Betting the House: Asset Accumulation, Marriage Patterns, and Divorce Law

Jeanne Lafortune* and Corinne Low†

December 31, 2016

There has been a tremendous erosion of marriage over the last 50 years, in particular among the young, poor, and non-white. This paper proposes an explanation for this phenomena, arguing that as divorce has become easier, and non-marital contracts better substitutes for marriage, marriage has retained value for individuals with more assets. We first show that marriage probabilities are larger for those with more assets, even when controlling for a number of other characteristics such as income, education, race, etc. We then provide a model with some key features to explain that pattern: couples can make an investment towards a public good but this imposes a future cost in terms of income for the partner who makes the investment; marriage allows the partner who makes that investment to obtain some "insurance" but that depends on the level of assets their partner brings to the relationship. Therefore, our model predicts lower marriage rates among those who expect comparatively lower transfers from accumulated assets than from ongoing flows. Young people, who may be on steep income trajectories, are likely to only delay marriage until a time when income will have risen, and therefore when asset accumulation will be larger. Individuals with permanently low assets are, however, more likely to forgo marriage entirely, and choose non-marital childbearing arrangements. We show that the predictions from our model are upheld using state-level variation in non-marital contracting, divorce laws, and housing prices. Increases in ease of non-marital contracting, through in-hospital paternity establishment, reduces marriage only for those with low levels of assets. Easier divorce, through the transition to no-fault divorce has the same effect: less marriage for low asset individuals, which is counteracted by asset-holding. Finally, using variation in housing prices, and thus the ability to accumulate assets, based on time of marriage, we show that lower assets marriages are less durable and have lower levels of child investment, aligning with our model's mechanism for lower marriage rates among low-asset individuals.

*Pontificia Universidad Catolica de Chile, jlafortune@uc.cl
†University of Pennsylvania, The Wharton School, corlow@wharton.upenn.edu

1 Introduction

Marriage rates are decreasing all around the world but there also seems to be a growing gap between socio-economic groups in terms of marriage rates. Why would some groups find marriage less and less attractive? What are the benefits that marriage grants that are not offered by cohabitation? This paper hypothesizes that marriage offers a way for couples to share the costs of the investments, allowing higher levels of investments in the public good, particularly for couples with higher levels of assets. This is because these couples would be able to use their assets as an "insurance" for the partner who is paying the investment cost in case of separation. We show that this type of framework has clear predictions that we test empirically using various sources of US data.

The fact that children of married parents receive more investment than from those of unmarried parents has been relatively well established. However, it is unclear whether this comes from the fact that parents who care more about their children select more into marriage or whether marriage in itself makes parents invest more in their children. This paper first proposes a theoretical model that suggests that asset-holding at the crux of that issue. In particular, the fact that divorce tends to treat assets differently than income provides individuals in marriage "insurance" not held by unmarried partners. This makes marriage more attractive to them since they know that because of this insurance, one partner may be able to invest more into children in that type of union, even at the cost of his or her own income, compared to one where marriage is not contracted.

This idea is highly consistent with the suggestion raised by Lundberg and Pollak (2015) that marriage has remained valuable for those seeking to invest highly in children, because marriage provides a framework to contract over such long-term investments. However, the source of differentiation here stems not from *desire* to invest in children, but in the *ability* to insure such investments for the partner who makes them, in the case of marriage dissolution. Couples who possess assets have this ability, since assets will be divided at the time of divorce. Couples who have only their earnings cannot insure the spouse who endogenously becomes lower earning through parental investments, and therefore will not be able to harvest this value of marriage, and thus may choose non-marital fertility instead, if it is a good substitute for marriage on dimensions other than asset division.

We first document the stylized facts that higher assets individuals are more likely to marry in the United States than those with less assets. To do so, we use the panel nature of the Survey of Income and Program Participation (SIPP) so show that single individuals who have more assets in the first wave are more likely to marry in the subsequent periods. While assets are clearly correlated with a number of other characteristics, we show that even conditional on confounding factors such as wages, education, etc, we still find a strong pattern among those with more assets.

