Bankruptcy and Investment: Evidence from Changes in Marital Property Laws in the U.S. South, 1840-1850*

Peter Koudijs† Laura Salisbury‡

January 27, 2016

Abstract

We study the impact of the introduction of a form of bankruptcy protection on household investment in the U.S. South in the 1840s, which pre-dated modern bankruptcy laws. During this period, certain southern states passed laws that protected married women's property from seizure in the case of insolvency, amending the common law default which vested a wife's property in her husband and thus allowed it to be seized for the repayment of his debts. Importantly, these laws only applied to newlyweds. We compare couples married after the passage of a law with couples from the same state who married before the passage of a law. Since states passed laws at different points in time, we can exploit variation in protection conditional on state and year of marriage. We find that the effect on household investment was heterogeneous: if most household wealth came from the husband (wife), the law led to an increase (decrease) in investment. This is consistent with a simple model where downside protection leads to both an increase in the demand for credit and a reduction in supply. Demand effects will only dominate if a modest fraction of total wealth is protected.

*We thank seminar and conference participants at Berkeley, Gerzensee, NYU, Stanford, the University of Minneapolis, Queen's, and the University of Zurich, and in particular Gillian Hamilton, Eric Hilt, Ulf Lilienfeld-Toal (discussant), Hanno Lustig, Petra Moser, Joachim Voth, Lucy White, and Gavin Wright for comments and suggestions. All errors are our own.

†Stanford University and NBER, koudijs@stanford.edu.

‡York University, NBER, lsalisbu@yorku.ca.

1 Introduction

Personal bankruptcy is an important economic institution. By allowing individuals to discharge unsecured debt and preventing creditors from seizing future income, society allows people to make a fresh start. Ex ante, this encourages people to take on risky projects that might benefit society as a whole, but that a risk-averse individual person would never engage in without some sort of downside protection. There is also a drawback: the possibility of bankruptcy reduces the amount of collateral an individual can pledge, reducing access to outside finance. Moreover, bankruptcy might encourage people to take on too much risk or strategically default, further limiting the willingness of financial intermediaries to provide credit.

Studying this trade-off empirically is not straightforward. Bankruptcy proceedings in the U.S. are governed by federal law and are the same for all individuals. Gropp, Scholz and White (1997) argue that there is one dimension in which bankruptcy protection does vary: different states have different exemption levels, which determine the amount of an individual's assets (mostly home equity) is protected in case of bankruptcy. This has spurred a large empirical literature on the link between state exemption levels and a host of economic outcomes. Nevertheless, this approach has certain limitations. First of all, the effect of state-level exemptions is estimated for individuals who already enjoy significant downside protection under the (federal) U.S. Bankruptcy Code: bankruptcy releases a borrower from unsecured debt and stays the garnishment of future income by creditors. As such, these studies estimate the impact of a marginal increase in protection, and not its overall effect. It is therefore not obvious to what extent differences in homestead exemptions are informative about the general impact of bankruptcy protection. Second, the impact of exemptions on investment differs across studies, and it is not fully understood what drives this heterogeneity. Third, if credit supply is not infinitely elastic, state-level differences in exemptions could have important effects on the market supply of credit, leading to general equilibrium effects that make it difficult to interpret empirical findings (Lilienfeld-Toal, Mookherjee, and Visaria [2012]). Finally, differences in exemption levels across states might be correlated with other factors, making it difficult to make causal inferences (Hynes, Malani and Posner [2004]).

In this paper we study the impact of downside protection in a period and region when there was virtually no bankruptcy relief: the U.S. South during the 1840s. Though households were sometimes protected through (limited) homestead exemptions, there was no bankruptcy procedure that could lead to a discharge of current debts. After the Panic of 1837 led to a spike in insolvencies in the

South (McGrane [1924], Wallis [2001]), many state legislatures decided to remedy this situation. Modern bankruptcy rules were considered but rejected as being detrimental to creditors (Coleman [1974]). Instead, a number of states passed so-called Married Women Property Acts, whose main purpose was to protect a wife's assets (acquired through dowry or inheritance) from her husband's creditors. This way, a family would enjoy downside protection, while, at the same time, creditors could seize fewer assets, potentially limiting access to credit. In the absence of bankruptcy relief, these laws arguably had a first order impact on economic outcomes that is comparable with a (hypothetical) introduction of a modern bankruptcy code.[1]

We study the impact of these laws on household investment decisions, in particular the size and type of household investment measured by the possession of real estate and slaves. Crucially, the Married Women Property Acts only applied to newlyweds: a retroactive application would have been unconstitutional, as it would have violated the terms of existing contracts (Kelly [1882]). We can therefore compare couples in the same state, in the same census year (1850), who were married before and after the passing of the law. No other study has been able to exploit within state-year variation in bankruptcy protection. Since states introduced laws at different points in time we can also control for the year of marriage, making sure that the time since marriage, and age effects more generally, are not driving our results. Furthermore, since the law change only applied to newlyweds, a relatively small group of people, general equilibrium effects are probably not first order in the short term, allowing for a straightforward partial equilibrium interpretation of results.

The starting point for our analysis is a simple model of household borrowing and risky investment. Following the large literature on bankruptcy protection (see White [2011], Livshits [2014] for overviews), downside protection has two opposing effects. First, less collateral is available and this will shift the credit supply curve inward. Second, downside protection increases the demand for credit. This goes back to the insights of Dubey, Geanakoplos and Shubik (2005) and Zame (1993) that if (financial) markets are incomplete, the ability to default on payments in certain states of the world might actually serve to make markets more complete. This matters for risk averse borrowers who are now better able to smooth consumption across states. As a result, the demand curve for

[1]The marital property laws passed in the U.S. South during the 1840s are particularly comparable to bankruptcy protection because they did not grant married women autonomy over their separate property; they merely shielded this property from seizure by creditors. This differentiates them from other Married Women's Property Acts passed outside the South starting in the late 1840s. This is important, because it means that our southern property laws affected the way in which households interacted with the credit market without affecting other features of household production. For instance, these laws should not have affected the quantity of effort married women expended in household production, because they did not redistribute property rights to these women in any meaningful sense (Geddes and Lueck [2002]; Hamilton [1999]). This also implies that the channel through which these laws changed investment behavior is not systematic gender differences in preferences over investment strategies.

credit will shift outwards. The key insight from our simple model is that the net effect of these two opposing forces depends on the fraction of total assets that is protected. If most assets are exempt from seizure by creditors, collateral constraints will be very restrictive and, even though the household would like to borrow extensively, credit will fall. If most assets are unprotected, supply effects will be minor, while the household might still value the protection and, on net, credit will increase.

We find strong support for these predictions in the data. We compile a new database that links records of marriages contracted in southern states between 1840 and 1850 to the censuses of 1840 and 1850. Though we don't observe credit, this database does allow us to observe the gross value of real estate and slave holdings at the household level in 1850. We can compare this measure of family investment for 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 slave wealth among people with a certain surname from a certain state. This measure captures how wealthy grooms' and brides' families were at the time of marriage, which approximates the quantity of assets they brought into a union.

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. Moreover, because these laws only protected women's assets, variation in the relative asset position of husbands and wives generates variation in the degree of protection, conditional on state of marriage, year of marriage, and level of total household assets. As such, we can implement what is essentially a differences in differences in differences design, which is unique in this literature. Using this identification strategy, we show that, consistent with theory, married women's property laws had a heterogeneous effect on 1850 real estate and slave 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.

In related work, Koudijs and Salisbury (2015) study the impact of the passage of these married women's property laws on the marriage market. In particular, they find that rich women are more likely to marry a poorer man after the passing of a law. To deal with this issue, we explicitly control for individual pre-marital wealth levels, in addition to a host of other personal characteristics such as age, literacy and place of birth. Nevertheless, the paper's estimates will be biased if the average

quality of a marital match changes in some unobservable way that is correlated with differences in spousal pre-marital wealth. More precisely, it may be that marriages involving relatively rich husbands had systematically better unobservable qualities after the passage of a property law, and this might explain why they held more assets in 1850. To evaluate this alternative explanation, we look at two plausible indicators of match quality – separation and fertility – and we show that there is no evidence of a disproportionate increase in unobservable quality among matches with relatively rich husbands after the passage of a law.

We perform three more robustness tests. First, we investigate whether changes in bequests on the part of a married couple's parents can explain the patterns we find. It is possible that, in response to the law change, parents shifted bequests from daughters to sons since these were less restricted in its use. In fact, we find the opposite effect: the law change seems to have led parents to bequeath more wealth to their daughters. As a result, changes in bequest behavior should cause households with relatively rich women to hold *more* assets in 1850, not fewer. Second, we show that our effects are not driven by the introduction of state level bankruptcy exemptions that also took place during the 1840s. Third, we investigate the possible endogeneity of married women's property laws to state-level macroeconomic conditions, and we show that state-level variation in macro conditions cannot explain our results.

This paper is directly related to the literature on the consequences of bankruptcy protection on household borrowing and investment decisions. Bankruptcy protection encourages people to take greater financial risks but limits access to credit. There is a large literature in macroeconomics that estimates this trade-off in a structural way (see for example Athreya [2002], Livshits, MacGee and Tertilt [2007], Chatterjee et al [2007], and Davila [2015]). Closer to our paper, there is an extensive micro-econometric literature on the topic using cross-state variation in exemptions. Conclusions differ whether higher exemptions increase or decrease credit and investment. Gropp et al (1997), the seminal paper in this literature, find that larger homestead exemptions tend to redirect credit to individuals with high assets to begin with. On the other hand, Severino et al (2013) look at a recent wave in changes in exemptions and show that higher exemptions are associated with an increase in unsecured debt that is mainly driven by low-income households. Berkowitz and White (2004), Berger, Cerquiero and Penas (2011) and Cerquiero and Penas (2011) focus on small-business owners and show that higher exemptions lead to less credit. Fan and White (2001) find that the probability of starting a small business does go up. Cerqueiro et al (2014) document that higher

exemptions are related to less innovative activity, emphasizing the importance of external financing for innovation.

The remainder of this paper is structured as follows. Section I provides more historical background. In Section II, we introduce a simple model of bankruptcy protection and investment. Section III describes the dataset underlying our analyses and Section IV presents the empirical results. Section V concludes.

2 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 prenuptial agreements, 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.[2] 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

[2]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).

property; earnings laws, which allowed women to control their own labour earnings; and sole trader laws, which allowed women to engage in contracts and business without their husbands' consent.

We focus on the first class of married women's property acts ("debt relief"), which were enacted in most southern states during the 1840s. Interestingly, the states that did not pass these law changes had the most well developed equity law systems, such as Virginia and Georgia (Warbasse 1987, p. 167). The passing of these laws followed a major recession after the Panic of 1837, which was caused by a large decline in cotton prices (Temin [1969]). This depressed land and slave prices in the southern states, where the economy and financial system was largely based around plantation agriculture (McGrane [1924]). After a brief recovery, the U.S. economy entered a phase of strong deflation in 1839, which made it hard for debtors to repay their loans (Wallis 2001). At the time, bankruptcy relief was virtually non-existent – a (permanent) federal bankruptcy law allowing for the discharge of unsecured debt was only introduced in 1898 (Coleman 1974). Moreover, all loans were full recourse and lenders could use the local court systems to press for debt repayment through the seizure of a borrowers' assets and by threatening to send a borrower to debtor's prison.[3] This meant that debtors generally had no other way to discharge their debts than through private negotiation with their creditors. Since loans were full recourse, this implied that if a husband's assets were not sufficient to cover a mortgage, creditors could lay claim on a wife's assets, an option that seems to have been widely exercised in the aftermath of the 1837 crisis.

In response to the crisis, the national government implemented a controversial Federal Bankruptcy law in the summer of 1841 that allowed thousands of families to file for volutary bankruptcy and qualify for debt foregiveness. The law was very unpopular with creditors and was repealed within a year (Coleman [1974], p. 23).[4] A number of states therefore decided to introduce (limited) forms of bankruptcy protection at the state level. The introduction of the married women's property laws was an important element of these policies, as it was observed that men's losses were also being borne by their wives (Goodman [1993], Kahn [1996], and Thompson [2004], p. 26, 91-2). 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 Geor-

[3]Debtor's prison was only abolished after after the Civil War (Coleman 1974, p. 243). In the 1840s and 1850s it was a tool that was predominantly used to force borrowers to give up their remaining assets, rather than a form of punishment. Most states put restrictions on the use of debtor's prison. Generally, a borrower could get a quick release from prison after assignment of his property to his creditors. If lenders refused to free borrowers, they had to assume the costs of imprisonment.

[4]All our results are robust to the exclusion of couples who got married before the summer of 1842.

gia 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.[5] Around the same time, states also introduced bankruptcy exemptions; under which lenders could not seize borrower's property up to a specific maximum value, usually around $500 ($16,000 in today's money) (Farnam [1938]).[6]

The first married women property 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, wives' assets were protected 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

[5]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 January of 1850, even though the issue had clearly been raised prior to this.

[6]In one of our robustness tests in Section IV we show that the introduction of exemptions cannot explain our findings.

could use them as collateral to obtain credit.

In general, husbands and wives 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 .

