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.\footnote{For instance, Chiappori et al (2002) explores the impact of divorce laws on the division of labor between spouses, citing changes in bargaining power as the driving mechanism. Geddes & Lueck (2002) discuss the adoption of U.S. state statutes allowing women to own and control property. They argue that the adoption of these laws can be explained in part by increasing returns to women’s work: if women invest more effort in production when they hold property rights within the family, this may explain why male dominated legislatures were willing to pass such legislation.} It may also affect non-monetary utility transfers between spouses, which further muddies the waters. 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.\(^2\)

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 mar-

\(^2\)See Weiss (1997) for an overview.
riage 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. 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 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. Alternatively, if people prefer mates with similar characteristics to themselves, assortative matching will also tend to occur when matches are stable.

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

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5 Gale and Shapely (1962); Hirtsch et al (2010); Weiss (1997).
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 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 Slijtenhorst (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 19th 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 separate body of equity law had evolved. This branch of the law did support prenups, but it was less well established and was administered in separate 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. The acts can be broadly separated into four categories: debt relief, or acts that 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 al-

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6 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).
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 possessions 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 separate 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 woman 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).^7

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. Both husband and wife are risk averse with log-utility. Men’s preferences over \( c_0, c_1, \) and \( a_F \) are represented by

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^7The tendency to will real estate to men seems to have been a national phenomenon in the first half of the 19th c.: see Salmon et al. (1987, p. 111) on the case of Bucks county in Pennsylvania.
the following utility function:

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

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

\[ U_F(c_0, c_1, a_F) = \log c_0 + \theta_F E[\log(c_1)] + \psi_F \log a_M \]

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 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 \( \psi_M \) and \( \psi_F \) do not play an important role in the model.

Husbands decide how much to invest today. They can invest their (remaining) household wealth, \( w_M + w_F - c_0 \), and can borrow an amount \( l \) to lever up. Alternatively, they can save their wealth in a risk-free asset, where we normalize the risk-free rate to be zero. By assumption, we exclude the possibility that the household consumes \( l \) in \( t = 0 \).

In modelling the investment decision and the interaction with credit markets, we closely follow Hart and Moore (1994) and Kiyotaki and Moore (1997). Investment requires two ingredients: fixed assets (such as land, slaves, etc.) and variable inputs (wages for free labor, seeds, etc.). For simplicity, we model the investment technology as Leontief. For each unit of investment, a fraction \( \alpha < 1 \) has to be put into fixed assets and a fraction \( 1 - \alpha \) has to go into variable inputs. The investment project is risky. With probability \( 1/2 \) the project is successful and returns \( \alpha + (1 - \alpha) R \); with probability \( 1/2 \) the project fails and, again for simplicity, the household is only left with the value of the fixed assets: \( \alpha \) (both per dollar invested).

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\(^8\)It turns out that the household is only willing to consume \( l \) in \( t = 0 \) if the loan size is sufficiently large so that they would have to make substantial debt payments in the good state of the world in \( t = 1 \) and certain default is preferable. This endogenously results in a (non-linear) collateral constraint, limiting the loan amount \( l \). This leads to a more complicated model that is similar in spirit to the model we write down here.
Expected returns are positive if $R > 2$. The household also needs to invest its own human capital in the project: if not, the project fails with certainty. We assume that

$$\alpha > \frac{1}{2} \text{ and } R (2\alpha - 1) - 2\alpha > 0;$$  \hfill (1)\end{equation}

this ensures that, before the law change, the husband will always want to borrow to invest.

Capital markets are incomplete and only feature simple loan contracts. Lenders are risk neutral and competitive. If loan contracts are risky, and the debt payment in the bad state of the world exceeds a fraction $\alpha$ of total investment, lenders can seize all of the borrower’s fixed assets and realize their full value. Before the passing of a married women’s property law, creditors can seize up to 100% of fixed assets if the project fails, $\alpha(w_M + w_F - c_0 + l)$. After the law change, only $\alpha(w_M - c_0 + l)$ can be seized, as $\alpha w_F$ is now protected.

Crucially, we assume that the husband cannot commit to making large loan payments in the good state of the world. Suppose that the loan size is such that the loan payment exceeds the value of the fixed assets. At that point, the husband could threaten to withhold the household’s human capital and the project would fail; only the value of the fixed assets would be left and creditors would loose money. This threat is only credible after the passing of the law as the household can now fall back on the value of the wife’s assets to consume. This gives the husband bargaining power, and we assume that the lender can only extract a fraction $\beta \in (0, 1)$ of the total (risk-neutral) surplus that is on the table, $(1 - \alpha)R$. This endogenously generates a collateral constraint: the husband can only borrow a multiple of the household’s net wealth.$^9$ Were he allowed to borrow more, he would always be able to negotiate the debt payment down to $[\alpha + \beta(1 - \alpha)R]$ per unit invested. This places an upper limit on the household’s loan payments in the good state of the world, which implicitly places an upper limit on the amount of credit lenders are willing to extend. We assume that

$$2 - \beta R > 0;$$  \hfill (2)

this ensures that the collateral constraint is binding if the husband decides to contract a risky loan.

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

$^9$An equivalent assumption would be that the lender can only appropriate fraction $\beta$ of the project’s return, above and beyond the value of the fixed assets which he can fully seize.
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. All proofs are in the appendix.

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 $l^* < \alpha (w_M + w_F - c_0 + l^*)$; otherwise, they would receive $U = -\infty$ if the project fails. Since the loan amount is smaller than the value of the fixed assets, the household will never hit the collateral constraint.

Proposition 1 Before the passing of the married women’s property law, the husband will contract a risk-free loan

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

$$< \frac{\alpha}{1 - \alpha} (w_M + w_F - c_0), \tag{3}$$

and the household’s period $t = 0$ consumption is given by

$$c_0 = \frac{w_M + w_F}{1 + \theta m}. \tag{4}$$

So, husbands choose to allocate a fixed portion of total family wealth to $c_0$, and they borrow a fraction of their savings, which is increasing in the return on the risky project.