We then develop a model to try to explain this pattern. Our model is a simple framework where two individuals can decide to either stay single, engage in non-marital fertility or marry. In the last two cases, they must also elect the level of investment they want to make into a public good that can be enjoyed by both partners. The difference between the last two forms of unions is that a woman can extract a higher contribution from her partner in the second case and that marriage may end in divorce while non-marital fertility has a certain outcome. We assume that, in the case of a divorce, assets are divided more equally than income. This allows the partner who makes the investment to obtain some "insurance" which raises her incentive for that investment, making marriage more profitable for the couple.

This model produces a number of predictions. First, couples with a higher assets are more likely to marry, less likely to divorce and have higher child investments. Second, making divorce easier or enforcing non-marital fertility payments more strongly decrease the attractiveness of marriage overall but do so more strongly for individuals with lower levels of assets. A change in divorce laws that reduces the amount of asset sharing will also lead to a decrease in child investment and thus a fall in the attractiveness of marriage, particularly for those with high assets.

We then extend the model to a setting where assets are growing over time and obtain that we may also observe that individuals with more assets or more growth potential delay marriage in order to secure higher investment marriages. Those with lower assets choose non-marital fertility early in life since the returns to waiting are lower for that part of unions.

Having theoretically presented a framework where we can explain why higher assets individuals would marry more, we then explore some of the predictions of that model empirically.

We return to the SIPP and look how in hospital voluntary paternity establishment (IHVPE) legislation made non-marital fertility more similar to marriage in terms of income sharing but not in terms of asset-sharing. We test whether the introduction of these laws, whose timing differed by states, influenced the relationship between assets and marriage. Our model predicts that as non-marital fertility becomes a stronger alternative, the relationship between assets and marriage should strengthen. Our results show that indeed, the introduction of IHVPE policies decreased marriage rates, as in Rossin-Slater (2016), but marriage rates were actually strengthened for those with assets. This indicates that individuals with and without assets may have opposite results to policy changes, since the value of marriage will be impacted differently.

We then look at changes in the ease of divorce. Our model suggests that as divorce becomes easier, the relationship between assets and marriage becomes stronger. To do this, we employ the Panel Study of Income Dynamics (PSID) and study how the pre-marital asset holdings affect the probability of marriage and the interaction of assets with the phasing in of no-fault divorce. No fault divorce decreases marriage rates, but the interaction between no fault divorce and asset-holding is significantly positive.

Finally, we test the models proposed mechanism by examining whether assets holding influence outcomes of marriages using the American Community Surveys (ACS). Since asset holdings at the time of marriage are difficult to measure and potentially endogenous, we use a "shock" to local economies which influence one of the most important asset-holding in the US population, namely houses. We thus contrast the outcomes of marriages of couples who were married at the same time but in states that were facing different housing prices. We assume that when individuals marry at a higher housing price period, their likelihood of owning a home is lower. Our difference-in-difference estimator suggests that, as predicted by the model, households who are more likely to own a home at the time of the marriage (reflected by lower housing prices) are less likely to be divorced by the time of the survey. They are also more likely to invest in their children, as measured by the number of young children in the household and by the decreased probability of grade repeating amongst these children. Finally, we see weak evidence that in households who are more likely to be home owners at the time of the marriage, women are less likely to work while men show the opposite (but not significant) pattern, suggesting that couples are more able to specialize, exactly as predicted by our framework.

This paper relates to the literature on out of wedlock childbearing, the purpose and history of marriage, and changing divorce and child-support policies over time. Many authors have explored the reasons for declining marriage rates, and accompanying increases in non-marital fertility. Akerlof, Yellen, and Katz (1996) provides a simple model where following the introduction of abortion, the expectation of "shotgun" weddings stemming from pregnancy would decline. Mechoulan (2011) links declining marriage rates among black women to black male incarceration. Duncan and Hoffman (1990) introduce a model where marriage-dependent welfare benefits may incentive out-of-wedlock birth, while Rosenzweig (1999) provides empirical support that AFDC benefits are linked to lower marriage rates. Nechyba (2001) provides a model where changing social approval for out-of-wedlock childbearing can result in increasing rates of non-marital fertility even as AFDC benefits fall. Neal (2004) provides a model including unmarried singlehood as a choice.