At the same time, the law did make exceptions to prevent hardship on part of the family. For example, a wife's property could generally be used for "common law necessaries", which included food, shelter and sometimes school fees, if the husband was unable to do so because of insolvency, sickness or because he abondoned his family. In addition, part of the wife's property could be sold to pay for the maintenance of a plantation. In sum, the married women property laws had the dual purpose of preserving the wife's property and offering protection from adverse shocks.

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 (Shammas 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]

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

3 Theory

3.1 Basics

In this section, we develop a simple model to characterize the way in which married women's property laws affect household borrowing and investment. Starting point is the observation that the only financial instruments available to households at the time were simple, non-contingent, debt contracts. In this case, offering downside protection through the exemption of the wife's property likely had two countervailing effects. First, it could reduce the overall amount of credit and investment because households have less pledgeable collateral after the passage of the law. Second, it could also increase overall investment: the downside protection makes potential insolvency less harmful and this could incentivize a family to increase borrowing and invest more. In what follows, we explore when one of the two effects dominates.

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. Both husband and wife are risk averse with log-utility. Men's preferences over c_0 and c_1 are represented by the following utility function:

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

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. By assumption, we exclude the possibility that the household consumes l in $t = 0$.[8]

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 $\alpha + (1 - \alpha) R$;

[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.

with probability 1/2 the project fails and, again for simplicity, the household is only left with the value of the fixed assets: α (both per dollar invested). 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

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

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 α 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 αw_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 can 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

$$2 - \beta R > 0; \tag{2}$$

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

In what follows, 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. All proofs are in the appendix.

[9] An equivalent assumption would be that the lender can only appropriate fraction β of the project's return, above and beyond the value of the fixed assets which he can fully seize.

3.2 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*

$$\begin{aligned} l^* &= \frac{R(2\alpha-1)-2\alpha}{2(1-\alpha)(R-1)}(w_M + w_F - c_0) \\ &< \frac{\alpha}{1-\alpha}(w_M + w_F - c_0), \end{aligned} \tag{3}$$

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

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

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 αw_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 ρ, which is determined by the lenders' indifference condition:

$$\begin{aligned} l &= \frac{1+\rho}{2} l + \frac{\alpha}{2}\,(w_M - c_0 + l) \text{ if } l > \frac{\alpha}{1-\alpha}(w_M - c_0); \\ (1+\rho)\,l &= \max\left\{l, (2-\alpha)l - \alpha(w_M - c_0)\right\}. \end{aligned} \tag{5}$$

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

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

The husband can only borrow up to a multiple of his own net wealth which is increasing in α, β 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*

$$\phi_1 = \frac{(2-\beta R)\widetilde{R}}{\theta_M(1-\beta)R}, \tag{7}$$

where

$$\widetilde{R} = \alpha + (1-\alpha)\, R. \tag{8}$$

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:*

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

Cutoff point ϕ_2 is given by:

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

3. *When $w_M/w_F > \phi_2$, the household can achieve the same allocation as before the legal change. Depending on the exact parameter values, he will either find it optimal to stay at the initial allocation, or he will find it optimal to contract 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 αw_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 ratio 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 $\phi_1 < w_M/w_F < \phi_2$, investment net of borrowing will increase 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 and increase investment net of borrowing. 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. There exists a χ such that, if $\chi < w_M/w_F < \phi_2$, $l > l^*$; and, if $\phi_1 < w_M/w_F < \chi$, $l < l^*$.*

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. In addition $y > y^*$ for at least part of the w_M/w_F distribution between ϕ_1 and ϕ_2.*

Intuitively, total debt will fall if the husband's wealth is small relative to the wife's wealth. At that point, the legal 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 the exact 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 1 provides a graphical representation of Lemmas 4-6. The bottom panel of Figure 1 for total investment illustrates the key theoretical prediction that we will be testing in the empirical section of the paper.

In sum, the introduction of the married women property laws forces couple for whom a large share of property is protected to downscale borrowing, and possibly investment. On the other hand, couples for whom only a small share of total assets is protected will want to borrow and invest more after the law passage as the downside protection makes them willing to take on more risk. Note that the predictions of the model would be dramatically different if we had assumed that markets are complete.[11] In that case, households would issue equity like claims to lenders guaranteeing households a minimum level of consumption in the bad state of the world. In this setting, the property laws would not give households additional protection, but they would tighten credit constraints. It is straightforward to show that this effective reduction of the contract space would always lead to a decrease in investments.

4 Data

We link data across four sources: (1) county records of marriages contracted in the South between 1840 and 1850 from familysearch.org; (2) the complete count 1850 federal census from the North Atlantic Population Project; (3) slave schedules from the 1850 federal census from ancestry.com; (4) and a complete index to the 1840 census from familysearch.org. We begin by extracting information from approximately 250,000 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

[10] For instance, if θ_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] See Vig (2013) for a different explanation why increased debtor protection might reduce investment.

obtained this marriage record data, we match it to the census of 1850 and to slave schedules from that year, which list the names of slave owners. The 1850 data contain information on place of residence, birth place, birth year, household composition, occupation, literacy, real estate assets and slave holdings.[12]

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.[13] 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.[14] 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.[15] 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 A1 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

[12] See appendix B for more details about our data sources and linking procedures.

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

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

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

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 use information on the implied age at marriage and discard potential matches with highly improbable ages. We assume that our unique matches are all true, and we compute $Pr(A = a|T)$, which is the probability that a man's age at marriage is equal to a given that a link is true; we do the same thing for women. Then, for each potential non-unique match, we compute a weight π, which is equal to the probability that each match is true given the implied age at marriage of the husband and wife using Bayes rule. For a marriage record with K potential matches, we compute $p_k = \frac{\pi_k}{\sum_{l=1}^{K} \pi_l}$, and define a match as "true" if $p_k \geq 0.95$. This raises our overall match rate by almost 5 percentage points, to just over 20%.

The validity of this procedure depends on the accuracy of our unique matches. Table A2 and Figure A1 suggest 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 A2 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 A1 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" would be typically 9 years younger for individuals married in 1840 compared with those married in 1849. In the top two panels of Figure A1, 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.[16] In our matched data, the distribution of age at marriage looks very similar for men married in 1840

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

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 A1.

The final 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 slave holdings. Specifically, each 1840 census record is taken at the household level, and contains 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 slave wealth at the household level as the number of enslaved persons residing there, multiplied by the average slave price in 1840, which was $377 (Carter et al 2006). 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 household slave wealth 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. We discuss the properties of this imputed measure of pre-marital wealth in appendix B.

Table 2 contains summary statistics for our matched data. We can match approximately 50,000 couples between marriage records and the 1850 census. Of these, we can determine slave ownership status using the 1850 slave schedules in 75% of cases. 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 76%, using the method described above. Thus, approximately 40% of all couples linked from our marriage records to the 1850 census appear in our core sample.[17]

5 Empirical Approach

5.1 Specifications and hypotheses

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 and slave 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" (Ruggles et al 2010).

[17] We show in the appendix that the main results are robust to relaxing some of these sample restrictions.

In addition, we observe each individual's slave holdings. We multiply the number of slaves each household owns by the average slave value in 1850 of \$377, which was the average slave price in 1850 (Carter et al 2006). We interpret the value of real estate and slaves 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. We also have variation in the fraction of familial assets – if any– that are protected, generated by variation in the fraction of assets owned by the wife. This essentially gives us a triple difference specification. Thus, we explore the effects of these laws on family assets by estimating the following equation by OLS:

$$\begin{aligned}\log(1 + I_{i,j,s,t}) = \alpha + \beta LAW_{s,t} + \psi_1 \log W_{i,1840} + \psi_2 \log W_{j,1840} + \delta_1 \log W_{i,1840} \times LAW_{s,t} \\ + \delta_2 \log W_{j,1840} \times LAW_{s,t} + \gamma_1 X_i + \gamma_2 X_j + \tau_t + \sigma_s + u_{i,j,s,t}\end{aligned} \tag{11}$$

Here, $I_{i,j,t,s}$ is the value of real estate and slaves belonging to man i and woman j, who were married in year t in state s. For many households we observe zero investment and for our OLS estimates we add \$1 to all investment in order for the log to be defined. The variable $LAW_{s,t}$ is 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. Interactions between $LAW_{s,t}$ and $\log W_{i,1840}$ and $\log W_{j,1840}$ will capture heterogeneity in the effect of the law, which we expect will depend on the difference between husband's and wife's pre-marriage assets. In some specifications we interact $LAW_{s,t}$ with $\log[W_{i,1840}/W_{j,1840}]$ instead. The vectors X_i and X_j are individual characteristics of man i and woman j, respectively, including literacy, age fixed effects, and birthplace fixed effects; τ_t is a marriage year fixed effect, and σ_s is a marriage state fixed effect. We impose that couples be resident in their state of marriage, as there is ambiguity about which state's laws apply if a couple lives in a different state than the state of marriage.

A complication is that around 45% of our couples report zero real estate and slave assets in 1850. As such, we have a censored measure of investment in 1850. To deal with this, we also estimate the above regression as a Tobit, in which observations with $I_{i,j,t,s} = 0$ 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 men's wealth ($W_{i,1840}$) and decreasing in women's wealth ($W_{j,1840}$), keeping partner's wealth, ($W_{j,1840}$ and $W_{i,1840}$, respectively), constant. Property laws also lead to a reallocation of $W_{j,1840}$ to investment, which tends to increase investment after the law. In addition, if $W_{i,1840}$ is relatively large, the passage of a property law leads to an increase in borrowing, and thus an even greater increase in investment. If $W_{j,1840}$ is relatively large, 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 $\hat{\delta}_1 > 0$ and $\hat{\delta}_2 < 0$. We normalize our variables in such a way that estimate $\hat{\beta}$ will reflect the impact of the law on couples in which husbands and wives have equal wealth.

In addition to total investment in real estate and slaves we also look at the composition of investment, in particular the share of slave holdings in total assets. Wright (1986) and Kilbourne (1995) argue that since slaves could be easily moved and used for different tasks, they were superior to land as a form of collateral. We would therefore expect credit constrained households to shift their assets towards more slave holdings, as this would have facilitated access to credit. Specifically we run the following regression:

$$\begin{aligned}\log(S_{i,j,s,t}/I_{i,j,s,t}) = \alpha + \beta LAW_{s,t} + \psi_1 \log W_{i,1840} + \psi_2 \log W_{j,1840} + \delta_1 \log W_{i,1840} \times LAW_{s,t} \\ + \delta_2 \log W_{j,1840} \times LAW_{s,t} + \gamma_1 X_i + \gamma_2 X_j + \tau_t + \sigma_s + u_{i,j,s,t}\end{aligned} \quad (12)$$

where $S_{i,j,s,t}$ is the value of a couple's slave holdings in 1850. We would expect to find that the more credit constrained households would hold more slaves, i.e. $\widehat{\delta}_1 < 0$ and $\widehat{\delta}_2 > 0$. We run this regression only for couples who reported to own real estate or slaves in the 1850 census.

5.2 Results

Figure 2 displays these results graphically using binscatters. Panel A shows that, keeping a wife's family wealth constant, an increase in husband's family wealth tends to lead to more investment in 1850. Consistent with the simple model we wrote down, this sensitivity is stronger for couples married after the law change. Panel B shows the reverse for wife's family wealth. Panel C summarizes this information by looking at the log-difference between husband's and wife's wealth. The relation between 1850 investment and the difference in spousal wealth is virtually flat for couples married before a law change, but strongly positive for couples married after the introduction of a

Married Women Property Law. Panel D shows that including additional controls does not change these conclusions.

Tables 3 and 4 report the OLS and Tobit estimates of equation (11). Odd numbered columns include $\log W_{i,1840} \times LAW_{s,t}$ and $\log W_{j,1840} \times LAW_{s,t}$ separately; even numbered columns include $\log[W_{i,1840}/W_{j,1840}] \times LAW_{s,t}$. All estimates include state and year-of-marriage fixed effects. Going from columns (1)-(2) to (5)-(6), we include additional controls. In columns (3) and (4) we include age-at-marriage, state-of-birth and literacy fixed effects. We also control for the commonness of family names. As we explain in the data appendix, error in the measurement of a person's premarital wealth is positively correlated with the commonness of his or her surname. To ensure that this does not affect our results, we calculate the prevalence of husbands' and wives' family names in their state of birth in 1840. We then divide husbands and wives in 10 bins where the first bin includes the rarest family names and the tenth bin the most common ones. We include bin fixed effects effects for both men and women; estimates therefore capture the effect within groups of people whose family name is more or less equally prevalent in the population.[18] Finally, in columns (5) and (6) we include a state specific time-trend estimated on the time of marriage. This way we control for state-specific changes over time. For example, suppose that for a certain state the wealth of married couples is increasing over time due to improving macro-economic conditions, such that a married couple in 1849 is on average richer than a couple married in 1841. Further suppose that this state introduced a Married Women Property Law some time between 1841 and 1849. In that case, we would mechanically find that couples married after a law change have more property in the 1850 census. As long as these macro-economic developments can be captured by a linear trend, a state-specific linear time trend should control for this. We explicitly control for a number of potentially important macroeconomic conditions in the next section.

