(\frac{2w+2\epsilon}{2w+\epsilon}\right)}{\log\left(\frac{(w+\epsilon)/w}{(2w+2\epsilon)/(2w+\epsilon)}\right)}$$

This threshold is a positive number, and it converges to 1 as $\epsilon \to 0$ by L'Hopital's rule. So, if θ_M is strictly less than one (which is implied by the assumption that $\phi_3 > 1$), then there exists some $\epsilon > 0$ such that the law predicts a decrease in the probability that the richer man will prefer a woman with $w_F = w + \epsilon$ to a woman with $w_F = w$.

The probability that the richer woman prefers the richer man will increase if

$$A_1^{M^*} > A_0^{M^*}$$

After some algebra, this will hold if

$$\theta_F > \frac{\log\left(\frac{w+\epsilon}{w}\right)}{\log\left(\frac{2w+2\epsilon}{2w+\epsilon}\right)} - 1$$

Again, this threshold converges to 1 as $\epsilon \to 0$ by L'Hopital's rule. So, if θ_F is strictly greater than one, then there exists some $\epsilon > 0$ such that the law predicts a decrease in the probability that the richer woman will prefer a man with $w_M = w + \epsilon$ to a man with $w_M = w$.

If $\phi_3 < 1$, then the constraint that $c_0 \leq w_M$ will not be binding on couples with similar wealth. For ease of exposition, we define the following:

$$\lambda \equiv \frac{R + 2 + \alpha(R-2)}{2} > 2$$

Then, the utility the richer man derives from marrying the richer or poorer woman is:

$$U_M^H = \log\left(\frac{2}{2+\theta_M}\Big(w+\epsilon+\frac{w+\epsilon}{\lambda}\Big)\right) + \frac{\theta_M}{2}\log\left(\frac{\lambda\theta_M}{2+\theta_M}\Big(w+\epsilon+\frac{w+\epsilon}{\lambda}\Big)\right) + \frac{\theta_M}{2}\log(w+\epsilon) + \psi_M \log a_F^H$$

$$U_M^L = \log\left(\frac{2}{2+\theta_M}\Big(w+\epsilon+\frac{w}{\lambda}\Big)\right) + \frac{\theta_M}{2}\log\left(\frac{\lambda\theta_M}{2+\theta_M}\Big(w+\epsilon+\frac{w}{\lambda}\Big)\right) + \frac{\theta_M}{2}\log(w) + \psi_M \log a_F^L$$

And, the utility the richer woman will get from marrying the richer or poorer man is:

$$U_F^H = \log\left(\frac{2}{2+\theta_M}\Big(w+\epsilon+\frac{w+\epsilon}{\lambda}\Big)\right) + \frac{\theta_F}{2}\log\left(\frac{\lambda\theta_M}{2+\theta_M}\Big(w+\epsilon+\frac{w+\epsilon}{\lambda}\Big)\right) + \frac{\theta_F}{2}\log(w+\epsilon) + \psi_F \log a_M^H$$

$$U_F^L = \log\left(\frac{2}{2+\theta_M}\Big(w+\frac{w+\epsilon}{\lambda}\Big)\right) + \frac{\theta_F}{2}\log\left(\frac{\lambda\theta_M}{2+\theta_M}\Big(w+\frac{w+\epsilon}{\lambda}\Big)\right) + \frac{\theta_F}{2}\log(w+\epsilon) + \psi_F \log a_M^L$$

Then, rich men and women will prefer one another if the following holds:

$$\psi_M A^F > \Big(1+\frac{\theta_M}{2}\Big)\log\left(\frac{w+\epsilon+\frac{w}{\lambda}}{w+\epsilon+\frac{w+\epsilon}{\lambda}}\right) + \frac{\theta_M}{2}\log\left(\frac{w}{w+\epsilon}\right) \equiv A_1^{F^*}$$

$$\psi_F A^M > \Big(1+\frac{\theta_F}{2}\Big)\log\left(\frac{w+\frac{w+\epsilon}{\lambda}}{w+\epsilon+\frac{w+\epsilon}{\lambda}}\right) \equiv A_1^{M^*}$$