In terms of the effects of child-support enforcement, most of the existing literature considers its impact on men, and thus that it decreases the appeal of non-marital fertility compared to marriage (Aizer and McLanahan (2006), Tannenbaum (2016)). However, this does not consider that it also makes fertility outside of marriage a better substitute for marriage, providing both some of the costs and some of the benefits. An exception is work by Rossin-Slater (2016), which demonstrates that establishing paternity officially at a time of the child's birth can cause marginal individuals to substitute away from marriage, finding empirically that in-hospital voluntary paternity establishment (IHVPE) both increased investment from unmarried fathers while decreasing marriage, and therefore investment from fathers who would have married.

Finally, in terms of studying the impact of increased ease of divorce, many papers have demonstrated its effects, starting with Friedberg (1998), who shows that unilateral divorce substantially increased divorce rates. Wolfers (2006) demonstrates that in an efficient bargaining model, we may not expect increases in divorce following such a policy change. Voena (2015) provides a model, however, where changes to divorce policy can affect divorce and household divisions, due to an inefficient autarky period prior to divorce.

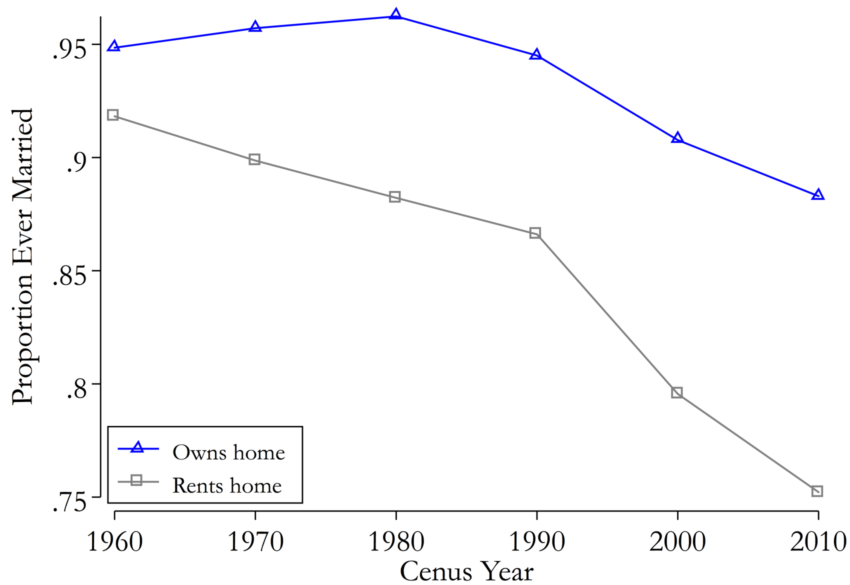
The rest of this paper is organized as followed. In the next section, we present stylized facts highlighting the role that asset holding plays a key role in the recent evolution of marriage trends. Then, in Section 3, we develop a theoretical framework to explain why assets may matter in marriage decisions. Section 4 presents our empirical strategies, data, and results, while the final section concludes.

2 Stylized facts

The decrease in marriage rates has been well documented previously. In the United States, while the fraction of ever married 31-35 year olds was above 90 percent in the 1960 Census, that number had fallen to around 70 percent. What has been less well documented is the relationship between that decrease in marriage propensity and asset ownership. In particular, the Census shows us that the fall in the propensity to marry has been particularly strong for those who are not owning a home at the time of the Census, as seen in Figure 1.

However, this may clearly be due to an inverse relationship: people who marry are more likely to own houses. Thus, we will now use the SIPP data since its panel nature allows us to look at assets ownership when single and the subsequent propensity to marry. The SIPP is ideal for these purposes, because it contains longitudinal data on individuals, including assets, income, and a variety of demographic factors, as well as

Figure 1: Fraction married by home ownership status, by Census year



Source: United States Censuses, 1960-2010.