Again, results are consistent with the predictions from our simple model. First, the interaction terms indicate that investment for couples who got married after the passing of the property laws is increasing in the difference between husband's and wife's wealth. Second, coefficient $\hat{\beta}$ is close to zero. This means that for a household where husband's and wife's wealth are approximately equal the law change has no effect. Together, these findings imply that the changing law leads households for whom wife's wealth is relatively important to decrease investment. The reverse is true for households with relatively rich husbands. The economic magnitude of the interaction

[18] In the appendix, we also present results in which we overweight observations with uncommon names, and in which we omit observations with common names from the sample. Our results are robust to these tests.

effects is considerable. All (continuous) independent variables are normalized by their own standard deviations. This means that a standard deviation increase in the wealth difference between husband and wife leads to increase in 1850 investment of 6% (OLS) to 12% (Tobit). Adding control variables does not change these results in any meaningful way.

Table 5 takes a closer look at the composition of investment. Consistent with the idea that slaves form a better form of collateral than real estate, we find that households that are more likely to be credit constrained hold more slaves as a fraction of total assets. In particular, keeping wife's wealth constant, we find that households with poorer husbands hold relatively more slaves. We don't find the opposite pattern for women: keeping husband's wealth equal, households with rich women do not hold more slaves. An explanation for this could be that, due to complications of the law, it proved harder to sell and reinvest a wife's assets than a husband's property.

5.3 Robustness tests

We perform four robustness tests. First, we look at whether possible changes in partner choice after the passing of the marriage laws could affect our results. Second, we look at whether changing bequest behavior on part of a couple's parents can explain our findings. Third, we investigate whether the introduction of state level exemptions during the 1840s might be driving our results. Fourth, we explore whether our results can be explained by state-varying macro conditions, which may have been correlated with the timing of adoption of married women's property laws.

Koudijs and Salisbury (2015) document that the passage of married women's property laws affected the composition of marriage matches. In particular, they find evidence that these laws increased the systematic gains from assortative matching on wealth among couples with relatively richer husbands; however, they lowered the gains from assortative matching among couples with relatively richer wives. If the systematic gains from assortative matching change, this will change the profile of matches that actually occur. In our estimates, we explicitly control for individual pre-marital wealth levels, in addition to a host of other individual characteristics such as age, literacy and place of birth. Pre-marital wealth is based on information from the 1840 census and has common support before and after the passing of the law. This means that including individual wealth levels in the regressions is sufficient to deal with changing spousal wealth pairings caused by the passage of a law. Nevertheless, the paper's estimates are still biased if the average quality of marital matches changes in some unobservable way that is correlated with differences in spousal pre-marital wealth. Suppose that, before the passage of a law, a man would only marry a poorer

woman if the match was highly favorable in some other, unobservable way. Further, suppose that spousal wealth became more valuable to men after the passage of a law, so the same man would require an even higher unobservable match quality in order to marry the poorer woman. In that case, marriages involving relatively rich husbands would have systematically better unobservable qualities after the legal change, and this might explain why they held more assets in 1850.

To explore this possibility directly, we look at two indicators of unobservable match quality: marital separation and fertility. Intuitively, couples that have better unobserved match qualities are less likely to separate. While divorce was uncommon during the 1840s, marital separation was not. Cvercek (2009) estimates that approximately 10% of marriages were "disrupted" during the mid to late 19th century, most often during the first five years of marriage. As such, co-residence in 1850 should be positively correlated with match quality. Fertility, or investment in children, is also commonly used as a measure of match quality.[19] In our case, we can observe two outcomes which are related to match quality: (i) whether or not we are able to link a couple to the census of 1850; (ii) whether or not the couple has children in 1850. We regress indicators for these outcomes on an indicator equal to one if a couple was married after the passage of a law, the difference between the husband's and wife's premarital wealth, and an interaction between these two variables. We present these results in table 6.[20]

We find no evidence that couples with relatively rich husbands are more likely to be linked to the census of 1850 if they are married after the passage of a property law. This is inconsistent with such couples having higher unobserved match quality. A limitation is that we cannot tell exactly why a couple is not linked to the census. In particular, it could be that couples with relatively rich husbands produce more children after the passage of a law, and – although they have higher match qualities – we are no more likely to find them in the 1850 census because of maternal mortality. However, we also find evidence that couples with relatively rich husbands who were married after the passage of a law are less likely to have children, conditional on being linked to the 1850 census. This is conditional on years of marriage, and omits couples who had been married for less than one year in 1850, or who were married when the wife was over the age of 40. Taken together, we

[19] Several papers, such as Stevenson (2007), interpret children as an investment in a marriage, and consider the impact of changing divorce laws on fertility and other marital investments. An implication is that couples in higher quality marriages should make greater investments in these marriages, such as children.

[20] When we look at the impact of property laws and premarital wealth on the probability of being matched to the 1850 census, we define premarital wealth for a person with surname i married in state s as mean slaveholdings among families with surname i in state s. In our baseline estimates, we match to the 1840 census using state of birth rather than state of marriage, which we believe is the more appropriate measure; however, we do not know state of birth for couples who we could not find in the 1850 census. Fortunately, the two measures are very highly correlated.

interpret this to mean that changes in unobservable match quality cannot explain our results.

Next, we investigate whether differences in 1850 real estate and slave holdings are actually the result of changes in bequest behavior on the part of couples' parents. For this to explain the baseline results in Tables 3 and 4, we would need that parents start to bequeath less to their daughters and more to their sons after the passing of the law – possibly in response to the fact that assets in the hands of married daughters are less valuable, as they cannot be used as collateral anymore. The first thing to note is that this not an obvious outcome. For example, in 1846 the Alabama legislature argued that the passing of a marriage law did not only protect a woman against a husband's insolvency, but also against his "intemperance or improvidence".[21] If parents valued this protection, they might have become less reluctant to bequeath assets to their daughters.

We can test for this more formally in the following way, starting with the the 1840 census. For each surname in each state, we calculate the mean fraction of children in households with that surname that are male ($\%ChildrenMale_{j,1840}$). For a wife with maiden name j, this is a measure of the fraction of her siblings that are male. This is a useful metric because it captures a family's scope for shifting bequests away from daughters and toward sons. We test whether there is any interaction between household asset holdings in the 1850 census, $\%ChildrenMale_{j,1840}$, and $LAW_{s,t}$. Specifically we estimate the following regression:

$$\begin{aligned}\log(1+I_{i,j,s,t}) = \alpha &+ \beta LAW_{s,t} + \psi_1 \log W_{i,1840} + \psi_2 \log W_{j,1840} \\ &+ \psi_3 \%ChildrenMale_{j,1840} + \psi_4 \%ChildrenMale_{j,1840} \times LAW_{s,t} \\ &+ \delta_1 \log W_{i,1840} \times LAW_{s,t} + \delta_2 \log W_{j,1840} \times LAW_{s,t} \\ &+ \delta_3 \log W_{i,1840} \times \%ChildrenMale_{j,1840} \\ &+ \delta_4 \log W_{i,1840} \times \%ChildrenMale_{j,1840} \times LAW_{s,t} \\ &+ \gamma_1 X_i + \gamma_2 X_j + \tau_t + \sigma_s + u_{i,j,s,t}\end{aligned} \tag{13}$$

If parents typically favored bequests to sons over daughters before the passage of a law, we should expect to find $\delta_3 < 0$. The coefficient δ_4 measures to what extent this changed after the legal change. If if our baseline results are driven by changing bequest behavior, we would expect that

[21] Similarly, 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).

$\widehat{\delta}_4 < 0$. Put another way, we should only expect a law to decrease investment for wealthier women *with brothers* if the results are being driven by parents shifting bequests from daughters to sons.

Table 7 presents the results. The coefficient $\widehat{\delta}_3$ is negative and significant, indicating that families with more sons bequeathed less wealth to their daughters. This effect is undone after the law change: coefficient $\widehat{\delta}_4$ is positive and significant. In other words, the apparent preference to convey wealth to sons disappears. This is likely a response to the fact that wealth conveyed to a daughter is now better protected against a husband's "improvidence". The implication of this finding is that changing bequest behavior cannot account for our baseline results: rather, it seems to work in the opposite direction. The legal change seems to favor bequests to women, and we would therefore expect the interaction between a wife's familial wealth and the Post Law dummy to be positive, not negative. This suggests that the baseline results in Tables 3 and 4 are actually a lower bound on the effect of increased bankruptcy protection on investment.

We look at the impact of the introduction of bankruptcy exemptions at the state level (see footnote 6, on p. 8). For each couple we determine the level of state exemptions in the year of marriage based on the information provided by Farnam (1938) and Coleman (1974). The idea is that material investment decisions might be made around the time of marriage, and that the exemption level could matter for this decision. Table 8 shows that exemption levels at time of marriage are negatively and significantly correlated with household investment in 1850, and they interact negatively (if at all) with the difference between husband's log wealth and wife's log wealth. Without a better understanding of the process underlying the introduction of exemptions it is hard make causal inferences though. What is important for this paper is that the interaction effect between the Post Law dummy and the difference in spousal wealth is unaffected by the inclusion of state exemption levels (compare Table 8 with the coefficients in Tables 3 and 4).

Finally, we address the possibility that the timing of the enactment of a married women's property law may be correlated with the state's economic performance in the aftermath of the 1837 Crisis, and this may bias our results. First of all, we should note that we consider this possibility very unlikely. If we were relying exclusively on cross-state variation in protection, then the endogeneity of laws would be a first order concern. However, because these laws apply only to newlyweds, we have variation in protection within a state *in 1850*. If states passed property laws because of economic distress, then we should expect to see fewer assets held by *all* couples residing in a state that has passed a law, not just couples married after the passage of a law. Granted, it is possible that couples make important investment decisions at the time of marriage, which

depend on macro conditions, so couples who were married in different economic climates may fare differently later on. Still, this should affect all couples married in the same year equally: there is no reason for the effect of macroeconomic conditions on investment to be contingent on the fraction of household wealth owned by the husband or wife. In this sense, our triple difference specification is especially useful.

Still, we test whether or not our results are affected by economic performance after the Crisis of 1837. As discussed earlier, the main driver of this crisis was a drop in cotton prices, which precipitated a drop in slave prices. So, states that relied more heavily on cotton and slaves should have fared worst. In figure A4, we plot Kaplan-Meier survival estimates, which capture the probability of not having passed a property law in each year. We estimate these separately for states with "high" and "low" cotton intensity – measured as the ratio of pounds of cotton picked in 1840 per white population – and for states with "high" and "low" slave intensity – measured as the ratio of slaves per white population in 1840. Some cotton- and slave-intensive states passed laws early on (Florida, Mississippi, Alabama), but other states with low cotton and slave intensity did too (Maryland, Kentucky). Moreover, low cotton- and slave-intensity states passed laws in 1849 and 1850 (North Carolina, Tennessee) while states with higher cotton and slave intensities (Georgia, South Carolina) did not. To explicitly test whether or not this affects our results, we control for annual cotton and slave prices, interacted with state fixed effects; in addition, we control for state-level cotton and slave intensity according to the 1840 census, interacted with year fixed effects. These results are presented in table 9. Our results are not at all sensitive to these controls.

6 Conclusion

In this paper, we study the impact of the introduction of Married Women Property Laws in the U.S. South in the 1840s on household investment. These laws gave households downside protection in an environment that lacked virtually any other form of bankruptcy relief. We find that the introduction of the marriage laws increased household 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. All in all, the results in this paper confirm that any sort of bankruptcy relief trades off protection

against credit constraints; which of the two dominates depends crucially on the fraction of assets that is protected. A limited amount of relief seems sufficient to increase households' demand for borrowing and investing, while at the same time keeping access to credit unimpeded.

Our major finding – that bankruptcy protection only increases investment when a modest fraction of total assets is protected – is not surprising. The pioneering work of Gropp et al (1997) comes to largely the same conclusion, finding that protection only increases borrowing for ex ante richer households. We are able to show that this finding holds true in an environment with little to no additional debtor protection, which is not obvious. We are also able address nagging concerns about causality which plague this literature. To date, microeconometric studies of the impacts of bankruptcy protection have relied on cross-state variation in homestead exemption limits. Identification in this literature is threatened by the possibility that the enactment of exemption limits is endogenous to other important state characteristics. Crucially, our identification strategy allows us to exploit variation in protection within a state at a given point in time. Moreover, we are able to exploit variation in the degree of protection within a state in a given year, *conditional on* total family wealth. This allows us to cleanly distinguish "fraction of assets protected" from "level of total assets." As a result, we are able to conclude with unprecedented certainty that bankruptcy laws that protect a modest fraction of total assets stimulate investment, while laws that protect a large fraction of total assets have the inverse effect.

References

[1] Atack, Jeremy and Fred Bateman (1992). "Matchmaker, Matchmaker, Make Me a Match: A General Personal Computer-Based Matching Program for Historical Research." *Historical Methods.* 25(2):53-65.

[2] Athreya, Kartik B. (2002). "Welfare implications of the Bankruptcy Reform Act of 1999". *Journal of Monetary Economics* 49: 1567-1595.

[3] Auslander, Mark (2011). *The Accidental Slave owner: Revisiting a Myth of Race and Finding an American Family*, University of Georgia Press, Athens

[4] Berger, Allen N., Geraldo Cerqueiro and Maria Fabiana Penas (2011). "Does Debtor Protection Really Protect Debtors? Evidence from the Small Business Credit Market", *Journal of Banking & Finance* 35: 1843-1857.