The probability that the rich man will prefer the rich woman will decrease if:

$$\frac{\theta_M}{2} < \frac{\log\left[\frac{\left(2(w+\epsilon)\right)/\left(2w+\epsilon\right)}{\left((1+\frac{1}{\lambda})(w+\epsilon)\right)/\left((1+\frac{1}{\lambda})w+\epsilon\right)}\right]}{\log\left[\left(\frac{\left((1+\frac{1}{\lambda})(w+\epsilon)\right)/\left((1+\frac{1}{\lambda})w+\epsilon\right)}{\left(2(w+\epsilon)\right)/\left(2w+\epsilon\right)}\right)\left(\frac{\left((w+\epsilon)/w\right)}{\left(2(w+\epsilon)\right)/\left(2w+\epsilon\right)}\right)\right]}$$

The numerator on the right hand side of this inequality is a positive number; this follows from the fact the the function $v(w+\epsilon)/(vw+\epsilon)$ is increasing in v, and $2 > 1+\frac{1}{\lambda}$. The denominator is also positive; this follows from the fact that it is equal to zero when $\epsilon = 0$ and is strictly increasing in ϵ. The right hand side of this inequality converges to $\frac{\lambda-1}{2}$ by L'Hopital's rule, which is always greater than 1/2. So, if $\theta_M < 1$, the law will always reduce the probability that the rich man prefers a woman with $w_F = w+\epsilon$ to a woman with $w_F = w$ for some $\epsilon > 0$.[8]

The probability that the rich woman will prefer the rich man will decrease if:

$$\frac{\theta_F}{2} > \frac{\log\left(\frac{\left(w+\epsilon+\frac{w+\epsilon}{\lambda}\right)/\left(w+\frac{w+\epsilon}{\lambda}\right)}{\left(2(w+\epsilon)\right)/\left(2w+\epsilon\right)}\right)}{\log\left(\frac{\left(\left(2(w+\epsilon)\right)/\left(2w+\epsilon\right)\right)^2}{\left(w+\epsilon+\frac{w+\epsilon}{\lambda}\right)/\left(w+\frac{w+\epsilon}{\lambda}\right)}\right)}$$

The numerator is positive because the function $((1+v)w+(1+v)\epsilon)/((1+v)w+\epsilon)$ is decreasing in v. The denominator is positive because it is equal to zero when $\epsilon = 0$ and is increasing in ϵ for reasonable values of ϵ. Again the right hand side of this inequality converges to $\frac{\lambda-1}{2}$. This means that, so long as $\theta_F > \lambda - 1$, the law will lead to a reduction in the probability that the richer woman prefers a man with $w_M = w+\epsilon$ to a man with $w_M = w$ for some $\epsilon > 0$. Recall that $\lambda = \frac{R+2+\alpha(R-2)}{2}$, which is increasing in both R and α. So, the $\theta_F < \lambda - 1$ condition is more restrictive when project returns are higher, or when collateral constraints are more generous to borrowers. Because men's assets are the only assets that can be used to access the credit market, men's assets should be more valuable in the marriage

[8]Notice that, from the definition of ϕ_3, it will only be the case that $\phi_3 < 1$ when $\theta_M > \frac{2}{\lambda}$. However, because λ is bounded below by 2, it will always be the case that $\lambda - 1 > \frac{2}{\lambda}$, so these two conditions on θ_M are compatible.

market when families are better able to participate in the credit market, or when returns are high. So, in this case, there must be a larger discrepancy between the preferences of men and women over c_0 and c_1 in order for women to be more likely to prefer the poorer man after the passage of the law.

5 Data

We link data across three sources: county records of marriages contracted in the South between 1840 and 1850 from familysearch.org; the complete count 1850 federal census from the North Atlantic Population Project; and a complete index to the 1840 census from ancestry.com. We begin by extracting information from approximately 300,000 marriage records from southern states dated between 1840 and 1850 from the genealogical website familysearch.org. These electronic records contain the full name of both the bride and the groom, the date of marriage, and the county of marriage. Once we have obtained this marriage record data, we match it to the census of 1850. The 1850 data contains information on place of residence, birth place, birth year, household composition, occupation, literacy, and real estate assets.

Linking marriage records to the census of 1850 is complicated by the fact that we have relatively little information with which to make these links. The conventional approach to linking census data is to use information on name, sex, race, birth year and birth place.[9] However, our marriage records only give us information on names; this makes it difficult to identify correct matches from a set of potential matches. We choose a methodology that aims to maximize the probability that a link is correct at the expense of a high linkage rate. We begin by identifying married couples residing in the South in 1850.[10] We do this using age, surname and location within the household, which is similar to the approach taken by IPUMS (Ruggles et al 2010); this is necessary because the 1850 census does not explicitly ask about

[9] See Ferrie 1996, Ruggles et al 2010.