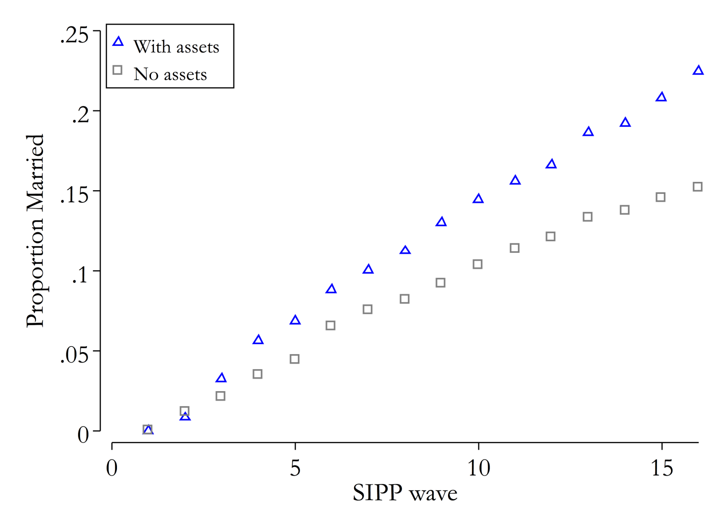
marital status. We assemble all 16 waves of the 2008 SIPP panel, which covers the period from 2008-2012 (each wave representing one quarter). Although the SIPP data contain information on each month, we use only the data from the reporting month, due to well-known issues with "seam bias"—overly serially correlated reports—within each reporting wave.

Starting with individuals who are listed as never married in the first wave and between 21 and 35 years old, we classify them based on *individual* assets (since joint assets are rare for unmarried individuals, and may be co-owned with parents) as either "asset holding" or "non-asset holding." We then track their rates of marriage over the subsequent four year period.

Figure 2 shows that individuals initially unmarried in the 2008 SIPP are much more likely to marry if they have non-zero assets at baseline.

Figure 3 and 4 shows that this relationship holds across education levels and races.

Figure 2: Marriage rates by asset status

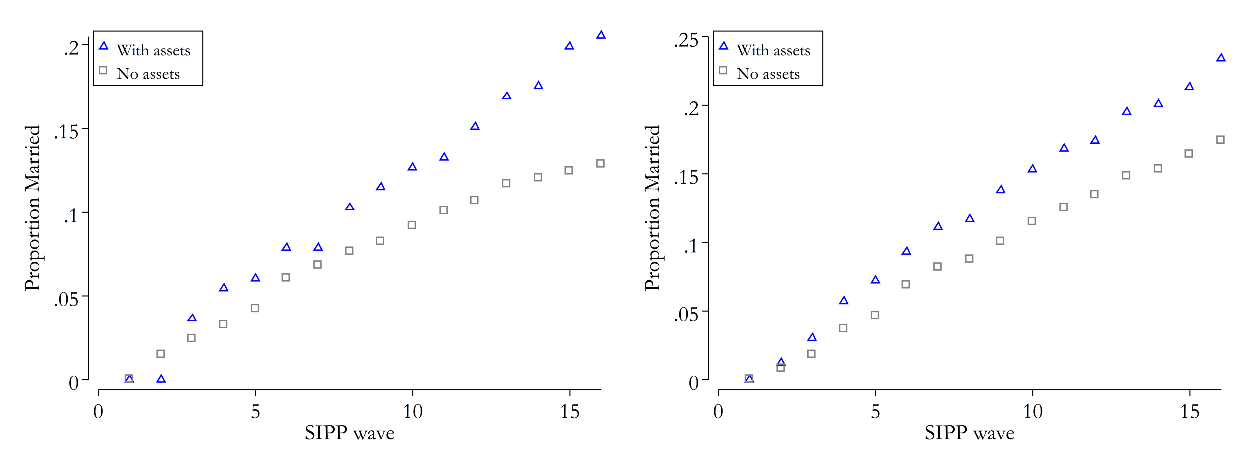


Source: 2008 SIPP. US-born men between 21 and 35 and unmarried at first wave.