[5] Brown, Allison. E. (2006). "In Defense of Normalcy: The Financial and Legal Statuses of Widows in Antebellum Fayette County, Tennessee", working paper

[6] Carter, Susan B et al (2006). *Historical Statistics of the United States from Colonial Times to Present.* New York: Cambridge University Press.

[7] Chatterjee, Satyajit, Dean Corbae, Makoto Nakajima and Jose-Victor Rios-Rull (2007), "A Quantitative Theory of Unsecured Consumer Credit with Risk of Default", *Econometrica* 75(6): 1525-1589.

[8] Cerqueiro, Geraldo, Deepak Hegde, Maria Fabiana Penas, and Robert Seamans (2014). "Debtor Rights, Credit Supply, and Innovation." TILEC Discussion Paper no. 2014-011.

[9] Cerqueiro, Geraldo and Maria Fabiana Penas (2011). "How Does Personal Bankruptcy Law Affect Start-ups?" European Banking Center Discussion Paper no. 2011-029.

[10] Chused, Richard (1983). "Married Women's Property Law: 1800-1850." *Georgetown Law Journal.* 71(2): 1359-1425.

[11] Coleman, Peter J. (1974). *Debtors and Creditors in America. Insolvency, Imprisonment for Debt and Bankruptcy; 1607-1900.* Madison: State Historical Society of Wisconsin.

[12] Cvrcek, Tomas (2009). "When Harry Left Sally: A New Estimate of Marital Disruption in the U.S., 1860-1948." *Demographic Research.* 21(24): 719-758.

[13] Davila, Eduardo (2015), "Using Elasticities to Derive Optimal Bankruptcy Exemptions", working paper

[14] Doepke, Matthias and Michele Tertilt (2009). "Women's Liberation: What's in it for Men?" *Quarterly Journal of Economics.* 124(4): 1541-1591.

[15] Dubey, Pradeep, John Geanakoplos, and Martin Shubik (2005), "Default and Punishment in General Equilibrium", *Econometrica* 73(1): 1-37.

[16] Fan, Wei and Michelle J. White (2003). "Personal Bankruptcy and the Level of Entrepreneurial Activity." *Journal of Law and Economics.* 46(2): 543-567.

[17] Farnam, Henry W. (1938). *Chapters in the History of Social Legislation in the United States to 1860.* Washington: Carnegie Institution.

[18] Fernandez, Raquel (2014). "Women's Rights and Development." *Journal of Economic Growth.* 19: 37-80.

[19] Ferrie, Joseph P. (1996). "A New Sample of Americans Linked from the 1850 Public Use Micro Sample of the Federal Census of Population to the 1860 Federal Census Manuscript Schedules." *Historical Methods.* 29: 141- 156.

[20] Geddes, Rick, Dean Lueck, and Sharon Tennyson (2012). "Human Capital Acquisition and the Expansion of Women's Economic Rights." *Journal of Law and Economics.* 55(4): 839-867.

[21] Geddes, Rick and Dean Lueck (2002). "The Gains from Self-Ownership and the Expansion of Women's Rights." *American Economic Review.* 92(4): 1079-1092.

[22] Goodman, Paul (1993). 'The Emergence of Homestead Exemptions in the United States: Accommodation and Resistance to the Market Revolution', 1840-1880. *Journal of American History* 80-2, p. 470-498.

[23] Gikandi, Simon (2011). *Slavery and the Culture of Taste*, Princeton University Press

[24] Gropp, Reint, John Karl Scholz, and Michelle J. White (1997). "Personal Bankruptcy and Credit Supply and Demand." *Quarterly Journal of Economics.* 112(1): 217-251.

[25] Haines, Michael R., and Inter-university Consortium for Political and Social Research (2010). Historical, Demographic, Economic, and Social Data: The United States, 1790-2002 [Computer file]. ICPSR02896-v3. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2010-05-21. doi:10.3886/ICPSR02896

[26] Hamilton, Gillian (1999). "Property Rights and Transaction Costs in Marriage: Evidence from Prenuptial Contracts." *Journal of Economic History.* 59(1): 68-103.

[27] Inwood, Kris and Sarah Van Sligtenhorst (2004). "The Social Consequences of Legal Reform: Women and Property in a Canadian Community." *Continuity and Change.* 19(1): 165-197.

[28] Kahn, B. Zorina (1996). "Married Women's Property Laws and Female Commercial Activity." *Journal of Economic History.* 56(2): 356-388.

[29] Kelly, John F. (1882). *A Treatise on the Law of Contracts of Married Women.* Jersey City: D. Linn & Co.

[30] Kilbourne, Jr., Richard Holcombe (1995). *Debt, Investment, Slaves, Credit Relations in East Feliciana Parish, Louisiana, 1825 - 1885.* Tuscaloosa: The University of Alabama Press

[31] Koudijs, Peter and Laura Salisbury (2015). "Marrying for Money: Evidence from Changes in Marital Property Laws in the American South, 1840-1850." Working Paper.

[32] Lilienfeld-Toal, Ulf, Dilip Mookherjee and Sujata Visaria (2012), "The Distributive Impact of Reforms in Credit Enforcement: Evidence from Indian Debt Recovery Tribunals." *Econometrica.* 80(2): 497-558.

[33] Livshits, Igor, James MacGee and Michele Tertilt (2007), "Consumer Bankruptcy: A Fresh Start", *American Economic Review* 97(1): 402-418.

[34] Livshits, Igor (2014), "Recent Developments in Consumer Credit and Default Literature", working paper

[35] McGrane, Reginald C. (1924). *The Panic of 1837: Some Financial Problems of the Jacksonian Era.* Chicago.

[36] Ruggles, Steven, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. (2010) *Integrated Public Use Microdata Series: Version 5.0* [Machine-readable database]. Minneapolis: University of Minnesota.

[37] Salmon, Marylynn (1982). "Women and Property in South Carolina: The Evidence from Marriage Settlements, 1730-1830." *William and Mary Quarterly.* 39(4): 655-85.

[38] Shammas, Carole, Marylynn Salmon and Michel Dalin (1987), *Inheritance in America from Colonial Times to the Present*, Rutgers University Press, New Brunswick.

[39] Severino, Filipe, Meta Brown and Brandi Coates (2013). "Personal Bankruptcy Protection and Household Debt." Working Paper.

[40] Stevenson, Betsey (2007). "The Impact of Divorce Laws on Marriage-Specific Capital." *Journal of Labor Economics.* 25(1): 75-94.

[41] Temin, Peter (1969), *The Jacksonian Economy*, Norton: NY.

[42] Thompson, Elizabeth L. (2004). *The Reconstruction of Southern Debtors: Bankruptcy after the Civil War. Athens*: The University of Georgia Press

[43] Vig, Vikrant (2013). "Access to Collateral and Corporate Debt Structure: Evidence from a Natural Experiment." *Journal of Finance.* 68(3): 881-928.

[44] Warbasse, Elizabeth (1987). *The Changing Legal Rights of Married Women. 1800-1861.* New York: Garland.

[45] Wallis, John J., "What Caused the Crisis of 1839?", NBER historical paper 133.

[46] Wells, John C. (1878). *A Treatise on the Separate Property of Married Women.* Cincinnati: R. Clarke & Co.

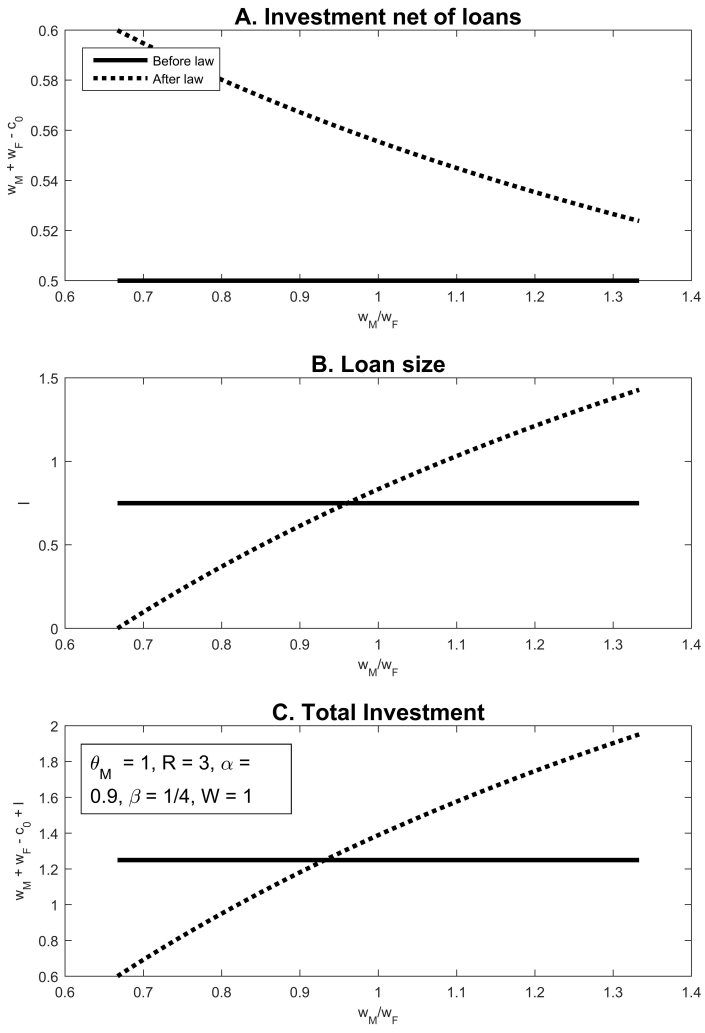
[47] White, Michelle J. (2013), "Corporate and Personal Bankruptcy Law", *Annual Review of Law and Social Science*, 7: 139-64.

[48] Wright, Gavin (1986). *Old South, New South: Revolutions in the Southern Economy Since the Civil War*, Louisiana State University Press

[49] Zame, William R., "Efficiency and the Role of Default When Security Markets are Incomplete", *American Economic Review* 83(5): 1142-1164.

Figures and Tables

Figure 1: Main Results, Model



Note: This figure shows how the law change affects A. Investment net of loans, B. Total debt and C. Total investment for couples with a different distribution of assets between partners, while keeping total wealth constant.

Figure 2: Investment and Protection

Note: This figure explores the relation between the difference in spousal familial wealth and 1850 household investment using binscatters grouping the following x-variables in 25 bins: Panel A: husband' 1840 familial wealth; Panel B: wife's 1840 familial wealth; Panels C and D: the ratio of husband's to wife's 1840 familial wealth. Panels A and B show how much investment changes keeping spousal 1840 familial wealth constant. All panels control for state and year-of-marriage fixed effects. Panel D includes additional controls, see Table 5 for details. All variables are in logs.

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

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

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

Table 2: Summary Statistics, Linked Data

	Mean	SD	Min	Max	N
		Panel A. Sample Restrictions			
Husband & wife born in south	0.88	0.32	0	1	50809
Household linkable to 1850 slave schedules	0.75	0.43	0	1	50809
Resident in marriage state in 1850	0.77	0.42	0	1	50809
Surname/birthplace matched to 1840	0.76	0.43	0	1	44949
Meets all sample restrictions	0.39	0.49	0	1	50809
		Panel B. Sample Characteristics			
Husband's age at marriage	26.99	8.82	15	91	19672
Wife's age at marriage	21.86	6.73	13	78	19672
Log total wealth, 1850	3.82	3.56	0	12.16	19672
Fraction of wealth held in slaves	0.29	0.37	0	1	10980
Nonzero slave wealth, 1850	0.24	0.43	0	1	19672
Zero wealth in 1850	0.44	0.5	0	1	19672
Employed in agriculture	0.67	0.47	0	1	19672
Married after law change	0.20	0.40	0	1	19672
Resident in marriage county in 1850	0.71	0.45	0	1	19672
Groom's 1840 log slave wealth	2.65	1.99	0	10.68	19672
Bride's 1840 log slave wealth	2.69	1.79	0	11.17	19672

Table 3: Effect of Married Women's Property Laws on 1850 Investment - OLS

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var.	log(Gross investment), 1850					
Post Law	-0.025	-0.012	-0.057	-0.045	-0.091	-0.078
	(0.105)	(0.104)	(0.095)	(0.094)	(0.114)	(0.114)
Husband's log(Wealth), 1840	0.061		0.059		0.061	
× Post Law	(0.066)		(0.068)		(0.069)	
Wife's log(Wealth), 1840	-0.204		-0.182		-0.176	
× Post Law	(0.067)***		(0.065)***		(0.066)***	
[Husband's log(W) - Wife's		0.065		0.060		0.059
log(W), 1840] × Post Law		(0.019)***		(0.018)***		(0.018)***
Husband's log(Wealth), 1840	0.523	0.511	0.391	0.381	0.392	0.382
	(0.031)***	(0.030)***	(0.031)***	(0.031)***	(0.031)***	(0.031)***
Wife's log(Wealth), 1840	0.493	0.478	0.388	0.375	0.387	0.376
	(0.028)***	(0.027)***	(0.026)***	(0.026)***	(0.027)***	(0.026)***
Adj-R^2	0.090	0.090	0.186	0.186	0.186	0.186
Obs	19672	19672	19672	19672	19672	19672
State and year-of-marriage FE	Y	Y	Y	Y	Y	Y
Age at marriage FE	N	N	Y	Y	Y	Y
Birthstate and literacy FE	N	N	Y	Y	Y	Y
Frequency names, bin FE	N	N	Y	Y	Y	Y
State specific lin. time trend	N	N	N	N	Y	Y