[10] We only search for couples in the South for two reasons. First, only southern states currently have fully digitized census data from 1850. However, we also feel that some residency restriction on our target sample is helpful because of the lack of precise information we have that can be used for matching. Couples married in the South are unlikely to have left the region within less than 10 years. So, this location restriction (or some version of it) will help us distinguish between some of the multiple matches that we obtain when matching on name alone.

marital status. We then search these couples for potential matches to our marriage records based on husband's and wife's first initial and a phonetic surname code.[11] We then evaluate the similarity between all three name variables in the marriage record and census record using the Jaro-Winkler algorithm (Ruggles et al 2010), and we drop all potential matches that score below a defined threshold. Finally, we keep only unique matches, in which complete first names are given for both the husband and wife in the 1850 census; we discard potential matches if there is an additional possible match in the 1850 census with information on only first initials. For example, "John and Mary Smith" would be discarded if there was another couple named "J and Mary Smith". This is a very conservative approach, which is meant to maximize accuracy at the expense of sample size. It is also important to note that this approach heavily favors individual with unusual names.

Table 2 contains statistics on our linkage rates, separately by state. We collect marriage records from all southern states (broadly defined) besides Delaware, Maryland, and South Carolina. Delaware has too few marriage records to be worthwhile; Maryland and South Carolina do not have available marriage record data. The fraction of marriage records we are able to link uniquely is 16%, which is on the low side. This appears to be due to the high frequency of multiple matches: approximately 50% of our marriage records can be linked to at least one 1850 census record (including those with first initials only) and 40% can be matched to at least one record with full first name entries.

To narrow down information on multiple matches, we make use of information on the implied age at marriage and discard potential matches with highly improbable ages. We assume that our unique matches are all true, and we compute $Pr(A = a|T)$, which is the probability that a man's age at marriage is equal to a given that a link is true; we do the same thing for women. Then, for each potential non-unique match, we compute a weight π, which is equal to the probability that each match is true given the implied age at marriage of the husband and wife using Bayes rule. For a marriage record with K potential matches, we compute $p_k = \frac{\pi_k}{\sum_{l=1}^{K} \pi_l}$, and define a match as "true" if $p_k \geq 0.95$. This raises our overall

[11] We use NYSIIS codes, which are commonly used in record linkage. See Atack and Bateman (1992), Ferrie (1996), and Abramitzky et al (2012) for examples.

match rate by almost 5 percentage points, to just over 20%.

The validity of this procedure depends on the accuracy of our unique matches. In Table 3 and Figure 3, we attempt to argue that these matches are typically accurate. Recall that we are matching marriage records to census records from southern states based on names only; we are not using information about state of marriage to refine these matches. So, if couples who were married in Alabama, for example, are more likely to reside in Alabama in 1850 than a randomly selected southern couple, this suggests that our matches are relatively accurate. Table 3 compares the probability of residing in or being born in the couple's marriage state with the probability of residing or being born in that state for a randomly selected southern couple in 1850. These probabilities are typically an order of magnitude higher for couples married in state than for all southern couples, suggesting that our matches are typically accurate.

Figure 3 plots the distribution of age at marriage for men and women in our uniquely matched sample. We compute age at marriage by combining information on age in the 1850 census with information on marriage year from our marriage records. Again, recall that we are not using any of this information to create our unique matches. So, if our matches were completely random (i.e. inaccurate), our estimated "age at marriage" variable would be typically 9 years younger for individuals married in 1840 compared with those married in 1849. In the top two panels of Figure 3, we plot the distribution of age at marriage for men in our actual matched sample who were married in 1840 and 1849, and we plot the same distribution for a "placebo" sample of randomly matched data.[12] In our matched data, the distribution of age at marriage looks very similar for men married in 1840 and 1849, suggesting that the matches are relatively accurate. The same picture emerges when we look at age at marriage for women, in the bottom two panels of figure 3.

The third data source is a complete index to the 1840 census. We use this to measure the pre-marriage socioeconomic status of husbands and wives. The only socioeconomic information available in the 1840 census is slaveholdings. Specifically, each 1840 census record is taken at the household level, and contains information on the name of the household head as well

[12]This is done by randomly selecting couples and then randomly assigning them to be "married" in 1840 or 1849.

as the number of free and enslaved persons residing in the household. So, we calculate 1840 slaveholdings per household as the number of enslaved persons residing there. Because we do not have detailed demographic (or even first name) information on household members, it is difficult to link our couples to their precise 1840 households. Instead, we compute a measure of "familial assets" by averaging slaveholdings by state and surname, and we link this to our matched sample by birth state and surname (using the maiden name from marriage records for women). This measure is clearly only available for individuals born in the South.