Figure 3: Marriage rates by asset status, by education

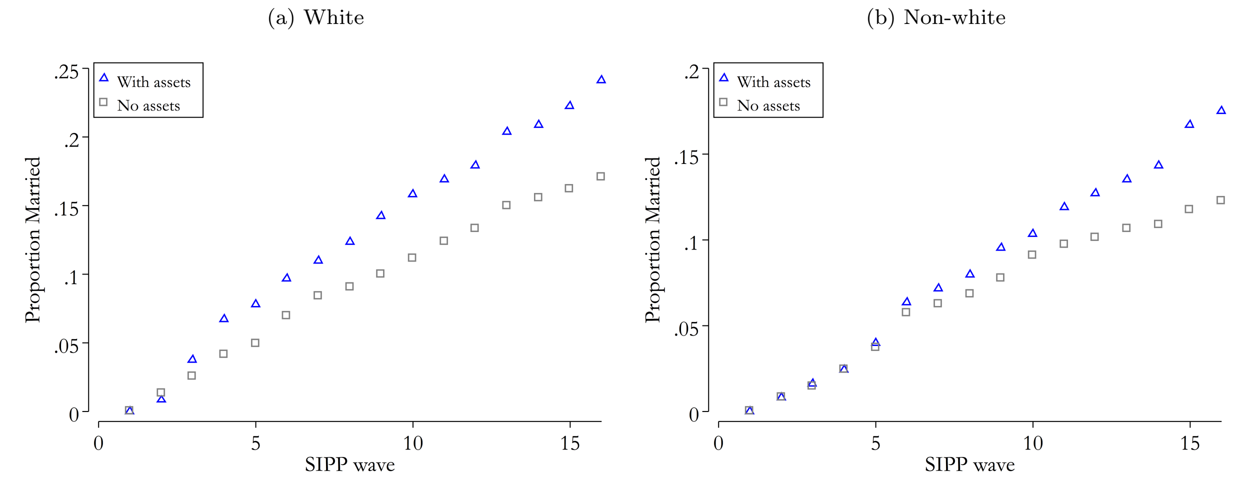
(a) High school or less

(b) Some college or more



Source: 2008 SIPP. US-born men between 21 and 35 and unmarried at first wave.

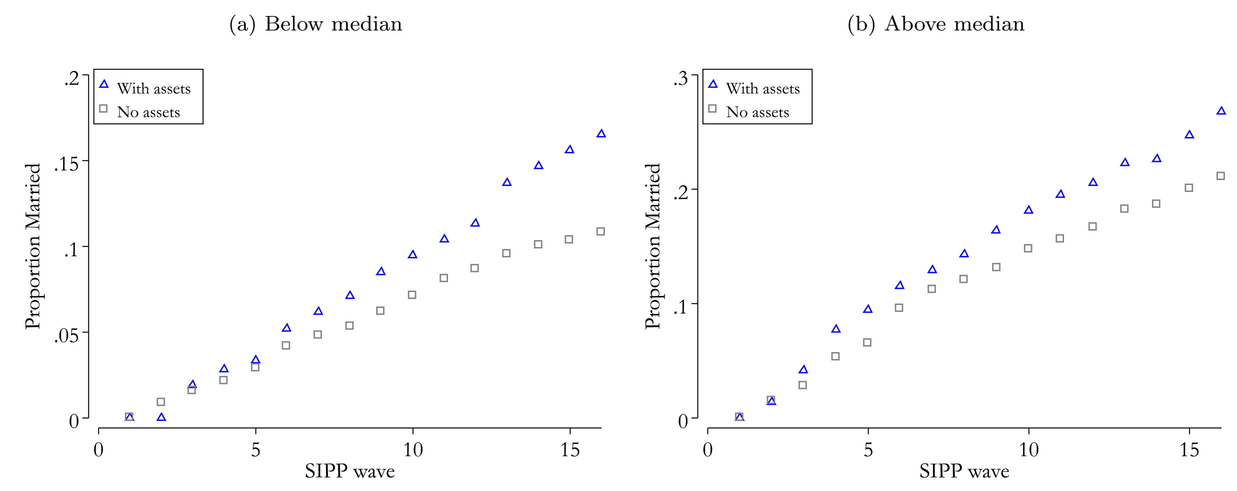
Figure 4: Marriage rates by asset status, by race



Source: 2008 SIPP. US-born men between 21 and 35 and unmarried at first wave.

But are assets just a proxy for general socioeconomic status? Figure 5 shows that this is not the case, as the relationship between assets and marriage rates hold even within income groups.

Figure 5: Marriage rates by asset status, by income level



Source: 2008 SIPP. US-born men between 21 and 35 and unmarried at first wave.

Together, these figures suggest a role for assets in determining the value of marriage, above other characteristics that have been linked to marriage decisions in previous literature.

3 Model

3.1 Set-up

We have a continuum of men m and women w in an economy. All of them have an endowment Ω which is drawn from a distribution $F(\Omega)$ for women and $G(\Omega)$ for men, where the distribution of endowment of men stochastically dominate that of women.