OLS estimates. *Gross investment*: value of household's real estate and slave holdings in 1850 census, gross of debt. Dependent variable: log(1+ *Gross investment*) . *Husband's/Wife's 1840 wealth:* average log slave wealth (log(# slaves $\times 377 + 1$)) of individuals with the same surname as the husband and wife in their respective states of births in the 1840 census. *Frequency names, bin FE*: we calculate the relative prevalence of husband's and wifes' family names per state. We summarize this information in 10 bins, where bin 1 includes the rarest family names, and bin 10 the most common ones. All (continuous) independent variables are normalized by their standard deviation; reported coefficients therefore indicate by what % gross investment changes in response to a one standard deviation increase in the right hand side variable. All interactions with the 1840 wealth variables are in deviations from the mean. The coefficient on *Post Law* therefore measures the effect of the passage of a Married Woman Property Act on a household with average wealth or average wealth difference. Standard errors (clustered at the state × year-of-marriage level) are reported in parantheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Effect of Married Women's Property Laws on 1850 Investment - Tobit

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var.	log(Gross investment), 1850					
Post Law	0.029	0.039	-0.031	-0.024	-0.181	-0.171
	(0.188)	(0.189)	(0.170)	(0.169)	(0.196)	(0.198)
Husband's log(Wealth), 1840	0.150		0.157		0.151	
× Post Law	(0.112)		(0.113)		(0.116)	
Wife's log(Wealth), 1840	-0.358		-0.316		-0.318	
× Post Law	(0.118)***		(0.113)***		(0.115)***	
[Husband's log(W) - Wife's		0.127		0.120		0.119
log(W), 1840] × Post Law		(0.034)***		(0.032)***		(0.032)***
Husband's log(Wealth), 1840	0.813	0.795	0.572	0.559	0.573	0.559
	(0.057)***	(0.054)***	(0.055)***	(0.053)***	(0.055)***	(0.053)***
Wife's log(Wealth), 1840	0.790	0.768	0.600	0.584	0.601	0.584
	(0.052)***	(0.048)***	(0.047)***	(0.045)***	(0.047)***	(0.045)***
Pseudo-R^2	0.020	0.020	0.046	0.046	0.046	0.046
Obs	19672	19672	19672	19672	19672	19672
State and year-of-marriage FE	Y	Y	Y	Y	Y	Y
Age at marriage FE	N	N	Y	Y	Y	Y
Birthstate and literacy FE	N	N	Y	Y	Y	Y
Frequency names, bin FE	N	N	Y	Y	Y	Y
State specific lin. time trend	N	N	N	N	Y	Y

Tobit estimates. *Gross investment*: value of household's real estate and slave holdings in 1850 census, gross of debt. *Husband's/Wife's 1840 wealth:* average log slave wealth ($\log(\#\text{ slaves} \times 377 + 1)$) of individuals with the same surname as the husband and wife in their respective states of births in the 1840 census. *Frequency names, bin FE*: we calculate the relative prevalence of husband's and wifes' family names per state. We summarize this information in 10 bins, where bin 1 includes the rarest family names, and bin 10 the most common ones. All (continuous) independent variables are normalized by their standard deviation; reported coefficients therefore indicate by what % gross investment changes in response to a one standard deviation increase in the right hand side variable. All interactions with the 1840 wealth variables are in deviations from the mean. The coefficient on *Post Law* therefore measures the effect of the passage of a Married Woman Property Act on a household with average wealth or average wealth difference. Standard errors (clustered at the state × year-of-marriage level) are reported in parantheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Effect of Married Women's Property Laws on 1850 Investment Mix - OLS

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var.	log(Value Slaves) - log(Gross Investment), 1850					
Post Law	0.116	0.116	0.101	0.101	0.131	0.132
	(0.108)	(0.109)	(0.103)	(0.105)	(0.134)	(0.132)
Husband's log(Wealth), 1840	-0.191		-0.171		-0.156	
× Post Law	(0.083)**		(0.079)**		(0.082)*	
Wife's log(Wealth), 1840	-0.014		-0.024		-0.014	
× Post Law	(0.076)		(0.078)		(0.078)	
[Husband's log(W) - Wife's		-0.053		-0.045		-0.043
log(W), 1840] × Post Law		(0.034)		(0.033)		(0.034)
Husband's log(Wealth), 1840	0.477	0.462	0.410	0.396	0.409	0.397
	(0.032)***	(0.031)***	(0.035)***	(0.034)***	(0.035)***	(0.034)***
Wife's log(Wealth), 1840	0.489	0.471	0.447	0.431	0.447	0.432
	(0.030)***	(0.029)***	(0.031)***	(0.030)***	(0.031)***	(0.030)***
Adj-R^2	0.091	0.090	0.121	0.121	0.122	0.122
Obs	10980	10980	10980	10980	10980	10980
State and year-of-marriage FE	Y	Y	Y	Y	Y	Y
Age at marriage FE	N	N	Y	Y	Y	Y
Birthstate and literacy FE	N	N	Y	Y	Y	Y
Frequency names, bin FE	N	N	Y	Y	Y	Y
State specific lin. time trend	N	N	N	N	Y	Y

OLS estimates. *Value slaves*: value of household's slave holdings in 1850 census. *Gross investment*: value of household's real estate and slave holdings in 1850 census, gross of debt. Dependent variable only defined for households with non-zero total investment. *Husband's/Wife's 1840 wealth:* average log slave wealth (log(# slaves $\times 377 + 1$)) of individuals with the same surname as the husband and wife in their respective states of births in the 1840 census. *Frequency names, bin FE*: we calculate the relative prevalence of husband's and wifes' family names per state. We summarize this information in 10 bins, where bin 1 includes the rarest family names, and bin 10 the most common ones. All (continuous) independent variables are normalized by their standard deviation; reported coefficients therefore indicate by what % gross investment changes in response to a one standard deviation increase in the right hand side variable. All interactions with the 1840 wealth variables are in deviations from the mean. The coefficient on *Post Law* therefore measures the effect of the passage of a Married Woman Property Act on a household with average wealth or average wealth difference. Standard errors (clustered at the state × year-of-marriage level) are reported in parantheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Changes in unobservable quality marital matches

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var	= 1 if linked to 1850 census			= 1 if couple has a child		
Post Law	0.011	0.011	0.012	-0.014	-0.014	-0.015
	(0.004)***	(0.004)***	(0.005)**	(0.006)**	(0.006)**	(0.009)*
[Husband's log(W) - Wife's	-0.001	-0.000	-0.000	-0.005	-0.005	-0.005
log(W), 1840] × Post Law	(0.001)	(0.001)	(0.001)	(0.002)*	(0.002)**	(0.002)**
Husband's log(Wealth), 1840	0.002	0.002	0.002	-0.004	-0.003	-0.003
	(0.001)***	(0.001)***	(0.001)***	(0.001)***	(0.001)**	(0.001)**
Wife's log(Wealth), 1840	0.002	0.002	0.002	-0.003	-0.002	-0.002
	(0.001)***	(0.001)***	(0.001)***	(0.001)**	(0.001)*	(0.001)*
Adj-R^2	0.0267	0.0434	0.0436	0.0739	0.114	0.114
Obs	199,459	199,459	199,459	21,965	21,965	21,965
State and year-of-marriage FE	Y	Y	Y	Y	Y	Y
Age at marriage FE	N/A	N/A	N/A	N	Y	Y
Birthstate and literacy FE	N/A	N/A	N/A	N	Y	Y
Frequency names, bin FE	N	Y	Y	N	Y	Y
State specific lin. time trend	N	N	Y	N	N	Y

Linear probability models. The dependent variable captures if a couple was linked to the 1850 census (implying a smaller likelihood of being separated) or if a couple, conditional on being identified in the 1850 Census, had at least one child. *Husband's/Wife's 1840 wealth:* average log slave wealth ($\log(\#\text{ slaves} \times 377 + 1)$) of individuals with the same surname as the husband and wife in their respective states of births in the 1840 census. In columns (1)-(3), we use state of marriage since state of birth is not available for unlinked observations. *Frequency names, bin FE*: we calculate the relative prevalence of husband's and wifes' family names per state. We summarize this information in 10 bins, where bin 1 includes the rarest family names, and bin 10 the most common ones. All (continuous) independent variables are normalized by their standard deviation; reported coefficients therefore indicate teh change in probability of being linked to the 1850 census or having a child in response to a one standard deviation increase in the right hand side variable. All interactions with the 1840 wealth variables are in deviations from the mean. The coefficient on *Post Law* therefore measures the effect of the passage of a Married Woman Property Act on a household with average wealth or average wealth difference. Standard errors (clustered at the state × year-of-marriage level) are reported in parantheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Effect of Married Women's Property Laws on 1850 Gross Investment - 1840 household sex composition

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var.	log(Gross Investment), 1850					
	OLS			*Tobit*		
Post Law	-0.028	-0.061	-0.081	0.026	-0.035	-0.155
	(0.107)	(0.098)	(0.120)	(0.191)	(0.174)	(0.208)
Husband's log(Wealth), 1840	0.058	0.058	0.061	0.144	0.152	0.148
× Post Law	(0.067)	(0.069)	(0.069)	(0.112)	(0.114)	(0.116)
Wife's log(Wealth), 1840	-0.206	-0.188	-0.182	-0.359	-0.321	-0.322
× Post Law	(0.069)***	(0.067)***	(0.068)***	(0.120)***	(0.116)***	(0.118)***
% Children male, 1840, wife	-0.023	-0.022	-0.022	-0.042	-0.043	-0.043
× Wife's log(Wealth)	(0.017)	(0.016)	(0.016)	(0.029)	(0.027)	(0.027)
___ × ___ × Post Law	0.062	0.056	0.056	0.112	0.106	0.105
	(0.028)**	(0.031)*	(0.031)*	(0.046)**	(0.050)**	(0.050)**
Husband's log(Wealth), 1840	0.521	0.390	0.390	0.806	0.568	0.568
	(0.032)***	(0.032)***	(0.032)***	(0.058)***	(0.056)***	(0.055)***
Wife's log(Wealth), 1840	0.501	0.393	0.393	0.797	0.604	0.604
	(0.027)***	(0.026)***	(0.026)***	(0.049)***	(0.045)***	(0.045)***
% Children male, 1840, wife	-0.001	0.010	0.009	0.005	0.031	0.030
	(0.028)	(0.027)	(0.027)	(0.050)	(0.047)	(0.047)
% Children male, 1840, wife	-0.077	-0.064	-0.062	-0.156	-0.138	-0.134
× Post Law	(0.046)*	(0.045)	(0.046)	(0.084)*	(0.082)*	(0.082)
Adj-R^2 / Pseudo-R^2	0.090	0.187	0.187	0.020	0.046	0.046
Obs	19541	19541	19541	19541	19541	19541
State and year-of-marriage FE	Y	Y	Y	Y	Y	Y
Age at marriage FE	N	Y	Y	N	Y	Y
Birthstate and literacy FE	N	Y	Y	N	Y	Y
Frequency names, bin FE	N	Y	Y	N	Y	Y
State specific lin. time trend	N	N	Y	N	N	Y

Gross investment: value of household's real estate and slave holdings in 1850 census, gross of debt. When estimating OLS the dependent variable is log(1+ *Gross investment*). *Husband's/Wife's 1840 wealth:* average log slave wealth (log(# slaves $\times 377 + 1$)) of individuals with the same surname as the husband and wife in their respective states of births in the 1840 census. *% Children male, 1840, wife*: percentage of children that are male in households with the same surname as the wife in her state of birth in the 1840 census. *Frequency names, bin FE*: we calculate the relative prevalence of husband's and wifes' family names per state. We summarize this information in 10 bins, where bin 1 includes the rarest family names, and bin 10 the most common ones. All (continuous) independent variables are normalized by their standard deviation; reported coefficients therefore indicate by what % gross investment changes in response to a one standard deviation increase in the right hand side variable. All interactions with the 1840 wealth variables are in deviations from the mean. The coefficient on *Post Law* therefore measures the effect of the passage of a Married Woman Property Act on a household with average wealth or average wealth difference. Standard errors (clustered at the state × year-of-marriage level) are reported in parantheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Effect of Married Women's Property Laws on 1850 Gross Investment - Exemption levels