Table 4 contains summary statistics for our matched data. We can match approximately 46,000 couples between marriage records and the 1850 census. In approximately 88% of cases, both the husband and wife are southern born. Of these, we are able to obtain an 1840 assets measure for 75%, using the method described above. Mean familial slaveholdings are equal to around 3.25, but they range from 0 to just under 260.

6 Empirical Approach

6.1 Investment

Our model generates predictions about the impact of a married women's property law on consumption, investment, and borrowing. However, the only outcome variable we can use to test these predictions is the couple's 1850 real estate holdings. Specifically, we observe real estate assets in 1850, which includes property that is mortgaged: census enumerators were instructed to collect the value of real estate owned by each person, and "no abatement of the value [was] to be made on account of any lien or encumbrance thereon in the nature of debt." As such, we interpret this as gross real estate assets.

One attractive feature of our data is that we observe couples who are married in the same state both before and after a married women's property law; we also have cross-state variation in the timing of the passage of these laws. So, our data allow us to include both year of marriage and state fixed effects. The most straightforward way of exploring the effects of

these laws on family assets is to estimate the following by OLS:

$$\log RE_{i,j,s,t} = \alpha + \beta LAW_{s,t} + \psi_1 \log W_{i,1840} + \psi_2 \log W_{j,1840} + \delta \log\left(W_{i,1840}/W_{j,1840}\right) \times LAW_{s,t} + \\ + \gamma_1 X_i + \gamma_2 X_j + \tau_t + \sigma_s + u_{i,j,s,t}$$

Here, $RE_{i,j,t,s}$ is the value of real estate assets belonging to man i and woman j, who were married in year t in state s. The variable $LAW_{s,t} = 1$ if a married women's property law had been enacted in state s by year t; $W_{i,1840}$ and $W_{j,1840}$ are, respectively, man i's and woman j's familial slaveholding measure from 1840. We include an interaction between $LAW_{s,t}$ and $\log\left(W_{i,1840}/W_{j,1840}\right)$ because we expect the effect of the law to depend on the difference between husband's and wife's pre-marriage assets. The vectors X_i and X_j are individual characteristics of man i and woman j, respectively, including literacy, age fixed effects, and birthplace fixed effects; τ_t is a marriage year fixed effect, and σ_s is a marriage state fixed effect. We impose that couples be resident in their state of marriage, as there is ambiguity about which state's laws apply if a couple lives in a different state than the state of marriage.

A complication is that a large fraction of our couples report zero real estate assets in 1850. As such, we essentially have a censored measure of economic status in 1850. To deal with this, we estimate the above regression as a Tobit, in which observations of $RE = 0$ are treated as though they are censored.

According to our model, property laws should increase borrowing when $W_{i,1840}/W_{j,1840}$ is large, or when the husband is wealthier than the wife; however, it should decrease borrowing when $W_{i,1840}/W_{j,1840}$ is small, or when the wife is wealthier than the husband. At the same time, property laws shift the wife's assets away from consumption and toward saving, and this shift should be more pronounced when the wife is wealthy relative to the husband. If the borrowing effect dominates, we should expect the law to have a positive impact on RE when $W_{i,1840}/W_{j,1840}$ is large, and a negative effect when $W_{i,1840}/W_{j,1840}$ is small. As such, we expect to find $\hat{\delta} > 0$. Our estimate $\hat{\beta}$ will reflect the impact of the law on couples in which husbands and wives have equal wealth.

6.2 Assortative Matching

To estimate the effect of married women's property laws on assortative matching, we estimate the following:

$$|\log\left(W_{i,1840}/W_{j,1840}\right)| = \alpha + \beta LAW_{s,t} + \gamma_1 X_i + \gamma_2 X_j \tau_t + \sigma_s + u_{i,j,s,t}$$

Variable are defined as above. This specification will capture the impact of property laws on assortative matching on wealth. We are using absolute differences in log assets instead of signed differences because we expect the law to increase the incidence of wealthy men marrying poor women *and* wealthy women marrying poor men. We also assess the impact on assortative matching on age, by estimating the above regression equation, using $|\log\left(A_i/A_j\right)|$ as the dependent variable; here, A_i is husband's age at marriage, and A_j is wife's age at marriage.