After a property law is passed, husbands are forced to invest $w_F$ and their current consumption is constrained: $c_0 \leq w_M$. Furthermore, since creditors are unable to seize $\alpha w_F$ if the project is unsuccessful, the household’s consumption in $t = 1$ can never be driven down to zero and the husband might find it optimal to contract a risky loan: $l > \alpha (w_M - c_0 + l)$. If this is the case, lenders will charge a risk premium $\rho$, which is determined by the lenders’ indifference condition:

$$l = \frac{1 + \rho}{2} l + \frac{\alpha}{2} (w_M - c_0 + l) \text{ if } l > \frac{\alpha}{1 - \alpha} (w_M - c_0);$$

$$(1 + \rho) l = \max \{l, (2 - \alpha)l - \alpha (w_M - c_0)\}. \tag{5}$$
Such a risky loan exceeds the value of the fixed assets and the collateral constraint might bind. Because women’s wealth is protected, this constraint only depends on men’s net wealth, $w_M - c_0$:

**Lemma 2** After the passing of the married women’s property law, the collateral constraint is given by

$$ l \leq \bar{l} = \frac{2\alpha + (1 - \alpha)\beta R}{(1 - \alpha)(2 - \beta R)}(w_M - c_0) $$  \quad (6)

The husband can only borrow up to a multiple of his own net wealth which is increasing in $\alpha$, $\beta$ and $R$.

**Proposition 3** After the passing of the married women’s property law, there are three different cases:

1. When $c_0 = w_M$, a household cannot access credit markets, $l = 0$, and will only invest the wife’s wealth. This will happen when the husband’s wealth is relatively small: $w_M/w_F < \phi_1$, with

$$ \phi_1 = \frac{(2 - \beta R)\bar{R}}{\theta_M(1 - \beta)R} $$  \quad (7)

where

$$ \bar{R} = \alpha + (1 - \alpha) R. $$  \quad (8)

2. When $\phi_1 < w_M/w_F < \phi_2$, the husband will always contract a risky loan at the collateral constraint defined by (6), $l = \bar{l}$. The household’s period $t = 0$ consumption is given by:

$$ c_0 = \frac{2}{2 + \theta_M}w_M + \frac{(2 - \beta R)\bar{R}}{(2 + \theta_M)(1 - \beta)R}w_F $$  \quad (9)

*Cutoff point* $\phi_2$ is given by:

$$ \phi_2 = \frac{2\alpha (R - 1) + \theta_M [R (2\alpha - 1) - 2\alpha]}{\theta_M R} > \phi_1. $$  \quad (10)

3. When $w_M/w_F > \phi_2$, the household can achieve the exact same allocation as before the law change. Depending on the exact parameter values, he will find it optimal to stay at the initial allocation or he is better off contracting a risky loan.

In Case 2 the household will always contract a risky loan. The intuition follows from the fact that the household is ensured a consumption of $\alpha w_F$ in the bad state of the world. Since $R > 2$, the return to the
project in the good state of the world (per unit invested) is larger than the marginal cost of debt:

\[ \alpha + (1 - \alpha) R > 2 - \alpha, \]

and it is optimal for the husband to lever up as much as he can. The loan size will be exactly at the collateral constraint. The total amount of credit contracted by the household can either increase or decrease compared to the pre-law situation. This depends on the proportion of husband’s to wife’s wealth.

We are primarily interested in how married women’s property laws affect consumption, borrowing, and investment. In what follows, we will analyze the impact of property laws on these outcomes for couples captured by Case 2, in which \( \phi_1 < w_M/w_F < \phi_2 \). In other words, we will analyze the impact of a law on couples who are bound by the law, but who are not induced to reduce borrowing to zero by the passage of the law. Assuming \( \phi_1 < 1 \), this intermediate case should describe husbands and wives with similar premarital wealth, arguably the majority of couples if some assortative matching on wealth is common.

**Lemma 4** When \( \phi_1 < w_M/w_F < \phi_2 \), household consumption will decline after the passage of a property law.

This finding is intuitive: because property laws restrict couples to consume out of the husband’s wealth only, this tends to lower consumption. In addition, only the husband’s wealth can be used to access the credit market, which encourages men to allocate some of their own assets to future consumption.

**Lemma 5**

1. Define \( l^* \) to be optimal borrowing before the passage of a property law and \( l \) to be optimal borrowing after the passage of a property law. When \( \phi_1 < w_M/w_F < \phi_2 \), then \( l - l^* \) is strictly increasing in \( w_M/w_F \).

2. Define \( y^* \) to be optimal investment, \( w_M + w_F - c_0 + l \), before the passage of a property law and \( y \) to be optimal investment after the passage of a property law. When \( \phi_1 < w_M/w_F < \phi_2 \), then \( y - y^* \) is strictly increasing in \( w_M/w_F \).

Intuitively, total debt will fall if the husband’s wealth is small relative to the wife’s wealth. At that point the law change will impose severe credit constraints on the household. When the husband is relatively rich, credit constraints will be much milder, as creditors can still seize a large fraction of total household wealth. At this point, the household will increase its debt, as the insurance provided by the law encourages the
husband to take on more risk and lever up. Overall, there should be a larger differences between borrowing after the law and borrowing before the law when husbands own a larger share of total family assets.

The effect on total investment \((w_M + w_F - c_0 + l)\) is similar. Because families are constrained to invest the wife’s wealth after a property law is passed, it is not clear whether or not total investment will ever decrease; this depends on parameter values.\(^{10}\) What is clear is that the gap between pre- and post-law investment will increase as men hold a larger share of family assets, as the difference between pre- and post-law borrowing increases in this share. Figure 2 provides a graphical representation of Lemmas 4-6.

### 4.3 Assortative Matching

In this section, we analyze how married women’s property laws should affect assortative matching in the marriage market. We consider a marriage market without frictions, in which men and women assign a rank to each member of the opposite sex, and matches are formed through a version of 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.\(^{11}\)

In general, this matching algorithm will generate positive assortative matching on wealth if men and women generally rank wealthy individuals above poor individuals in their evaluation of potential spouses. For example, consider a marriage market with \(N\) men and \(N\) women, and suppose they are indexed in order of premarital wealth, so man \(M_i\) is wealthier than \(M_{i+1}\) but poorer than man \(M_{i-1}\). Similarly, woman \(F_i\) is wealthier than woman \(F_{i+1}\) but poorer than woman \(F_{i-1}\). If wealth is the only determinant of attractiveness in the marriage market, then all women will rank men in the following way:

\[
M_1 \succ M_2 \succ M_3 \succ \ldots \succ M_{N-1} \succ M_N
\]

\(^{10}\)For instance, if \(\theta_M\) is sufficiently small, or husbands place sufficiently little weight on future consumption, they will have invested very little before the passage of a property law; this implies that forcing them to invest their wife’s property after a property law is passed will increase investment, regardless of the impact on credit market outcomes.