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var.	log(Gross Investment), 1850					
	OLS			*Tobit*		
Post Law	-0.015	-0.049	-0.084	0.035	-0.030	-0.186
	(0.105)	(0.094)	(0.114)	(0.189)	(0.170)	(0.196)
[Husband's log(W) - Wife's	0.078	0.071	0.070	0.152	0.142	0.141
log(W), 1840] × Post Law	(0.020)***	(0.020)***	(0.020)***	(0.037)***	(0.037)***	(0.037)***
State exemption level	-0.243	-0.264	-0.297	-0.244	-0.279	-0.480
	(0.063)***	(0.058)***	(0.080)***	(0.095)**	(0.094)***	(0.127)***
___ × [Husband's log(W)	-0.012	-0.011	-0.010	-0.023	-0.021	-0.021
- Wife's log(W), 1840]	(0.008)	(0.007)	(0.007)	(0.013)*	(0.012)*	(0.012)*
Husband's log(Wealth), 1840	0.518	0.387	0.387	0.804	0.567	0.566
	(0.031)***	(0.031)***	(0.031)***	(0.054)***	(0.054)***	(0.054)***
Wife's log(Wealth), 1840	0.473	0.371	0.371	0.754	0.572	0.572
	(0.028)***	(0.026)***	(0.026)***	(0.049)***	(0.045)***	(0.045)***
Adj-R^2 / Pseudo-R^2	0.090	0.186	0.186	0.020	0.046	0.046
Obs	19672	19672	19672	19672	19672	19672
State and year-of-marriage FE	Y	Y	Y	Y	Y	Y
Age at marriage FE	N	Y	Y	N	Y	Y
Birthstate and literacy FE	N	Y	Y	N	Y	Y
Frequency names, bin FE	N	Y	Y	N	Y	Y
State specific lin. time trend	N	N	Y	N	N	Y

Gross investment: value of household's real estate and slave holdings in 1850 census, gross of debt. When estimating OLS the dependent variable is log(1+ *Gross investment*). *Husband's/Wife's 1840 wealth:* average log slave wealth (log(# slaves $\times 377 + 1$)) of individuals with the same surname as the husband and wife in their respective states of births in the 1840 census. *State exemption level*: $ amount exempt in case of insolvency. *Frequency names, bin FE*: we calculate the relative prevalence of husband's and wifes' family names per state. We summarize this information in 10 bins, where bin 1 includes the rarest family names, and bin 10 the most common ones. All (continuous) independent variables are normalized by their standard deviation; reported coefficients therefore indicate by what % gross investment changes in response to a one standard deviation increase in the right hand side variable. All interactions with the 1840 wealth variables are in deviations from the mean. The coefficient on *Post Law* therefore measures the effect of the passage of a Married Woman Property Act on a household with average wealth or average wealth difference. Standard errors (clustered at the state × year-of-marriage level) are reported in parantheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Effect of Married Women's Property Laws on 1850 Gross Investment - Macro Conditions

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var.	log(Gross Investment), 1850					
		OLS			*Tobit*	
Post Law	0.023	-0.168	-0.005	0.027	-0.311	-0.008
	(0.119)	(0.126)	(0.135)	(0.205)	(0.215)	(0.237)
[Husband's log(W) - Wife's	0.067	0.059	0.068	0.138	0.119	0.138
log(W), 1840] × Post Law	(0.019)***	(0.018)***	(0.019)***	(0.035)***	(0.032)***	(0.035)***
Husband's log(Wealth), 1840	0.380	0.381	0.380	0.554	0.554	0.553
	(0.031)***	(0.031)***	(0.031)***	(0.054)***	(0.053)***	(0.054)***
Wife's log(Wealth), 1840	0.376	0.374	0.375	0.584	0.579	0.584
	(0.026)***	(0.026)***	(0.026)***	(0.045)***	(0.045)***	(0.045)***
Adj-R^2 / Pseudo-R^2	0.184	0.186	0.184	0.046	0.046	0.046
Obs	19372	19672	19372	19372	19672	19372
1840 Cotton & Slave Intensity × Year FEs	Y	N	Y	Y	N	Y
Annual Cotton & Slave Prices × State FEs	N	Y	Y	N	Y	Y
State and year-of-marriage FE	Y	Y	Y	Y	Y	Y
Age at marriage FE	Y	Y	Y	Y	Y	Y
Birthstate and literacy FE	Y	Y	Y	Y	Y	Y
Frequency names, bin FE	Y	Y	Y	Y	Y	Y
State specific lin. time trend	Y	Y	Y	Y	Y	Y

Gross investment: value of household's real estate and slave holdings in 1850 census, gross of debt. When estimating OLS the dependent variable is log(1+ *Gross investment*). *Husband's/Wife's 1840 wealth:* average log slave wealth (log(# slaves $\times 377 + 1$)) of individuals with the same surname as the husband and wife in their respective states of births in the 1840 census. *Cotton & slave prices*: price per pound raw cotton; average price per slave; from HSUS. *Cotton & slave intensity*: pounds of cotton picked per white population in 1840, state level; number of slaves per white population, state level; from Haines & ICPSR *Frequency names, bin FE*: we calculate the relative prevalence of husband's and wifes' family names per state. We summarize this information in 10 bins, where bin 1 includes the rarest family names, and bin 10 the most common ones. All (continuous) independent variables are normalized by their standard deviation; reported coefficients therefore indicate by what % gross investment changes in response to a one standard deviation increase in the right hand side variable. All interactions with the 1840 wealth variables are in deviations from the mean. Interactions with state exemption levels are deviations from zero. The coefficient on *Post Law* therefore measures the effect of the passage of a Married Woman Property Act on a household with average wealth or average wealth difference. Standard errors (clustered at the state × year-of-marriage level) are reported in parantheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A Theory Appendix

Proof. of Proposition 1.

The husband solves the following maximization problem:

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

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 α of the husband's investment, $w_M - c_0 + l$ plus fraction β of the surplus that the household can generate by providing its human capital, $(1-\alpha)R$. This implies that

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

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 ϕ_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 ϕ_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:

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

subject to (6). Since $[\alpha + (1-\alpha)R] > (2-\alpha)$, 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:

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

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

$$\begin{aligned} \frac{R(2\alpha-1) - 2\alpha}{2(1-\alpha)(R-1)} (w_M + w_F - c_0) &< \frac{\alpha}{1-\alpha} (w_M - c_0); \\ w_M/w_F &> \phi_2, \end{aligned}$$

where ϕ_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

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

The assumption from (1) guarantees that

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

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

$$c_0^* - c_0 = -\underbrace{\frac{\theta_M}{(1+\theta_M)(2+\theta_M)}}_{\delta_1} w_M + \underbrace{\frac{(2+\theta_M)(1-\beta)R - (1+\theta_M)(2-\beta R)\widetilde{R}}{(1+\theta_M)(2+\theta_M)(1-\beta)R}}_{\delta_2} w_F.$$

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 ϕ_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 $R/2 > \widetilde{R}$.

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

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

$$\frac{(2+\theta_M)(1-\beta)R-(1+\theta_M)(2-\beta R)\widetilde{R}}{1-\beta} > 2\alpha\left(R-1\right)+\theta_M\left[R\left(2\alpha-1\right)-2\alpha\right].$$

   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:

$$\begin{aligned} l-l^* &= \frac{\theta_m}{1-\alpha}\underbrace{\left\{\frac{2\alpha+(1-\alpha)\beta R}{(2+\theta_m)(2-\beta R)}-\frac{R(2\alpha-1)-2\alpha}{2(1+\theta_m)(R-1)}\right\}}_{\gamma_1}w_M \\ &\quad -\frac{1}{1-\alpha}\underbrace{\left\{\frac{\widetilde{R}\left[2\alpha+(1-\alpha)\beta R\right]}{(2+\theta_m)\left(1-\beta\right)R}+\frac{\theta_m\left[R(2\alpha-1)-2\alpha\right]}{2(1+\theta_m)(R-1)}\right\}}_{\gamma_2}w_F. \end{aligned}$$

   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:

$$\begin{aligned} y-y^* &= \frac{1}{1-\alpha}\underbrace{\left\{\frac{2\theta_M}{(2+\theta_m)(2-\beta R)}-\frac{\theta_M(R-2)}{2(1+\theta_m)(R-1)}\right\}}_{\zeta_1}w_M \\ &\quad +\frac{1}{1-\alpha}\underbrace{\left\{\frac{(2+\theta_M)(1-\alpha)(1-\beta)R-2\widetilde{R}}{(2+\theta_m)\left(1-\beta\right)R}-\frac{\theta_m(R-2)}{2(1+\theta_m)(R-1)}\right\}}_{\zeta_2}w_F. \end{aligned}$$

Then, by the chain rule for partial derivatives

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

for the derivative to be positive we need that

$$\frac{w_M}{w_F}>\frac{\zeta_2}{\zeta_1}. \tag{14}$$

It turns out that $\zeta_2/\zeta_1 < \phi_1$ and condition (14) never binds for $\phi_1 < w_M/w_F < \phi_2$. To see this, start with the expressions for ζ_1 and ζ_2; after some straightforward algebra we arrive at

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

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

$$\begin{aligned}
&(1+\theta_M)\left\{8(R-1)\widetilde{R}-(2-\beta R)(R-2)\widetilde{R}+(1-\beta)R\left[\theta_M\underbrace{\left[R(2\alpha-1)-2\alpha\right]}_{>0}-2(1-\alpha)(R-1)\right]\right\}\\
>\;&(2-\beta R)(R-2)\widetilde{R}+(1-\beta)R\left[2(1-\alpha)(R-1)-\theta_M\underbrace{\left[R(2\alpha-1)-2\alpha\right]}_{>0}\right],
\end{aligned}$$

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

$$\widetilde{R}\left[4(R-1)-(2-\beta R)(R-2)\right]>2(1-\alpha)(R-1)(1-\beta)R.$$

This always holds, since

$$\widetilde{R}>(1-\alpha)(R-1)=\widetilde{R}-1,$$

and

$$\begin{aligned}
4(R-1) &> 2(1-\beta R)+(2-\beta R)(R-2)\\
&\Leftrightarrow\quad \beta R^2>0.
\end{aligned}$$

■

B Data Appendix

1850 Census

We use the full count 1850 Federal Census from the North Atlantic Population Project (NAPP). This dataset is largely clean; however, the 1850 census does no identify married couples, so we need to assign marital status to individuals based on their placement in the household. We use a rule that is very similar to the rule that IPUMS uses: we define a married couple to be a man (15+) and a woman (13+) with the same surname, entered adjacent to one another in the census manuscript,

with the man no more than 25 years older or less than 10 years younger than the woman. We also eliminate potential siblings, defined as being part of descending list of similarly aged individuals with the same surname. We test our assignment rule by verifying that it broadly assigns the same marital status to couples in the 1850 1% samples as the IPUMS procedure: our procedure and the IPUMS procedure assign the same marital status to 97% of southern women in the 1850 1% sample.

We then link the 1850 population census to the 1850 slave schedules, which come from the genealogical website familysearch.org (Baker and Salisbury 2015). The slave schedules contain information on the name of the slave owner and the county of residence. We match the 1850 slave schedules to the population census by county of residence (since the slave census and population census were taken at the same time) and first surname initial. We then evaluate the similarity of potential matches – both first and last names– using the Jaro-Winkler algorithm (Ruggles et al 2010), and we define a string as "matched" if it scores 0.9 (out of 1) or higher. We break ties in favor of exact surname matches, head of household status, and gender (if only the first initial of the first name is given in the slave schedules). We define a household as having zero slave wealth if they do not match to anyone in the 1850 slave schedules, and we assign slaveholdings from the 1850 slave schedules to all households that uniquely match to the slave schedules. In about 25% of cases, we are unable to determine the slaveowner status of a household – because of multiple matches that cannot be refined using our algorithm – so these households drop from our core sample. To test that our results are not biased by error in linkages between the population census and the slave schedules, we estimate a version of our model using real estate wealth alone; these results are presented in tables A4 and A5. We plot the distributions of our 1850 investment measures in Figure A2.

Marriage Records

We obtain a list of marriages contracted in 9 southern states from the genealogical website familysearch.org. These records are available for a subset of counties; details about the coverage of these records are given in table A3. These records give us information about the bride's full name, the groom's full name, the county of marriage, and the date of marriage. We link these records to the census of 1850 by groom's first name, groom's last name, and bride's last name. We drop observations in which only the groom's or bride's first initial is provided, as we feel this provides insufficient information to make quality links.

We first merge our marriage records with the 1850 census by: (1) Groom's first initial; (2) Bride's first initial; (3) NYSIIS code for groom's surname (Atack and Bateman 1992). Because we only have information on names with which to narrow our list of potential matches, it is necessary to impose some filter prior to evaluating the similarity of our matches. We then calculate a measure of string similarity between names in our marriage records and names in the census using the Jaro-Winkler algorithm. We define two strings as "matched" if they score 0.8 (out of 1) or higher, or if only a first initial is recorded in the census and first initials match. We keep unique matches only, and then we drop matches with only first initials reported in the census. We are aiming for accuracy at the expense of sample size. This procedure yields numerous multiple matches – see table A1 for details. So, we narrow down our matches using information on implied ages at marriage, using the procedure described in the main body of the text. Evidence on the accuracy of our unique matches can be found in table A2 and figure A1.

1840 Census

We compute a measure of "familial assets" by averaging log slave wealth by state and surname, and we link this to our matched sample by state of birth and surname (using the maiden name from marriage records for women). So, the pre-marital wealth of person i with surname j who was born in state s will be:

$$\hat{w}_{i,j,s} = \frac{1}{K_{j,s}} \sum_{k=1}^{K_{j,s}} w_{k,j,s}$$

Here, $K_{j,s}$ is the number of households in state s headed by someone with the surname j. We match the spelling of surnames exactly. We are able to obtain an estimate of pre-marital wealth for 76% of our linked sample, among couples in which both the husband and wife are southern born.