As discussed above, we expect these laws to cause assortative matching on assets to decrease; this may be associated with an increase in assortative matching on non-market traits (which we proxy with age). As such, we expect to find $\hat{\beta} > 0$ when $|\log\left(W_{i,1840}/W_{j,1840}\right)|$ is the dependent variable, and we expect to find $\hat{\beta} < 0$ when $|\log\left(A_i/A_j\right)|$ is the dependent variable.

One concern pertains to the accuracy of our W_{1840} measure. For person i with surname k born in state s, W_{1840} is equal to the mean value of slaveholdings among all people with surname k in state s in 1840. The accuracy of this measure depends on the fraction of people residing in state s with surname k that are actually related to person i. If k is a relatively uncommon surname, this fraction will be large; however, if k is a very common name, this fraction is likely to be smaller.[13] In other words, there will be more measurement error for men's last names that are more common. To solve this issue, we assign more weight to brides and grooms with uncommon surnames. In particular, we weight our regressions by $\frac{1}{\sqrt{N_i \times N_j}}$, where N_i is the number of families in state s used to compute $W_{i,1840}$ and N_j is the number of families used to compute $W_{j,1840}$. This should improve the accuracy of our W_{1840} measure,

[13] Because of our matching procedure, men with uncommon surnames are already overrepresented; however, this is not true of women with uncommon surnames, since we are not matching on wives' maiden names.

as we are working with the population of 1840 families. However, it augments the bias toward uncommon names in our sample. As such, we present both unweighted and weighted results for all specifications.

7 Results

7.1 Familial assets

We estimate the effect of the passage of a married woman's property law on familial assets in tables 5 and 6. Table 5 contains estimates from our baseline model, estimated by OLS. In columns (1)-(4), we estimate our regression model unweighted; in columns (5)-(6), we weight our regression by $\frac{1}{\sqrt{N_i \times N_j}}$, as defined above. In columns (1)-(3) and (5)-(6), we sequentially add controls for state of marriage, year of marriage, husbands' and wives' age at marriage, birthplace, and literacy. In columns (4) and (8), we include a state-specific linear time trend, to allow for the possibility that states that passed laws were experiencing different trends on real estate investment than states that did not pass laws. Table 6 replicates these specifications using a tobit model instead of OLS.

In all cases, the property law has a negative but insignificant effect on real estate investment for husbands and wives with equal familial wealth. However, there is a positive and significant interaction between the post law indicator and $\log(W_{i,1840}/W_{j,1840})$, indicating that the law positively affected real estate investment when husbands are wealthier than wives but negatively affected real estate investment when wives are wealthier than husbands. This is consistent with our theoretical predictions. The interpretation of the coefficients in table 5, column (1), for example, is that the law increases real estate holdings by 8% when $\log(W_{i,1840}/W_{j,1840}) = 1$; however, the law decreases real estate holdings by 14% when $\log(W_{i,1840}/W_{j,1840}) = -1$.

7.2 Assortative Matching

In this section, we present our findings about the impact of property laws on assortative matching in the marriage market. Our model has two important implications for wealth and

non-market characteristics in the marriage market. First, our model assumes that, to a degree, people are willing to substitute between wealth and the non-market trait. To the extent that age is an appropriate proxy for this non-market trait, we should expect to see a trade-off between spousal wealth and age in the marriage market: a person should only be willing to marry a much older spouse if he or she is much wealthier. Second, our model predicts that the effect of the law on assortative matching is not signed: the law should increase the probability of marrying a richer *or* poorer spouse, relative to the probability of marrying a spouse of similar means. Similarly, the law should increase the probability of marrying a spouse of a like age, relative to the probability of marrying an older or younger spouse. We present results consistent with these two conjectures, and we test the robustness of our assortative matching results.

In table 7, we regress the difference in groom's log age and bride's log age on the difference between groom's log wealth and bride's log wealth. If there is a trade off between spouse's wealth and age, then we should expect the coefficient on $\log(W_{i,1840}/W_{j,1840})$ to be greater than zero: individuals should only be willing to marry a much older spouse if he or she is also much wealthier. Regressions in columns (1)-(3) are unweighted, while regressions in columns (4)-(6) are weighted. In all cases, we find a positive and significant relationship between log wealth gaps and log age gaps.