\(^{11}\)Gale and Shapley (1962); Hirtsch et al (2010).
Similarly, all men will rank women in the following way:

\[ F_1 \succ F_2 \succ F_3 \succ \ldots \succ F_{N-1} \succ F_N \]

Thus, by our matching algorithm, \( M_i \) will marry \( F_i \) \( \forall i \in [1, N] \). In other words, there will be perfect assortative matching on wealth. Conversely, if wealth is uncorrelated with attractiveness in the marriage market, the ranking of potential spouses will be uncorrelated with wealth, so \( M_i \) might marry any \( F_j \), \( j \in [1, N] \). In other words, there will be no positive assortative matching on wealth.

To understand how the introduction of a married women’s property law will affect assortative matching on wealth, we will consider a hypothetical marriage market consisting of two men and two women, all of whom have similar wealth. This is akin to isolating a particular portion of a marriage market in which assortative matching on wealth is prevalent. We will show that, under the reasonable assumptions we have made about parameters \( \theta_M \) and \( \theta_F \), the passage of a married women’s property law will lead to a decline in the probability that the richer man and the richer woman are both ranked highest in this marriage market. In other words, the passage of a law leads to a decline in the probability that both men and women are ranked in descending order of wealth. In a larger marriage market, if men and women are less likely to be ranked in descending order of wealth (and more likely to be ranked in descending order of “attractiveness”), this should generate a decline in assortative matching on wealth (and an increase in assortative matching on “attractiveness”).

In our hypothetical marriage market, the richer man and woman both have \( w_i = w + \epsilon, i \in \{M, F\} \), and the poorer man and woman both have \( w_i = w, i \in \{M, F\} \). We define \( A^F \equiv \log(a^H_F/a^L_F) \), or the log ratio of the richer woman’s non-market trait to the poorer woman’s non-market trait, and we define \( A^M \) similarly for men. Further, we 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. Similarly, we 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. For simplicity, we assume that \( \psi_M = \psi_F = \psi \).\(^{12}\)

\(^{12}\)We get the same predictions about assortative matching if we assume that \( \psi_M > \psi_F \), or that men place more weight on the non-market trait than women. This is a common assumption in the literature (Chen et al 2013; Olivetti et al 2015), and is based largely on revealed preferences in online dating or live dating experiments.
Lemma 6 Before a married women’s property law is passed, $A^M_0$ and $A^F_0$ are defined as follows:

$$A^M_0 = \frac{(1 + \theta_F)}{\psi} \log \left( \frac{2w + \epsilon}{2(w + \epsilon)} \right)$$

$$A^F_0 = \frac{(1 + \theta_M)}{\psi} \log \left( \frac{2w + \epsilon}{2(w + \epsilon)} \right)$$

Note that, because wealth matters in the marriage market, $A^M_0$ and $A^F_0$ are less than zero.

Lemma 7 After a married women’s property law is passed, $A^M_0$ and $A^F_0$ are defined as follows, where

$$\lambda \equiv \frac{2R(1-\beta)}{R(2-\beta R)} :$$

$$A^F_1 = \frac{1}{\psi} \left[ \left(1 + \frac{\theta_M}{2}\right) \log \left( \frac{w + \epsilon + \frac{w}{\lambda}}{w + \epsilon + \frac{w + \epsilon}{\lambda}} \right) + \frac{\theta_M}{2} \log \left( \frac{w}{w + \epsilon} \right) \right]$$

$$A^M_1 = \frac{1}{\psi} \left[ \left(1 + \frac{\theta_F}{2}\right) \log \left( \frac{w + \frac{w + \epsilon}{\lambda}}{w + \epsilon + \frac{w + \epsilon}{\lambda}} \right) \right]$$

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 are both ranked highest in the marriage market is: $^{13}$

$$\pi = \left(1 - F(A^F)\right) \left(1 - F(A^M)\right)$$

If a married women’s property law changes these thresholds by a relatively small amount, then the change in this probability that occurs after a law is passed can be approximated as follows:

$$d\pi = -\left(1 - F(A^F)\right) f(A^M) dA^M - \left(1 - F(A^M)\right) f(A^F) dA^F$$

Proposition 8 If $\theta_F > \theta_M$, there exists an $\epsilon^* > 0$ such that $d\pi < 0 \forall \epsilon < \epsilon^*$.

In words, this means that, if women place more weight on future consumption than men, the law will certainly lead to a decline in the probability that a man and woman with $w_M = w_F = w + \epsilon$ are both ranked above a man and woman with $w_M = w_F = w$ for values of $\epsilon$ that are close to zero.

$^{13}$Because the marginal utility of a spouse’s wealth decreases in one’s own wealth, the probability that the richer man and woman are universally ranked highest in the marriage market is equivalent to the probability that the richer man and woman are ranked highest in the marriage market by each other.
The intuition behind this result is straightforward. Men are less likely to rank women in descending order of wealth after the passage of a property law because a property law causes men’s marginal utility from women’s wealth to fall. Before the passage of a property law, men have unfettered access to their wife’s property: they can use it for consumption or to secure a loan. After the passage of a property law, men are constrained in the way they can use their wife’s property. This should cause women’s property to be less valuable to men at the margin. If women’s property becomes relatively less valuable to men, they should be less likely to rank potential wives in descending order of wealth.

Property laws have competing effects on the way in which women value men’s wealth in the marriage market. On the one hand, because property laws limit the ability for households to use a woman’s property to access the credit market, they should tend to make women value men’s wealth more at the margin. This is mitigated by a tension between men’s and women’s desired allocation between \( c_0 \) and \( c_1 \), which is captured by our assumption that \( \theta_F < \theta_M \). Notice that after a property law is passed, a greater fraction of each marginal dollar of \( w_M \) is allocated to \( c_0 \) than it would have been in the absence of a property law. If women would prefer to allocate more to \( c_1 \), this will lead to a decline in the marginal value of men’s wealth.

So long as this tension between women’s and men’s desired allocation between \( c_0 \) and \( c_1 \) exists, we predict that property laws will lead to a decline in the probability that men and women both rank one another in descending order of affluence. In a larger marriage market, this should generate less sorting on wealth and more sorting on other attributes.

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. 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. 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 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. 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

---

15We 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.
16We use NYSIIS codes, which are commonly used in record linkage. See Atack and Bateman (1992), Ferrie (1996), and Abramitzky et al (2012) for examples.
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 $\pi$, 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 $p_k = \frac{\pi_k}{\sum_{i=1}^{K} \pi_i}$, and define a match as “true” if $p_k \geq 0.95$. This raises our overall 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 1, 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 1 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 1, 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.\textsuperscript{17} 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 1.