For men, this endowment is divided into a fraction α, which is an asset, and $1-\alpha$ which is a flow of income. Assets can only be consumed in the second period but income is consumed in both periods. Individuals can make a child investment τ. This reduces their second period income (not assets) by τ and increases child quality by $h(\tau)$ where $\tau \in [0,1]$. h is assumed to be an increasing, concave, differentiable function of τ and $h(0)=0$.

Men and women care about their income and a public good, which are children. The quality of that public good depends on the investments that are made in them in the first period and the endowments of both parents. It is assumed that only one parent needs to invest in the child.

3.2 Child investment and divorce selection

Men and women can remain single, in which case they each receive

$$U_i^S = \Omega_i(1+(1-\alpha_i)(1-\tau))$$

Given that they receive no benefit from τ, all singles will set $\tau=0$ and thus their utility will be given by

$$U_j^S = \Omega_j(2-\alpha)$$
$$U_i^S = 2\Omega_i$$

Men and women can also enter into an arrangement of non-marital fertility. In this case, a woman i receives

$$U_i^{NM} = \Omega_i + 2(\Omega_i+\gamma\Omega_j) * h(\tau) - C' + \Omega_i(1-\tau)$$

where C' represents the cost of entering into this type of arrangement and Ω_j is the endowment of her partner. γ represents the fact that a man in that type of arrangement may contribute less than his full endowment to the child.

Her partner j receives utility:

$$U_j^{NM} = \Omega_j(2-\alpha) + 2(\Omega_i+\gamma\Omega_j) * h(\tau) - C'$$

A woman in that type of union will thus invest in a child up to the point where:

$$h'(\tau^{NM}) = \frac{\Omega_i}{2(\Omega_i+\gamma\Omega_j)}$$

Note that the second order condition is satisfied since $h''(\tau) < 0$..

But, note, the socially optimal level of τ would be where:

$$h'(\tau^*) = \frac{\Omega_i}{4(\Omega_i + \gamma\Omega_j)}$$

where $\tau^* > \tau^{NM}$.

Thus, child investment for unmarried couples will increase in father's involvement γ and in his endowment Ω_j. Conditional on the partner's endowment, child investment will also be decreasing in the woman's endowment.

Married individuals get many benefits. First, father's involvement is complete. Second, there are benefits to the child that can be obtained only in marriage, η. However, they face a higher fixed cost to enter into the relationship, $C > C'$, and also face the probability that they will have a bad love shock ϕ in the second period and will want to divorce.

They share resources within marriage with a sharing rule β, which is the fraction that is given to the woman. Assume that $\frac{\Omega_i(1-\tau)}{\Omega_i(1-\tau)+\Omega_j} < \beta < 0.5$, namely that women receive a higher share in marriage than their share of endowments but less than 0.5, since women have always lower endowments than their spouse.

If a married couple divorces, each partner receives half of the joint assets and earns their own income. Define the second period utilities if couples remain married as:

$$u_i^m = \beta(\Omega_i(1-\tau) + \Omega_j(1-\alpha)) + (\Omega_i + \Omega_j) * h(\tau) * (1+\eta) + \beta\alpha\Omega_j + \phi$$

$$u_j^m = (1-\beta)(\Omega_i(1-\tau) + \Omega_j(1-\alpha)) + (\Omega_i + \Omega_j) * h(\tau) * (1+\eta) + (1-\beta)\alpha\Omega_j + \phi$$

and the values if they divorce:

$$u_i^d = \Omega_i(1-\tau) + (\Omega_i + \Omega_j) * h(\tau) + 0.5\alpha\Omega_j - D$$

$$u_j^d = \Omega_j(1-\alpha) + (\Omega_i + \Omega_j) * h(\tau) + 0.5\alpha\Omega_j - D$$

From this, we can see that married couples will divorce (Pareto) when:

$$\phi < \bar{\phi} = -D - (\Omega_i + \Omega_j) * (h(\tau) * \eta)$$

Which means that divorce is more likely when the costs of divorce are lower, when endowments are lower, when the returns to child quality in marriage is lower, and when investment in children is lower.