In table 8, we show that the passage of a married women's property law is associated with an increase (or decrease) in the *absolute* difference between groom's and bride's log wealth (or age), not the signed difference. This is true whether we weight our regressions or not. In tables 9 and 10, we test the robustness of our core assortative matching results by adding additional controls, as we did in table 5, and by estimating all specifications using observations that are uniquely matched. The results suggest that the passage of a property law is associated with a 2-9% increase in the ratio of the wealthier's spouse's 1840 assets to the poorer spouse's 1840 assets. And, the passage of a law is associated with approximately a 1% decline in the ratio of the older spouse's age to the younger spouse's age. The average age difference at marriage was about 5 years (see Table 4). This means that the introduction of the law reduced this

difference by about 5% or 3 months.

8 Conclusion

This paper offers new insight into the economics of marriage by analyzing the impact of married women's property laws on marriage decisions. We focus on laws passed in the American South during the 1840s, which re-directed wives' property toward saving and investment without significantly altering their bargaining position within the household. As such, we are able to isolate one mechanism through which these laws affected preferences in the marriage market, namely by re-allocating economic resources to particular uses. We find that these laws increased real estate investment when husbands were wealthier than wives; however, they decreased investment when wives were wealthier than husbands. This suggests that there was an important interaction between the laws and credit markets. For some couples the property laws offered significant protection in downturns; thus increasing the amount of debt they were willing to take on. For others it imposed credit constraints, reducting investment. We find that this had a significant impact on marriage choice; assortative matching on assets declined after the passage of these laws, while assortative matching on age increased.

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Table and Figures

Table 1: Dates of Key Married Women's Property Legislation during the 1840s

State	Date main law change	Protection wife's assets	Ability to sell wife's assets
Alabama	Mar 1, 1848	All property held at marriage or subsequently acquired	Wife cannot sell
Arkansas	-		
Florida	Mar 6, 1845	All property owned before marriage, or acquired afterwards	Husband and wife can jointly sell real estate
Georgia	-		
Kentucky	Feb 23, 1846	Real estate and slaves	Husband and wife can jointly sell real estate
Louisiana	-		
Mississippi	Feb 28, 1846	Real estate owned at time of marriage and all other property required for the maintenance of the plantation (incl. slaves)	Husband and wife can jointly sell real estate; a wife can individually sell if required for maintenance
North Carolina	Jan 29, 1849	Husband's interest in the wife's real estate (i.e. profits or rents) not liable for his debts.	Wife's real estate cannot be sold by husband without her written consent
Tennessee	Jan 10, 1850	Interest in wife's real estate protected from husband's creditors	Husband cannot sell his interest in his wife's real estate
Texas	-		
Virginia	-		

Notes: We omit Maryland and South Carolina from this Table as we do not have a sufficient number of marriage records to include these states in our analysis. Due to their French and Spanish heritage, Louisiana and Texas had community property systems in place that, by default, allowed men and women to have separate estates.
Sources: Kahn (1996), Geddes and Lueck (2002), Warbasse (1987), Kelly (1882), Wells (1878), Chused (1983) and Salmon (1982).

Table 2: Linkage Rates: Marriage Records to 1850 Census

	% at least 1 match to census (incl. first initials)	% at least 1 full first name match to census	% unique match to census	% matched with using age information	Total # Marriage Records
Alabama	0.585	0.487	0.176	0.236	23,843
Arkansas	0.534	0.445	0.167	0.218	5,846
Florida	0.525	0.455	0.162	0.197	2,378
Georgia	0.614	0.518	0.196	0.256	27,689
Kentucky	0.558	0.476	0.171	0.216	43,584
Louisiana	0.288	0.219	0.067	0.086	6,140
Mississippi	0.636	0.527	0.210	0.286	10,635
North Carolina	0.569	0.496	0.222	0.266	23,050
Tennessee	0.308	0.243	0.089	0.120	81,380
Texas	0.493	0.378	0.139	0.215	6,502
Virginia	0.618	0.562	0.243	0.283	26,813
Total	0.489	0.411	0.158	0.203	257,860