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

\textsuperscript{17}This is done by randomly selecting couples and then randomly assigning them to be “married” in 1840 or 1849.
information on the name of the household head as well 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. The outcome variable we use to test these predictions is the couple’s 1850 real estate holdings. We observe real estate assets as reported in the 1850 census, which includes real 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 investment, or saving plus borrowing for investment. In our theoretical model, this would be $w_M + w_F - c_0 + l$.

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:

\[
\log RE_{i,j,s,t} = \alpha + \beta \text{LAW}_{s,t} + \psi_1 \log W_{i,1840} + \psi_2 \log W_{j,1840} + \delta \log \left( \frac{W_{i,1840}}{W_{j,1840}} \right) \times \text{LAW}_{s,t} + \\
+ \gamma_1 X_i + \gamma_2 X_j + \tau_t + \sigma_s + u_{i,j,s,t}
\]

Here, \( RE_{i,j,s,t} \) 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 \( \text{LAW}_{s,t} = 1 \) 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 \( \text{LAW}_{s,t} \) and \( \log \left( \frac{W_{i,1840}}{W_{j,1840}} \right) \) 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; \( \tau_t \) is a marriage year fixed effect, and \( \sigma_s \) 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 investment 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, the introduction of a property law should have an impact on gross investment that is increasing in \( \frac{W_{i,1840}}{W_{j,1840}} \). Property laws results in reallocating \( w_F \) to investment, which tends to increase investment after the law. In addition, if \( \frac{W_{i,1840}}{W_{j,1840}} \) is large, the passage of a property law leads to an increase in borrowing, and thus an even greater increase in investment. If \( \frac{W_{i,1840}}{W_{j,1840}} \) is small, the passage of a property law leads to a decrease in borrowing, which may or may not negate the increase in investment that stems from reallocating wives’ assets. In any case, any positive effect of the law on investment should be smaller for such couples. 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:

\[
| \log \left( \frac{W_{i,1840}}{W_{j,1840}} \right) | = \alpha + \beta \text{LAW}_{s,t} + \gamma_1 X_i + \gamma_2 X_j + \tau_t + \sigma_s + u_{i,j,s,t}
\]
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 $|\log \left( \frac{A_i}{A_j} \right)|$ 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 $|\log \left( \frac{W_i,1840}{W_j,1840} \right)|$ is the dependent variable, and we expect to find $\hat{\beta} < 0$ when $|\log \left( \frac{A_i}{A_j} \right)|$ 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. 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, 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 Household Investment

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

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18Because 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.
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 evidence that pooling property is an important motive for 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 – and limited husbands’ ability to borrow against their wives’ property – without altering their bargaining position within the household. As such, they altered the way in which married couples could pool property and access the credit market without affecting the productivity of marriage matches. 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, reducing investment. We find that this had a significant impact on marriage decisions: assortative matching on assets declined after the passage of these laws, while assortative matching on age increased.
References


# Table and Figures

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

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

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

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

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

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<thead>
<tr>
<th></th>
<th>Probability living in state:</th>
<th>Probability husband born in state:</th>
<th>Probability wife born in state:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Married in state</td>
<td>All southern couples, 1850</td>
<td>Married in state</td>
</tr>
<tr>
<td>Arizona</td>
<td>0.726</td>
<td>0.074</td>
<td>0.224</td>
</tr>
<tr>
<td>Arkansas</td>
<td>0.795</td>
<td>0.029</td>
<td>0.116</td>
</tr>
<tr>
<td>Florida</td>
<td>0.801</td>
<td>0.008</td>
<td>0.096</td>
</tr>
<tr>
<td>Georgia</td>
<td>0.800</td>
<td>0.091</td>
<td>0.572</td>
</tr>
<tr>
<td>Kentucky</td>
<td>0.865</td>
<td>0.137</td>
<td>0.637</td>
</tr>
<tr>
<td>Louisiana</td>
<td>0.794</td>
<td>0.044</td>
<td>0.515</td>
</tr>
<tr>
<td>Mississippi</td>
<td>0.770</td>
<td>0.052</td>
<td>0.203</td>
</tr>
<tr>
<td>North Carolina</td>
<td>0.831</td>
<td>0.098</td>
<td>0.806</td>
</tr>
<tr>
<td>Tennessee</td>
<td>0.781</td>
<td>0.132</td>
<td>0.554</td>
</tr>
<tr>
<td>Texas</td>
<td>0.820</td>
<td>0.028</td>
<td>0.030</td>
</tr>
<tr>
<td>Virginia</td>
<td>0.890</td>
<td>0.160</td>
<td>0.833</td>
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</table>

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### Table 4: Summary Statistics, Linked Data

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

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

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log real estate holdings, 1850</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Law</td>
<td>-0.029</td>
<td>-0.061</td>
<td>-0.054</td>
<td>-0.087</td>
<td>-0.084</td>
<td>-0.103</td>
<td>-0.064</td>
<td>-0.104</td>
</tr>
<tr>
<td>(Groom's log W - Bride's log W) X Post Law</td>
<td>0.109*</td>
<td>0.101*</td>
<td>0.112*</td>
<td>0.110*</td>
<td>0.194**</td>
<td>0.186**</td>
<td>0.190**</td>
<td>0.182**</td>
</tr>
<tr>
<td>Groom’s log W, 1840</td>
<td>0.480***</td>
<td>0.414***</td>
<td>0.362***</td>
<td>0.362***</td>
<td>0.475***</td>
<td>0.383***</td>
<td>0.328***</td>
<td>0.320***</td>
</tr>
<tr>
<td>Bride’s log W, 1840</td>
<td>0.451***</td>
<td>0.412***</td>
<td>0.350***</td>
<td>0.359***</td>
<td>0.446***</td>
<td>0.421***</td>
<td>0.367***</td>
<td>0.368***</td>
</tr>
<tr>
<td>Observations</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.127</td>
<td>(0.088)</td>
<td>(0.084)</td>
<td>(0.100)</td>
<td>(0.120)</td>
<td>(0.123)</td>
<td>(0.125)</td>
<td>(0.176)</td>
</tr>
<tr>
<td>State &amp; marriage year fixed effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Age at marriage indicators</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Birthplace &amp; literacy indicators</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>State-specific linear time trend</td>
<td>X</td>
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<td>X</td>
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<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>Weighted</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tr>
</tbody>
</table>
Table 6: Effect of Married Women’s Property Law on Familial Real Estate Holdings, Tobit