One thing to point out is that the distribution of $\hat{w}_{i,j,s}$ depends on $K_{j,s}$, with more common names having a more compressed distribution than uncommon names. In our linked sample, $\hat{w}_{i,j,s}$ among surnames occurring only has a mean of 2.8 and a standard deviation of 3.7; conversely, $\hat{w}_{i,j,s}$ among surnames occuring 2-100 times has a mean of 2.8 and a standard deviation of only 1.9. Among names occurring 100 times or more, $\hat{w}_{i,j,s}$ has a mean of 2.7 and a standard deviation of 0.75. The median man in the sample has a name occurring 15 times, while the median woman in the sample has a name occurring 28 times. This difference is due to the fact that we are performing links using men's surnames, which biases us against finding men with common surnames.

Given these distributional features of our measure of wealth, it is worth mentioning some of

its properties. Suppose there is no linkage error. So, if we observe person i with surname j from state s, we assume that this person's family is one of the $K_{j,s}$ households used to compute $\hat{w}_{i,j,s}$. Suppose also that there is error in the measurement of "true" log wealth (w^*), so that measured wealth (w) is given by:

$$w = w^* + \epsilon$$

First, notice that our wealth measure is "unbiased" in the sense that it does not differ systematically from w_i^*:

$$E[w_i^* - \hat{w}_{i,j,k}] = E[w^*] - E[w^*] = 0$$

We also derive the expected squared deviation of w_i^* from $\hat{w}_{i,j,k}$, which captures the variance of our wealth measure, and is a function of $K_{j,s}$ and other unknown parameters. Suppose that the variance of ϵ is σ_ϵ^2, and the variance of w^* for state s and surname j is $\sigma_{j,s}^2$. Further, suppose that the covariance of $w_{i,j,s}^*$ and $w_{k,j,s}^*$ is $\rho_{j,s}$, for any i, k. Then, it can be shown that:

$$E[w_i^* - \hat{w}_{i,j,k}]^2 = \sigma_\epsilon^2 + \frac{K_{j,s} - 1}{K_{j,s}}(\sigma_{j,s}^2 - \rho_{j,s})$$

After some algebra, this follows from the assumption that ϵ is IID with mean zero, and that $w_{i,j,s}$ is one of the $K_{j,s}$ observations used to compute $\hat{w}_{i,j,k}$. Intuitively, this is increasing in the variance of the measurement error term, increasing in the dispersion of w^* within surname-state groups, and decreasing in the covariance of w^* within surname-state groups.

Given that we have no information about these parameters, it is difficult for us to address this empirically. However, notice also that the overall variance of measurement error is increasing in $K_{j,s}$. This is because, as $K_{j,s}$ increases, $\hat{w}_{i,j,s}$ starts to converge to the median w. So, the expected squared deviation of w^* from $\hat{w}_{i,j,s}$ starts to grow. We can address this by overweighting observations with less common names. Specifically, we compute the following weight for men from state s with surname j and women from state t with surname k:

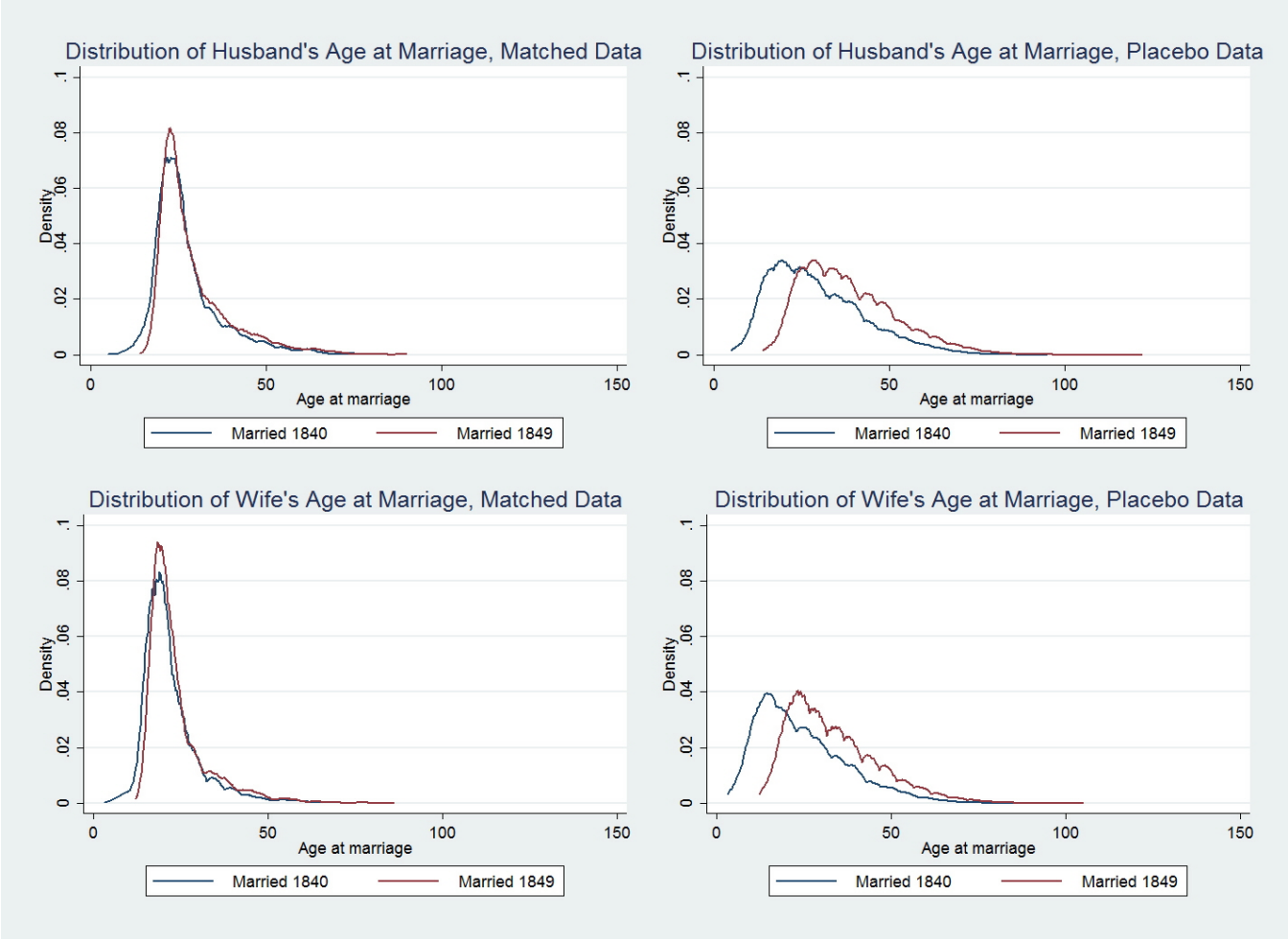
$$\lambda_{js,kt} = \left(1 + \frac{K_{j,s} - 1}{K_{j,s}}\right)^{-1/2} \left(1 + \frac{K_{k,t} - 1}{K_{k,t}}\right)^{-1/2}$$

This is an attempt at weighting by the inverse of the geometric mean of the variance of measurement error associated with the husband's and wife's wealth. We show these results in tables A4 and A5. We also test the sensitivity of our results to dropping households with husbands and wives who have

common names. In figure A3, we plot the OLS coefficient on $LAW_{s,t} \times [\log W_{i,1840} - \log W_{j,1840}]$ obtained by estimating our preferred specification (column (6) of table 3, omitting households in which the husband or wife has a name occurring more than a certain threshold of times. The threshold varies from 3 to 100; we have fewer than 500 observations in which both the husband and wife have a name occurring only once or twice. Our estimate does not appear to be sensitive to omitting frequently occurring names; however, when we restrict the sample to names occurring fewer than 8 times, our sample shrinks to fewer than 2,000 observations, so our estimate becomes quite volatile.

C Additional Tables and Figures

Figure A1: Accuracy of Matches



Note: This figure evaluates the accuracy of our matches using the implied age at marriage. The left panels present distributions of the age-at-marriage of husbands and wifes in our matched sample who got married in 1840 and 1849. The right panels present ages-at-marriage for randomly matched persons in the 1850 census, assuming they were either married in 1840 or 1849.