If we have unilateral divorce, partner j will want to divorce when

$$\phi < \tilde{\phi} = \bar{\phi} + \beta(1-\alpha)\Omega_j - \Omega_i(1-\tau)(1-\beta) + \alpha\Omega_j(\beta - 0.5)$$

It is easy to show that for $\alpha = 0$, $\bar{\phi} < \tilde{\phi}$ and thus men want to divorce more than what the couple would like to do, since men receive the benefit of their full income upon divorce instead of having to share it. But, as α increases, men will start being more careful with their divorce decision since divorce includes an additional cost to them. Assuming that

$$\alpha < 2(\beta - \frac{\Omega_i(1-\tau^M)(1-\beta)}{\Omega_j})$$

men will want to divorce more than is socially optimal. The rest of the comparative statics found for Pareto divorce hold true.

A woman i who is married will receive:

$$U_i^M = \beta(\Omega_i + \Omega_j(1-\alpha)) + (\Omega_i + \Omega_j) * h(\tau) * (1+\eta) - C + P(\phi > \bar{\phi})(u_i^m) + P(\phi < \bar{\phi})(u_i^d)$$

Her partner j will receive:

$$U_j^M = (1-\beta)(\Omega_i + \Omega_j(1-\alpha)) + (\Omega_i + \Omega_j) * h(\tau) * (1+\eta) - C + P(\phi > \bar{\phi})(u_j^m) + P(\phi < \bar{\phi})(u_j^d)$$

Married women will pick their optimal level of investment in children by setting:

$$h'(\tau^M) = \frac{\Omega_i\,(1-p+p\beta)}{(\Omega_i + \Omega_j) * (2+\eta(1+p))}$$

where p is the probability that the couple remains together after the love shock is revealed. Investment in children is decreasing in the probability of divorce, because divorce lowers the return to this investment, and increases the cost that the woman anticipates facing.

Socially optimal investment for married couples is:

$$h'(\tau^{**}) = \frac{\Omega_i}{2(\Omega_i + \Omega_j) * (2+\eta(1+p))}$$

which means that the choice of τ is too low when

$$p(1-\beta) < 0.5,$$

that is, when the probability of remaining together times the man's share of resources in marriage is less than half.

While in non-marital fertility, the non-optimality was due to the fact that the investment generates an externality on the partner, in marriage, this is counteracted by the fact that the woman shares the cost of her investment with her partner. Investment is closer to the social optimal than in the case of non-marital fertility.

It is easy to show that $\tau^{NM} < \tau^M$ and thus that child investment is higher in marriage.

Since the probability of divorce depends on the investment level and the investment level influences the probability of divorce, we will find $p*$ as the fixed point in the equation:

$$p* = P\left(\phi > -D - (\Omega_i + \Omega_j) * (h(\tau(p*)) * \eta) + \beta(1-\alpha)\Omega_j - \Omega_i(1-\tau)(1-\beta) + \alpha\Omega_j(\beta - 0.5)\right)$$

For such a fixed point to exist, we must have that the distribution of ϕ satisfies that:

$$P\left(\phi > -D - (\Omega_i + \Omega_j) * (h(\tau(0)) * \eta) + \beta(1-\alpha)\Omega_j - \Omega_i(1-\tau)(1-\beta) + \alpha\Omega_j(\beta - 0.5)\right) > 0$$

$$P\left(\phi > -D - (\Omega_i + \Omega_j) * (h(\tau(1)) * \eta) + \beta(1-\alpha)\Omega_j - \Omega_i(1-\tau)(1-\beta) + \alpha\Omega_j(\beta - 0.5)\right) < 1$$

Thus, higher α will make divorce less likely, and through that, increase investment levels. Thus, couples with more assets divorce less and invest in children more. Note that α would not influence either divorce probability or investments levels in a setting where Pareto divorce is at play.

3.3 Partnership selection

Finally, we can define total couple's utility in the three forms of partnerships. Define $\Omega_T \equiv \Omega_i + \Omega_j$. For singles:

$$U_T^S = 2\Omega_T - \alpha\Omega_j$$

For non-marital fertility:

$$U_T^{NM} = 4(\Omega_i + \gamma\Omega_j)h(\tau^{NM}) - \tau^{NM}\Omega_i + 2\Omega_T - \alpha\Omega_j - 2C'$$

and marriage:

$$U_T^M = 2\Omega_T h(\tau^M)(2+\eta) - \tau^M\Omega_i + 2\Omega_T(-\alpha)\Omega_j - 2C + p(2\eta\Omega_T h(\tau^M) + 2E(\phi|\phi > \bar{\phi})) + (1-p)(-2D)$$

We can easily show that as couples become better and better endowed, they will move from singlehood to cohabitation and then to marriage. That is because there is a fixed cost of marriage/cohabitation and increasing returns to cohabitation in endowments and even larger returns for marriage.