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post Law</td>
<td>0.017</td>
<td>-0.037</td>
<td>-0.030</td>
<td>-0.183</td>
<td>-0.086</td>
<td>-0.116</td>
<td>-0.070</td>
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</tr>
<tr>
<td>(0.186)</td>
<td>(0.169)</td>
<td>(0.163)</td>
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<td>(0.246)</td>
<td>(0.247)</td>
<td>(0.321)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Groom’s log W - Bride’s log W) X Post Law</td>
<td>0.230***</td>
<td>0.209*</td>
<td>0.231**</td>
<td>0.404**</td>
<td>0.384**</td>
<td>0.390**</td>
<td>0.391**</td>
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<tr>
<td>(0.114)</td>
<td>(0.112)</td>
<td>(0.111)</td>
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<td>(0.172)</td>
<td>(0.163)</td>
<td>(0.163)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groom’s log W, 1840</td>
<td>0.809***</td>
<td>0.690***</td>
<td>0.582***</td>
<td>0.778***</td>
<td>0.619***</td>
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<td>0.508***</td>
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</tr>
<tr>
<td>(0.056)</td>
<td>(0.052)</td>
<td>(0.050)</td>
<td>(0.089)</td>
<td>(0.084)</td>
<td>(0.084)</td>
<td>(0.083)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bride’s log W, 1840</td>
<td>0.774***</td>
<td>0.699***</td>
<td>0.597***</td>
<td>0.761***</td>
<td>0.711***</td>
<td>0.606***</td>
<td>0.610***</td>
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<tr>
<td>(0.068)</td>
<td>(0.064)</td>
<td>(0.063)</td>
<td>(0.097)</td>
<td>(0.087)</td>
<td>(0.087)</td>
<td>(0.087)</td>
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<td></td>
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<tr>
<td>Observations</td>
<td>27,466</td>
<td>27,466</td>
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<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
</tr>
<tr>
<td>State &amp; marriage year fixed effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Age at marriage indicators</td>
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<td>X</td>
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<td>X</td>
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</tr>
<tr>
<td>Birthplace &amp; literacy indicators</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>State-specific linear time trend</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Weighted</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

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

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

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

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>log(groom’s W/bride’s W)</td>
<td>-0.001</td>
<td>0.017*</td>
<td>-0.024</td>
<td>0.068**</td>
<td>-0.005</td>
<td>-0.008**</td>
</tr>
<tr>
<td>[log(groom’s W/bride’s W)]</td>
<td>(0.020)</td>
<td>(0.009)</td>
<td>(0.039)</td>
<td>(0.030)</td>
<td>(0.004)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.091***</td>
<td>0.826***</td>
<td>-0.089*</td>
<td>1.006***</td>
<td>0.249***</td>
<td>0.277***</td>
</tr>
<tr>
<td>[log(groom’s W/bride’s W)]</td>
<td>(0.025)</td>
<td>(0.016)</td>
<td>(0.047)</td>
<td>(0.041)</td>
<td>(0.006)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>Observations</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
<td>39,518</td>
<td>39,518</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.001</td>
<td>0.022</td>
<td>0.003</td>
<td>0.036</td>
<td>0.018</td>
<td>0.015</td>
</tr>
<tr>
<td>State &amp; marriage year fixed effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Weighted</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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Table 9: Married Women’s Property Laws and Assortative Matching on Wealth: Robustness

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
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<tbody>
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<td></td>
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<tr>
<td>Panel A. All Matches</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Post Law</td>
<td>0.018*</td>
<td>0.025**</td>
<td>0.029**</td>
<td>0.072**</td>
<td>0.081**</td>
<td>0.084**</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.012)</td>
<td>(0.011)</td>
<td>(0.029)</td>
<td>(0.036)</td>
<td>(0.034)</td>
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<tr>
<td>Constant</td>
<td>0.835***</td>
<td>0.811***</td>
<td>0.850***</td>
<td>0.944***</td>
<td>0.952***</td>
<td>0.829***</td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
<td>(0.021)</td>
<td>(0.117)</td>
<td>(0.063)</td>
<td>(0.057)</td>
<td>(0.199)</td>
</tr>
<tr>
<td>Observations</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
<td>27,466</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.037</td>
<td>0.023</td>
<td>0.042</td>
<td>0.052</td>
<td>0.038</td>
<td>0.038</td>
</tr>
</tbody>
</table>

| 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*** | 0.964*** | 0.861*** |
|                     | (0.030) | (0.022) | (0.132) | (0.072) | (0.069) | (0.215) |
| 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 | X | X |
| State-specific time trend | X | X | X | X | X | X |
| Weighted | X | X | X | X | X | X |

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

<table>
<thead>
<tr>
<th>Dependent variable:</th>
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<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Law</td>
<td>-0.007**</td>
<td>-0.006</td>
<td>-0.007</td>
<td>-0.008**</td>
<td>-0.007</td>
<td>-0.008*</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.005)</td>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.202***</td>
<td>0.264***</td>
<td>0.192***</td>
<td>0.207***</td>
<td>0.266***</td>
<td>0.193***</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.006)</td>
<td>(0.009)</td>
<td>(0.008)</td>
<td>(0.006)</td>
<td>(0.009)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.047</td>
<td>0.016</td>
<td>0.047</td>
<td>0.045</td>
<td>0.014</td>
<td>0.045</td>
</tr>
<tr>
<td>State &amp; marriage year fixed effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Age, birthplace &amp; literacy controls</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>State-specific time trend</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sample</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>Unique</td>
<td>Unique</td>
<td>Unique</td>
</tr>
</tbody>
</table>

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

**Proof.** of Proposition 1.

The husband solves the following maximization problem:

\[
\max_{l,c_0} \log c_0 + \frac{\theta_M}{2} \log \left\{ \left[ \alpha + (1 - \alpha)R \right] \left( w_M + w_F - c_0 \right) + (1 - \alpha)(R - 1)l \right\} \\
+ \frac{\theta_M}{2} \log \left\{ \alpha(w_M + w_F - c_0) - (1 - \alpha)l \right\} .
\]

We first solve for the optimal level of \(l\), which yields expression (3). Plugging this into the problem above, and solving for \(c_0\), we arrive at (4). Since \(R > 0\), the equilibrium loan amount, \(l^*\), is always risk free:

\[
\frac{R(2\alpha - 1) - 2\alpha}{2(1 - \alpha)(R - 1)} < \frac{\alpha}{1 - \alpha}.
\]