Figure A2: Distributions of Wealth Variables

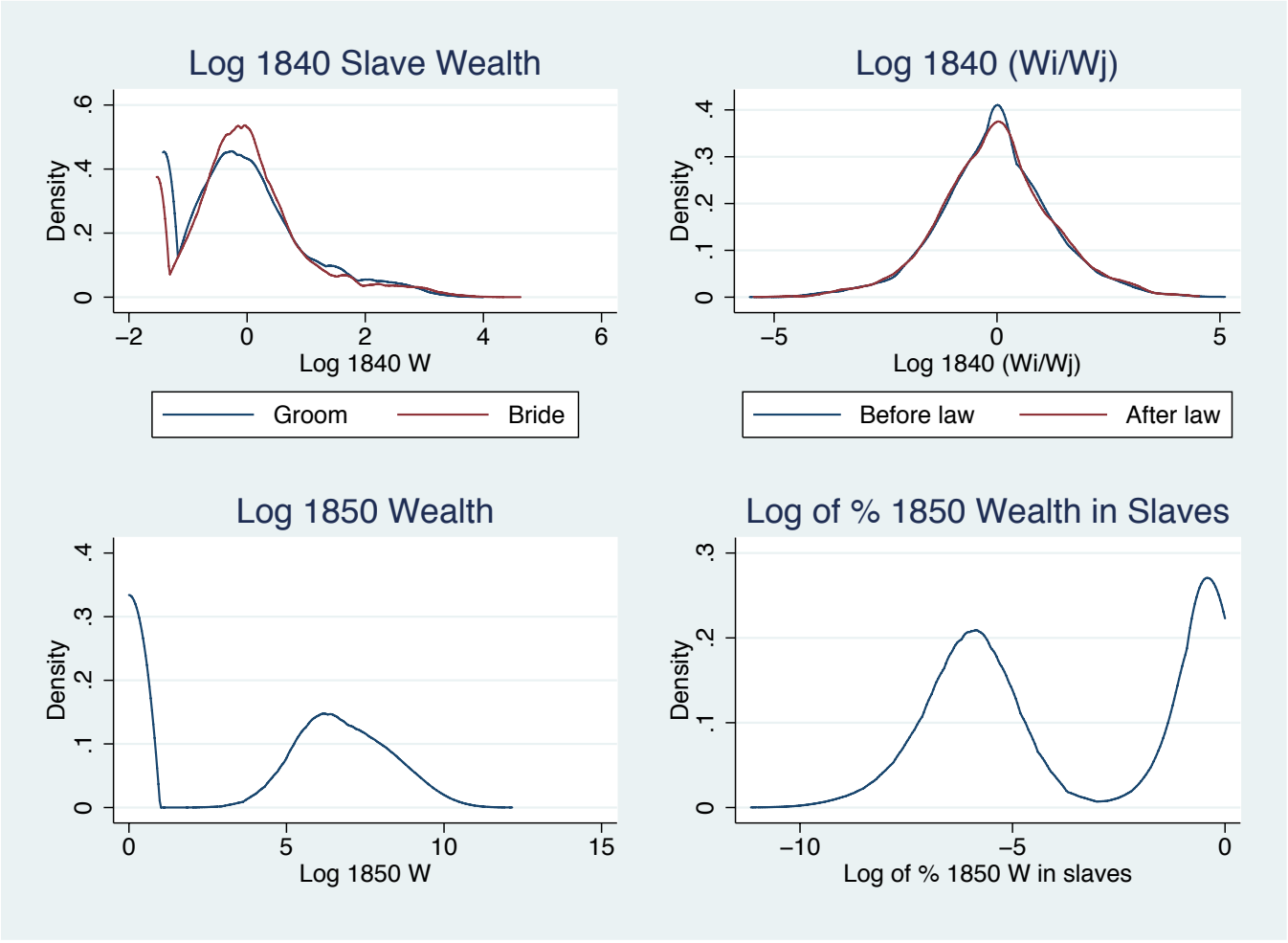
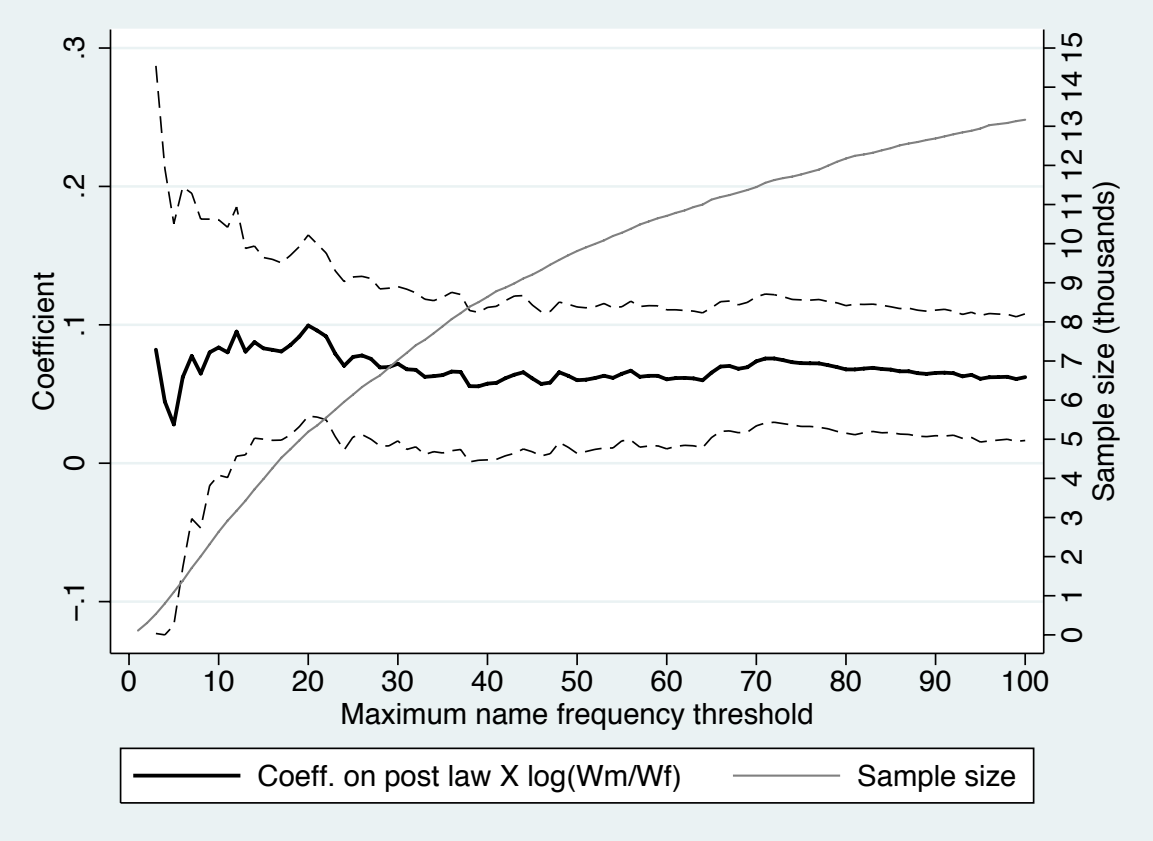
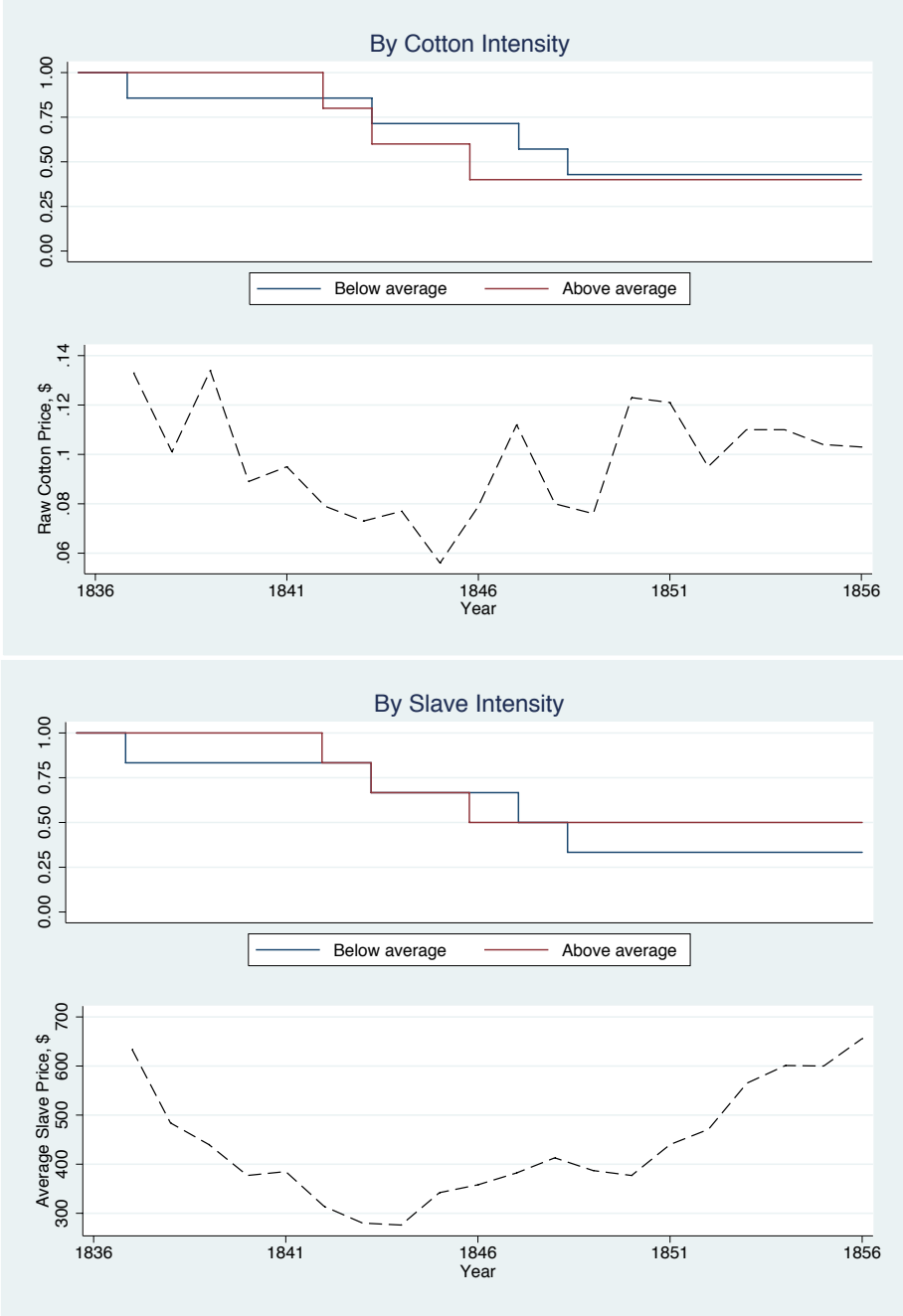


Figure A3: Sensitivity to Omitting Common Names



Note: Plots the OLS coefficient on $LAW_{s,t} \times [\log W_{i,1840} - \log W_{j,1840}]$, and 95% confidence intervals, using the specification from column (6) in table 3. At each point, the coefficient and confidence interval are estimated under the restriction that neither the husband or wife has a name occurring more than the threshold indicated on the horizontal axis. The sample size associated with each sample restriction is also plotted.

Figure A4: Kaplan-Meier Survival Estimates – Passage of New Laws



Note: Cotton intensity is defined as the ratio of pounds of cotton picked in 1840 to the white population, at the state level (Haines & ICPSR 2010). Slave intensity is the ratio of slaves to whites in 1840, at the state level ((Haines & ICPSR 2010). Cotton and slave prices are taken from the Historical Statistics of the United States (Carter et al 2006). Sample includes all southern states (adding Maryland and South Carolina to the base sample). Kaplan-Meier survival estimates represent the probability of note having passed a property law in each year, subdivided by cotton and slave intensity.

Table A1: Rates of Matching to 1850 Census by State

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

Table A2: Accuracy of Matched Data

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

Table A3: Coverage of 1840 Marriage Record Data

State	# Marriage records	% counties with marriage record data	% Population living in counties with marriage record data
Alabama	27,934	0.67	0.75
Arkansas	7,186	0.49	0.56
Georgia	32,756	0.74	0.78
Kentucky	50,507	0.64	0.71
Louisiana	5,277	0.19	0.37
Mississippi	12,838	0.47	0.65
North Carolina	27,564	0.73	0.76
Tennessee	95,371	0.65	0.72
Virginia	31,292	0.48	0.54

Table A4: Additional Robustness Tests – OLS

	(1)	(2)	(3)	(4)	(5)
Dep. var.	log(Gross investment), 1850				
Post Law	-0.108	-0.123	-0.083	-0.078	-0.078
	(0.104)	(0.088)	(0.115)	(0.116)	(0.115)
[Husband's log(W) - Wife's	0.040	0.053	0.052	0.059	0.059
log(W), 1840] × Post Law	(0.019)**	(0.019)***	(0.019)***	(0.024)**	(0.024)**
Husband's log(Wealth), 1840	0.273	0.369	0.368	0.382	0.382
	(0.020)***	(0.028)***	(0.031)***	(0.027)***	(0.027)***
Wife's log(Wealth), 1840	0.240	0.327	0.356	0.376	0.376
	(0.022)***	(0.024)***	(0.027)***	(0.027)***	(0.028)***
Adj-R^2	0.149	0.180	0.186	0.186	0.186
Obs	27090	24933	19672	19672	19672
State and year-of-marriage FE	Y	Y	Y	Y	Y
Age at marriage FE	Y	Y	Y	Y	Y
Birthstate and literacy FE	Y	Y	Y	Y	Y
Frequency names, bin FE	Y	Y	Y	Y	Y
State specific lin. time trend	Y	Y	Y	Y	Y

Gross investment: value of household's real estate and slave holdings in 1850 census, gross of debt. When estimating OLS the dependent variable is log(1+ *Gross investment*). *Husband's/Wife's 1840 wealth:* average log slave wealth (log(# slaves $\times 377 + 1$)) of individuals with the same surname as the husband and wife in their respective states of births in the 1840 census. *State exemption level*: $ amount exempt in case of insolvency. *Frequency names, bin FE*: we calculate the relative prevalence of husband's and wifes' family names per state. We summarize this information in 10 bins, where bin 1 includes the rarest family names, and bin 10 the most common ones. All (continuous) independent variables are normalized by their standard deviation; reported coefficients therefore indicate by what % gross investment changes in response to a one standard deviation increase in the right hand side variable. All interactions with the 1840 wealth variables are in deviations from the mean. The coefficient on *Post Law* therefore measures the effect of the passage of a Married Woman Property Act on a household with average wealth or average wealth difference. *Sample Restrictions:* Column (1) defines gross investment as real estate assets only, relaxing the constraint the observations be linkable to the 1850 slave schedules. Column (2) relaxes the constraint that couples be resident in their state of marriage in 1850, and adds state of residence fixed effects. Column (3) weights the regression by $\lambda_{js,kt}$, as defined in appendix B. Column (4) clusters standard errors by groom's surname. Column (5) clusters standard errors by bride's maiden name. Standard errors (default clustering at the state × year-of-marriage level) are reported in parantheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Additional Robustness Tests – Tobit

	(1)	(2)	(3)	(4)	(5)
Dep. var.	log(Gross investment), 1850				
Post Law	-0.219	-0.216	-0.187	-0.171	-0.171
	(0.190)	(0.159)	(0.612)	(0.216)	(0.214)
[Husband's log(W) - Wife's	0.086	0.105	0.107	0.119	0.119
log(W), 1840] × Post Law	(0.035)**	(0.033)***	(0.054)**	(0.041)***	(0.041)***
Husband's log(Wealth), 1840	0.431	0.539	0.527	0.556	0.556
	(0.040)***	(0.048)***	(0.082)***	(0.045)***	(0.044)***
Wife's log(Wealth), 1840	0.398	0.503	0.542	0.580	0.580
	(0.042)***	(0.040)***	(0.074)***	(0.045)***	(0.046)***
Pseudo-R^2	27090	24933	19672	19672	19672
Obs	0.038	0.044	0.046	0.046	0.046
State and year-of-marriage FE	Y	Y	Y	Y	Y
Age at marriage FE	Y	Y	Y	Y	Y
Birthstate and literacy FE	Y	Y	Y	Y	Y
Frequency names, bin FE	Y	Y	Y	Y	Y
State specific lin. time trend	Y	Y	Y	Y	Y

Gross investment: value of household's real estate and slave holdings in 1850 census, gross of debt. When estimating OLS the dependent variable is log(1+ *Gross investment*). *Husband's/Wife's 1840 wealth:* average log slave wealth (log(# slaves $\times 377 + 1$)) of individuals with the same surname as the husband and wife in their respective states of births in the 1840 census. *State exemption level*: $ amount exempt in case of insolvency. *Frequency names, bin FE*: we calculate the relative prevalence of husband's and wifes' family names per state. We summarize this information in 10 bins, where bin 1 includes the rarest family names, and bin 10 the most common ones. All (continuous) independent variables are normalized by their standard deviation; reported coefficients therefore indicate by what % gross investment changes in response to a one standard deviation increase in the right hand side variable. All interactions with the 1840 wealth variables are in deviations from the mean. The coefficient on *Post Law* therefore measures the effect of the passage of a Married Woman Property Act on a household with average wealth or average wealth difference. *Sample Restrictions:* Column (1) defines gross investment as real estate assets only, relaxing the constraint the observations be linkable to the 1850 slave schedules. Column (2) relaxes the constraint that couples be resident in their state of marriage in 1850, and adds state of residence fixed effects. Column (3) weights the regression by $\lambda_{js,kt}$, as defined in appendix B. Column (4) clusters standard errors by groom's surname-state of birth. Column (5) clusters standard errors by bride's maiden name-state of birth. Standard errors (default clustering at the state × year-of-marriage level) are reported in parantheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.