Table 3: Indicators of Record Linkage Accuracy, Marriage Records to 1850 Census

	Probability living in state:		Probability husband born in state:		Probability wife born in state:	
	Married in state	All southern couples, 1850	Married in state	All southern couples, 1850	Married in state	All southern couples, 1850
Alabama	0.726	0.074	0.224	0.022	0.380	0.034
Arkansas	0.795	0.029	0.116	0.002	0.181	0.004
Florida	0.801	0.008	0.096	0.001	0.225	0.002
Georgia	0.800	0.091	0.572	0.078	0.681	0.088
Kentucky	0.865	0.137	0.637	0.090	0.731	0.101
Louisiana	0.794	0.044	0.515	0.015	0.583	0.019
Mississippi	0.770	0.052	0.203	0.009	0.310	0.014
North Carolina	0.831	0.098	0.806	0.169	0.831	0.152
Tennessee	0.781	0.132	0.554	0.102	0.646	0.117
Texas	0.820	0.028	0.030	0.001	0.074	0.002
Virginia	0.890	0.160	0.833	0.194	0.861	0.180

Table 4: Summary Statistics, Linked Data

Variable	Mean	SD	Min	Max	N
Husband's age at marriage	28.43	9.98	15	91	51,513
Wife's age at marriage	22.95	8.48	13	90	51,513
Husband immigrant	0.05	0.21	0	1	51,513
Wife immigrant	0.04	0.19	0	1	51,513
Husband & wife born in south	0.88	0.32	0	1	51,513
Real estate wealth, 1850 ($)	1,075.62	4,207.14	0.00	219,600.00	51,513
Zero wealth in 1850	0.49	0.50	0	1	51,513
Employed in agriculture	0.64	0.48	0	1	51,513
Married after law change	0.22	0.42	0	1	51,513
Resident in marriage state in 1850	0.77	0.42	0	1	51,513
Resident in marriage county in 1850	0.56	0.50	0	1	51,513
Groom's 1840 slave holdings	3.37	5.12	0.00	258.67	41,059
Bride's 1840 slave holdings	3.34	4.92	0.00	258.67	40,981
Surname/birthplace matched to 1840	0.76	0.43	0	1	45,582

Table 5: Effect of Married Women's Property Law on Familial Real Estate Holdings, OLS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	*Log real estate holdings, 1850*							
Post Law	-0.029	-0.061	-0.054	-0.087	-0.084	-0.103	-0.064	-0.104
	(0.098)	(0.088)	(0.084)	(0.100)	(0.120)	(0.123)	(0.125)	(0.176)
(Groom's log W - Bride's log W) X Post Law	0.109*	0.101*	0.112*	0.110*	0.194**	0.186**	0.190**	0.182**
	(0.058)	(0.057)	(0.057)	(0.057)	(0.095)	(0.088)	(0.083)	(0.083)
Groom's log W, 1840	0.480***	0.414***	0.362***	0.362***	0.472***	0.383***	0.328***	0.329***
	(0.027)	(0.025)	(0.024)	(0.024)	(0.047)	(0.045)	(0.045)	(0.045)
Bride's log W, 1840	0.451***	0.412***	0.358***	0.359***	0.446***	0.421***	0.367***	0.368***
	(0.036)	(0.034)	(0.034)	(0.034)	(0.052)	(0.047)	(0.047)	(0.047)
Constant	1.132***	-1.319**	-2.868***	-2.682***	1.409***	-1.116	-2.512***	-2.384***
	(0.127)	(0.510)	(0.488)	(0.518)	(0.134)	(0.768)	(0.724)	(0.739)
Observations	27,466	27,466	27,466	27,466	27,466	27,466	27,466	27,466
R-squared	0.066	0.121	0.154	0.155	0.075	0.140	0.168	0.169
State & marriage year fixed effects	X	X	X	X	X	X	X	X
Age at marriage indicators		X	X	X		X	X	X
Birthplace & literacy indicators			X	X			X	X
State-specific linear time trend				X				X
Weighted					X	X	X	X

Table 6: Effect of Married Women's Property Law on Familial Real Estate Holdings, Tobit

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Log real estate holdings, 1850							
Post Law	0.017	-0.037	-0.030	-0.183	-0.086	-0.116	-0.070	-0.228
	(0.186)	(0.169)	(0.160)	(0.183)	(0.239)	(0.246)	(0.247)	(0.321)
(Groom's log W - Bride's log W) X Post Law	0.230**	0.209*	0.232**	0.231**	0.404**	0.384**	0.396**	0.391**
	(0.114)	(0.112)	(0.110)	(0.111)	(0.183)	(0.172)	(0.163)	(0.163)
Groom's log W, 1840	0.809***	0.690***	0.582***	0.579***	0.778***	0.619***	0.510***	0.508***
	(0.056)	(0.052)	(0.050)	(0.050)	(0.089)	(0.084)	(0.084)	(0.083)
Bride's log W, 1840	0.774***	0.699***	0.597***	0.597***	0.761***	0.711***	0.606***	0.610***
	(0.068)	(0.064)	(0.063)	(0.063)	(0.097)	(0.087)	(0.087)	(0.087)
Observations	27,466	27,466	27,466	27,466	27,466	27,466	27,466	27,466
State & marriage year fixed effects	X	X	X	X	X	X	X	X
Age at marriage indicators		X	X	X		X	X	X
Birthplace & literacy indicators			X	X			X	X
State-specific linear time trend				X				X
Weighted					X	X	X	X