**Proof.** of Lemma 2.

The total debt payment from household to lender in the good state of the world, \((1 + \rho)l\), is defined by (5). In this state of the world, the lender can only seize fraction \(\alpha\) of the husband’s investment, \(w_M - c_0 + l\) plus fraction \(\beta\) of the surplus that the household can generate by providing its human capital, \((1 - \alpha)R\). This implies that

\[
(2 - \alpha)l - \alpha(w_M - c_0) \leq \left[ \alpha + (1 - \alpha)\beta R \right] [w_M - c_0 + l]
\]

which yields the collateral constraint from expression (6), where we assume that

\[
2 - \beta R > 0
\]

and the constraint is always well-defined. Since \(\beta R > 0\), the maximum loan size is always risky:

\[
\frac{2\alpha + (1 - \alpha)\beta R}{(1 - \alpha)(2 - \beta R)} > \frac{\alpha}{1 - \alpha}.
\]

**Proof.** of Proposition 3.
Case 1: \( w_M/w_F < \phi_1 \) (where \( \phi_1 \) is given by (7)).

In this case, the solution for \( c_0 \) from (9) turns out to be larger than \( w_M \). This means that the husband will be at the constraint and will exactly consume \( w_M \).

Case 2: \( \phi_1 < w_m/w_f < \phi_2 \) (where \( \phi_2 \) is given by 10).

We conjecture that the husband will always pick a risky loan, which means that he solves the following maximization problem:

\[
\max_{l,c_0} c_0 + \frac{\theta_M}{2} \log \left\{ \left[ \alpha + (1 - \alpha)R \right] [w_M + w_F - c_0 + l] - (2 - \alpha)l + \alpha(w_M - c_0) \right\} \\
+ \frac{\theta_m}{2} \log \left\{ \alpha w_F \right\}
\]

subject to (6). Since \( \left[ \alpha + (1 - \alpha)R \right] > (2 - \alpha) \), the household will always borrow as much as the collateral constraint allows. We plug in for the constraint from (6) and solve for \( c_0 \) to arrive at (9).

We note that a higher \( w_F \) will lead to more current consumption \( c_0 \), as \( 1 - \beta > 0 \) and \( 2 - \beta R > 0 \) by assumption.

Case 3: \( w_M/w_F > \phi_2 \).

We conjecture that the husband contracts a loan that is risk-free. This means that the maximization problem is identical to the one in Proposition 1:

\[
\max_{l,c_0} \log c_0 + \frac{\theta_M}{2} \log \left\{ \left[ \alpha + (1 - \alpha)R \right] (w_M + w_F - c_0) + (1 - \alpha)(R - 1)l \right\} \\
+ \frac{\theta_M}{2} \log \left\{ \alpha(w_M + w_F - c_0) - (1 - \alpha)l \right\},
\]

but subject to the constraint that the loan is risk-free:

\[
l \leq \frac{\alpha}{1 - \alpha} (w_M - c_0).
\]

A solution to this problem exists iff

\[
\frac{R(2\alpha - 1) - 2\alpha}{2(1 - \alpha)(R - 1)} (w_M + w_F - c_0) < \frac{\alpha}{1 - \alpha} (w_M - c_0); \\
w_M/w_F > \phi_2,
\]
where $\phi_2$ is defined by (10).

It is straightforward to show that $\phi_2 > \phi_1$ and that the set of $w_M/w_F$ for which the husband contracts risky debt is non-empty. This is true iff

$$2 [1 - \beta] \alpha (R - 1) > (2 - \beta R) \bar{R}. $$

The assumption from (1) guarantees that

$$\alpha (R - 1) > \bar{R}. $$

Furthermore,

$$2 [1 - \beta] > (2 - \beta R) $$

iff

$$R > 2. $$

This must be true in order for the risky project to have a positive expected return. □

**Proof.** of Lemma 4. Combining expressions (4) and (9), we arrive at

$$c_0^* - c_0 = -\frac{\theta_M}{(1 + \theta_M)(2 + \theta_M)} w_M + \frac{(2 + \theta_M)(1 - \beta) R - (1 + \theta_M)(2 - \beta R) \bar{R}}{(1 + \theta_M)(2 + \theta_M)(1 - \beta) R} w_F. $$

To show that $c_0^* - c_0 > 0$ we proceed as follows: we first show that $\delta_2 > 0$, we then show that the values of $w_M/w_F$ for which $c_0^* - c_0 \leq 0$ lie to the right of $\phi_2$, i.e $\delta_2/\delta_1 > \phi_2$.

1. $\delta_2 > 0$

   This follows simply from the fact that assumption (1) guarantees that $2 (1 - \beta) > (2 - \beta R)$ and
   $R/2 > \bar{R}$.

2. $\frac{\delta_2}{\delta_1} > \phi_2$

   From (10), we know that for this to hold we need that

   $$\frac{(2 + \theta_M)(1 - \beta) R - (1 + \theta_M)(2 - \beta R) \bar{R}}{1 - \beta} > 2\alpha (R - 1) + \theta_M [R (2\alpha - 1) - 2\alpha].$$
After some rearranging, one can show that this will hold as long as
\[ 2(1 - \beta) > 2 - \beta R, \]
which will always be the case as long as assumption (1) is in place.

**Proof.** of Lemma 5.

1. Loan size.

The difference between \( l \) and \( l^* \) is given by:

\[
l - l^* = \frac{\theta_m}{1 - \alpha} \left\{ \frac{2\alpha + (1 - \alpha)\beta R}{(2 + \theta_m)(2 - \beta R)} - \frac{R(2\alpha - 1) - 2\alpha}{2(1 + \theta_m)(R - 1)} \right\} w_M \\
- \frac{1}{1 - \alpha} \left\{ \frac{\tilde{R}[2\alpha + (1 - \alpha)\beta R]}{(2 + \theta_m)(1 - \beta) R} + \frac{\theta_m[R(2\alpha - 1) - 2\alpha]}{2(1 + \theta_m)(R - 1)} \right\} w_F.
\]

Because \( \gamma_2 > 0 \), the difference in loan size is strictly decreasing in \( w_F \). If \( \gamma_1 > 0 \), then the loan difference is strictly increasing in \( w_M \). Together, this implies that the difference in loan size is strictly increasing in \( w_M/w_F \), which implies that the difference in loan size is increasing in the fraction of total family assets owned by the husband. We now prove that \( \gamma_1 > 0 \).

First, notice that, because \( 2 + \theta_M > 1 + \theta_M \), the following must hold:

\[
\gamma_1 > \frac{2\alpha + (1 - \alpha)\beta R}{(2 + \theta_m)(2 - \beta R)} - \frac{R(2\alpha - 1) - 2\alpha}{2(2 + \theta_m)(R - 1)} = \frac{1}{2 + \theta_M} \left( \frac{2\alpha + (1 - \alpha)\beta R}{(2 - \beta R)} - \frac{R(2\alpha - 1) - 2\alpha}{2(R - 1)} \right)
\]

After some algebra, this inequality simplifies to:

\[
\gamma_1 > \frac{1}{2 + \theta_M} \left( \frac{\beta R(R - 2) + 2R}{2(2 - \beta R)(R - 1)} \right) > 0
\]

2. Investment.
The difference between $y$ and $y^*$ simplifies to:

$$y - y^* = \frac{1}{1 - \alpha} \left\{ \frac{2\theta_M}{(2 + \theta_m)(2 - \beta R)} - \frac{\theta_M(R - 2)}{2(1 + \theta_m)(R - 1)} \right\} w_M$$

$$+ \frac{1}{1 - \alpha} \left\{ \frac{(2 + \theta_M)(1 - \alpha)(1 - \beta)R - 2\tilde{R}}{(2 + \theta_m)(1 - \beta) \tilde{R}} - \frac{\theta_m(R - 2)}{2(1 + \theta_m)(R - 1)} \right\} w_F.$$ 

Then, by the chain rule for partial derivatives

$$\frac{\partial (y - y^*)}{\partial (w_M/w_F)} = w_F \frac{1}{1 - \alpha} \left[ \zeta_1 - \zeta_2 \frac{w_F}{w_M} \right];$$

for the derivative to be positive we need that

$$\frac{w_M}{w_F} > \frac{\zeta_2}{\zeta_1}. \quad (11)$$

It turns out that $\zeta_2/\zeta_1 < \phi_1$ and condition (11) never binds for $\phi_1 < w_M/w_F < \phi_2$. To see this, start with the expressions for $\zeta_1$ and $\zeta_2$; after some straightforward algebra we arrive at

$$\frac{\zeta_2}{\zeta_1} = \phi_1 \frac{(2 + \theta_M)(1 - \beta)R \left\{ 2(1 - \alpha)(R - 1) - \theta_M \left[ R(2\alpha - 1) - 2\alpha \right] \right\} - 4(1 + \theta_M)(R - 1)\tilde{R}}{4(1 + \theta_M)(R - 1)\tilde{R} - (2 + \theta_m)(2 - \beta R)(R - 2)\tilde{R}},$$

which indicates that $\zeta_2/\zeta_1 < \phi_1$ iff

$$(1 + \theta_M) \left\{ 8(R - 1)\tilde{R} - (2 - \beta R)(R - 2)\tilde{R} + (1 - \beta)R \left[ \theta_M[R(2\alpha - 1) - 2\alpha] - 2(1 - \alpha)(R - 1) \right]_{>0} \right\}$$

$$> (2 - \beta R)(R - 2)\tilde{R} + (1 - \beta)R \left[ 2(1 - \alpha)(R - 1) - \theta_M[R(2\alpha - 1) - 2\alpha] \right]_{>0},$$

which is most restrictive when $\theta_M = 0$. This means that the condition is satisfied when

$$\tilde{R} \left[ 4(R - 1) - (2 - \beta R)(R - 2) \right] > 2(1 - \alpha)(R - 1)(1 - \beta)R.$$
This always holds, since
\[ \tilde{R} > (1 - \alpha)(R - 1) = \tilde{R} - 1, \]
and
\[ 4(R - 1) > 2(1 - \beta R) + (2 - \beta R)(R - 2) \]
\[ \iff \beta R^2 > 0. \]

**Proof.** of Lemma 6.

If a man with \( w_M \) marries a woman with \( w_F \), he will choose the following levels of consumption and borrowing:

\[ c^*_0 = \frac{w_M + w_F}{1 + \theta_M} \]
\[ l^* = \frac{R(2\alpha - 1) - 2\alpha}{2(1 - \alpha)(R - 1)}(w_M + w_F - c^*_0) = \left( \frac{R(2\alpha - 1) - 2\alpha}{2(1 - \alpha)(R - 1)} \right) \left( \frac{\theta_M}{1 + \theta_M}(w_M + w_F) \right) \]

This follows from the equilibrium solution for \( c^*_0 \) and \( l^* \) from Proposition 1. After some algebra, \( E[\log c_1] \) reduces to the following:

\[ E[\log c_1] = \frac{1}{2} \log \left( \frac{\theta_M R}{2(1 + \theta_M)(w_M + w_F)} \right) + \frac{1}{2} \log \left( \frac{\theta_M R}{2(1 + \theta_M)(R - 1)(w_M + w_F)} \right) \]

So, the utility that a man with \( w_M = w + \epsilon \) will derive from a marriage to a woman with \( w_F = w + \epsilon \), \( a_F = a^H_F \), and the utility he will derive from a marriage to a woman with \( w_F = w \), \( a_F = a^L_F \), respectively, is:

\[ U^H_M = \log \left( \frac{2(w + \epsilon)}{1 + \theta_M} \right) + \frac{\theta_M}{2} \log \left( \frac{\theta_M R(2(w + \epsilon))}{2(1 + \theta_M)} \right) + \frac{\theta_M}{2} \log \left( \frac{\theta_M R(2(w + \epsilon))}{2(1 + \theta_M)(R - 1)} \right) + \psi_M \log a^H_F \]
\[ U^L_M = \log \left( \frac{2w + \epsilon}{1 + \theta_M} \right) + \frac{\theta_M}{2} \log \left( \frac{\theta_M R(2w + \epsilon)}{2(1 + \theta_M)} \right) + \frac{\theta_M}{2} \log \left( \frac{\theta_M R(2w + \epsilon)}{2(1 + \theta_M)(R - 1)} \right) + \psi_M \log a^L_F \]
The difference between these two utilities simplifies to:

\[ U^M_H - U^M_L = (1 + \theta_M) \log \left( \frac{2(w + \epsilon)}{2w + \epsilon} \right) + \psi_M \log \left( \frac{a^H_M}{a^L_F} \right) \]

This man will prefer the woman with \( w_F = w + \epsilon \) to the woman with \( w_F = w \) if this difference is greater than zero. This will be the case if

\[ \psi_M \log \left( \frac{a^H_M}{a^L_F} \right) > (1 + \theta_M) \log \left( \frac{2w + \epsilon}{2(w + \epsilon)} \right) \]