Table 7: Trade-off between Age and Wealth in the Marriage Market

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)
	log(groom's age/bride's age)					
log(groom's W/bride's W)	0.005***	0.006***	0.004**	0.005**	0.006**	0.005*
	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
Constant	0.216***	0.246***	0.132***	0.217***	0.254***	0.137***
	(0.003)	(0.008)	(0.010)	(0.004)	(0.012)	(0.013)
Observations	27,466	27,466	27,466	27,466	27,466	27,466
R-squared	0.000	0.016	0.046	0.001	0.020	0.055
State & marriage year fixed effects		X	X		X	X
Age, birthplace & literacy indicators			X			X
Weighted				X	X	X

Table 8: Married Women's Property Laws and Assortative Matching: Signed versus Absolute Differences in Age and Wealth

Dependent variable:	(1) log(groom's W/bride's W)	(2) |log(groom's W/bride's W)|	(3) log(groom's W/bride's W)	(4) |log(groom's W/bride's W)|	(5) log(groom's age/bride's age)	(6) |log(groom's age/bride's age)|
Post Law	-0.001	0.017*	-0.024	0.068**	-0.005	-0.008**
	(0.020)	(0.009)	(0.039)	(0.030)	(0.004)	(0.004)
Constant	-0.091***	0.826***	-0.089*	1.006***	0.249***	0.277***
	(0.025)	(0.016)	(0.047)	(0.041)	(0.006)	(0.006)
Observations	27,466	27,466	27,466	27,466	39,518	39,518
R-squared	0.001	0.022	0.003	0.036	0.018	0.015
State & marriage year fixed effects	X	X	X	X	X	X
Weighted			X	X		

Table 9: Married Women's Property Laws and Assortative Matching on Wealth: Robustness

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)
			|log(groom's W/bride's W)|			
			Panel A. All Matches			
Post Law	0.018*	0.025**	0.029**	0.072**	0.081**	0.084**
	(0.009)	(0.012)	(0.011)	(0.029)	(0.036)	(0.034)
Constant	0.835***	0.811***	0.850***	0.944***	0.952***	0.829***
	(0.029)	(0.021)	(0.117)	(0.063)	(0.057)	(0.199)
Observations	27,466	27,466	27,466	27,466	27,466	27,466
R-squared	0.037	0.023	0.042	0.052	0.038	0.071
			Panel B. Unique Matches			
Post Law	0.025**	0.035**	0.036***	0.075**	0.087*	0.087*
	(0.011)	(0.014)	(0.013)	(0.038)	(0.049)	(0.047)
Constant	0.829***	0.824***	0.867***	0.940***	0.954***	0.861***
	(0.030)	(0.022)	(0.132)	(0.072)	(0.069)	(0.215)
Observations	23,062	23,062	23,062	23,062	23,062	23,062
R-squared	0.036	0.022	0.041	0.050	0.037	0.071
State & marriage year fixed effects	X	X	X	X	X	X
Age, birthplace & literacy controls	X		X	X		X
State-specific time trend		X	X		X	X
Weighted				X	X	X

Table 10: Married Women's Property Laws and Assortative Matching on Age: Robustness

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:			*|log(groom's age/bride's age)|*			
Post Law	-0.007**	-0.006	-0.007	-0.008**	-0.007	-0.008*
	(0.003)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Constant	0.202***	0.264***	0.192***	0.202***	0.266***	0.193***
	(0.007)	(0.006)	(0.009)	(0.008)	(0.006)	(0.009)
Observations	39,518	39,518	39,518	33,207	33,207	33,207
R-squared	0.047	0.016	0.047	0.045	0.014	0.045
State & marriage year fixed effects	X	X	X	X	X	X
Age, birthplace & literacy controls	X		X	X		X
State-specific time trend		X	X		X	X
Sample	All	All	All	Unique	Unique	Unique

Figure 1: Indicators of Record Linkage Accuracy, Marriage Records to 1850 Census