By the same reasoning, a woman with \( w_F = w + \epsilon \) will prefer a man with \( w_M = w + \epsilon, a_M = a^H_M \) to a man with \( w_M = w, a_M = a^L_M \) if:

\[ \psi_F \left( \frac{a^H_M}{a^L_M} \right) > (1 + \theta_F) \log \left( \frac{2w + \epsilon}{2(w + \epsilon)} \right) \]

This proves the lemma. ■

**Proof.** of Lemma 7.

We consider the case in which \( \phi_1 < 1 \), so the constraint that \( c_0 \leq w_M \) is not binding on couples with equal premarital wealth. This is the most reasonable case – this essentially means that the credit market doesn’t vanish after the passage of one of these laws. Now, a couple with \( w_M \) and \( w_F \) will set the following values of consumption and borrowing:

\[

c_0^* = \frac{2}{2 + \theta_M} w_M + \frac{(2 - \beta R)\hat{R}}{(2 + \theta_M)(1 - \beta)R} w_F
\]

\[
l^* = \frac{2\alpha + (1 - \alpha)\beta R}{(1 - \alpha)(2 - \beta R)} (w_M - c_0^*) = \left( \frac{2\alpha + (1 - \alpha)\beta R}{(1 - \alpha)(2 - \beta R)} \right) \left( \frac{1}{2 + \theta_M} \left( \theta_M w_M - \frac{(2 - \beta R)\hat{R}}{(1 - \beta)2R} w_F \right) \right)
\]

Then, \( E[\log c_1] \) reduces to:

\[
E[\log c_1] = \frac{1}{2} \log \left[ \left( \frac{2R(1 - \beta)}{2 - \beta R} \right) \left( \frac{\theta_M}{2 + \theta_M} \right) \left( w_M + \frac{\hat{R}(2 - \beta R)}{2R(1 - \beta)} w_F \right) \right] + \frac{1}{2} \log(\alpha w_F)
\]
For simplicity, define \( \lambda \equiv \frac{2R(1-\beta)}{R(2-\beta R)} \), so
\[
E[\log c_1] = \frac{1}{2} \log \left[ \lambda \tilde{R} \left( \frac{\theta_M}{2 + \theta_M} \right) \left( w_M + \frac{w_F}{\lambda} \right) \right] + \frac{1}{2} \log(\alpha w_F)
\]

Consumption \( c_0 \) can also be written:
\[
c_0 = \frac{2}{2 + \theta_M} \left( w_m + \frac{w_F}{\lambda} \right)
\]

By the same argument above, the richer man will prefer the richer woman and the richer woman will prefer the richer man if:
\[
\psi_M A^F > \left( 1 + \frac{\theta_M}{2} \right) \log \left( \frac{w + \epsilon + \frac{1}{\lambda}}{w + \epsilon + \frac{w + \epsilon}{\lambda}} \right) + \frac{\theta_M}{2} \log \left( \frac{w}{w + \epsilon} \right)
\]
\[
\psi_F A^M > \left( 1 + \frac{\theta_F}{2} \right) \log \left( \frac{w + \frac{w + \epsilon}{\lambda}}{w + \frac{w + \epsilon}{\lambda}} \right)
\]

\[\blacksquare\]

**Proof.** of Proposition 8.

Recall that:
\[
d\pi = - \left( 1 - F(A^{F*}) \right) f(A^{M*}) dA^{M*} - \left( 1 - F(A^{F*}) \right) f(A^{F*}) dA^{F*}
\]

When \( \epsilon = 0 \), \( d\pi = 0 \), since \( dA^{M*} \) and \( dA^{F*} \) are both equal to zero when \( \epsilon = 0 \). We take the derivative of \( d\pi \) with respect to \( \epsilon \) when \( \epsilon = 0 \) and show that this is negative when \( \theta_M < \theta_F \). This means that, for \( \epsilon \) close to zero, the law leads to a decline in the probability that the rich man and woman prefer one another as long as \( \theta_M < \theta_F \). First, notice the following:

\[
\frac{\partial d\pi}{\partial \epsilon} = -dA^{M*} \frac{\partial \left( 1 - F(A^{F*}) \right) f(A^{M*})}{\partial \epsilon} - \left( 1 - F(A^{F*}) \right) f(A^{M*}) \frac{\partial dA^{M*}}{\partial \epsilon} +
\]
\[
-dA^{F*} \frac{\partial \left( 1 - F(A^{M*}) \right) f(A^{F*})}{\partial \epsilon} - \left( 1 - F(A^{M*}) \right) f(A^{F*}) \frac{\partial dA^{F*}}{\partial \epsilon}
\]
Because $dA^i = 0$ when $\epsilon = 0$, $i \in \{M, F\}$, this reduces to the following when $\epsilon = 0$:

$$f(0)(1 - F(0)) \left( - \frac{\partial dA^M}{\partial \epsilon} \bigg|_{\epsilon=0} - \frac{\partial dA^F}{\partial \epsilon} \bigg|_{\epsilon=0} \right)$$

So, if $\frac{\partial dA^M}{\partial \epsilon} \bigg|_{\epsilon=0} + \frac{\partial dA^F}{\partial \epsilon} \bigg|_{\epsilon=0} > 0$, this proves the proposition. When $\phi_1 < 1$, this derivative is equal to the following:

$$\frac{\partial dA^M}{\partial \epsilon} \bigg|_{\epsilon=0} + \frac{\partial dA^F}{\partial \epsilon} \bigg|_{\epsilon=0} = \frac{1}{\psi} \left( \frac{\theta_F - 1}{2w} + \frac{1 - \theta_M}{2w} \right) = \frac{1}{\psi} \left( \frac{\theta_F - \theta_M}{2w} \right) > 0$$

This follows from the assumption that $\theta_F > \theta_M$. When $\phi_1 > 1$, this derivative is equal to the following:

$$\frac{\partial dA^M}{\partial \epsilon} \bigg|_{\epsilon=0} + \frac{\partial dA^F}{\partial \epsilon} \bigg|_{\epsilon=0} = \frac{1}{\psi} \left( \frac{\theta_F - (1 - \lambda)}{2w(1 + \lambda)} + \frac{(1 - \lambda) - \theta_M}{2w(1 + \lambda)} \right) = \frac{1}{\psi} \left( \frac{\theta_F - \theta_M}{2w(1 + \lambda)} \right) > 0$$

Again this follows from the assumption that $\theta_F > \theta_M$.

\[ \blacksquare \]

B Appendix Tables and Figures
Figure 2: Impact of Property Law on Consumption, Borrowing, and Investment: Illustration

A. Investment net of loans

B. Loan size

C. Total Investment

θ_M = 1, R = 3,
α = 0.9, β = 1/3