3.4 Comparative statics

We now generate some comparative statics that will be useful in our empirical analysis.

Proposition 1 *An increase in α is likely to push couples into marriage, and will lead to fewer divorces and higher child investment.*

Proof. As α increases, the likelihood of a couple choosing singlehood versus non-marital fertility will not be altered. However, as α increases, p, the probability of remaining married post-shock, will increase. This will lead to fewer divorces. Because of that, τ^{NM} remains unchanged while τ^{M} will increase, thus leading to higher child investment, conditional on marriage.

An increase in τ^{M} and in p will make marriage more attractive. Thus, more individuals will enter marriage, and since marriage offers higher investment than non-marital fertility, overall child investment will increase. ■

Proposition 2 *Moving from bi-lateral (Pareto) to unilateral will increase divorces. It will make marriage less attractive for all, particularly for those with lower assets.*

Proof. Going from Pareto to unilateral divorce simply changes the fixed-point equation determining p, making divorce more likely, particularly for those with lower assets. A lower p will decrease the attractiveness of marriage since under Pareto divorce, the p was determined as socially optimal, but under unilateral divorce, p will be too low socially in most cases. Given this, the utility of marriage will be increasing in p. Since p falls particularly for those with lower assets, the decrease in marriage attractiveness will be particularly strong for those with lower assets. ■

Proposition 3 *A lower cost of divorce may or not make marriage less attractive, conditional on child investment, but decreases child investment, which reduces the attractiveness of marriage. It decreases the attractiveness of marriage, conditional on child investment, more for couples with a low fraction of their endowment as assets and decreases child investment of couples with lower assets more strongly, making marriage still more attractive for high assets individuals than for lower ones.*

A lower D makes marriage more attractive than alternative arrangements since it allows unhappy couples to separate at lower cost, for a given level of child investment. However, it also makes marriage less attractive, since it increases the likelihood of divorce, which is, in the case of unilateral divorce, already too high compared to the social optimum.

Formally, the utility of marriage will be increasing in D, conditional on child investment, when:

$$\frac{\partial U_T^M}{\partial D} = -2(1-p) + 2(\tilde{\phi} - \bar{\phi}) > 0$$

To prove the fact that child investment decreases when D falls, note that the investment is unchanged for a given level of p, but that the right-hand side of the equation that determines $p*$ is now shifted upward, meaning that $p*$ will fall as D falls. From this, we can show that:

$$\frac{\partial \tau^M}{\partial p} = \frac{h'(\tau^M)}{h''(\tau^M)} \frac{(\beta-1) + \eta(\beta-2)}{(1-p+p\beta)(1+\eta(1+p))} > 0$$

Given that τ^M is lower than the social optimal, a lower D will decrease τ which is worse for the couple's utility. Thus, the utility of being married will fall with easier divorce through lower child investment. The overall attractiveness of marriage is likely to also decrease when divorce is easier but could be uncertain if the direct effect of an decrease of D on the value of marriage is sufficiently positive.

For couples with higher levels of assets, a fall in D is more likely to have a positive effect on marital utility, because their divorce decisions are closer to the Pareto optimum. Therefore, easier divorce, conditional on child investment, is more likely to be marriage-increasing for people with higher assets. The lower the asset level, the more likely that, conditional on child investment, easier divorce will make marriage less attractive.

However, child investment also is altered as we showed previously. The difference in that impact will depend solely on how α influences p. Thus, it will depend on how a change in p influences the impact that p has on τ^M. It will be more strongly affected by p for couples with lower assets, as long as h''' is not too positive since:

$$\frac{\partial^2 \tau^M}{\partial p \partial \alpha} = \frac{\partial^2 \tau^M}{\partial p^2}\frac{\partial p}{\partial \alpha} = \frac{\partial \tau^M}{\partial p}\left(\frac{h''(\tau^M)}{h'(\tau^M)} - \frac{h'''(\tau^M)}{h''(\tau^M)} - \frac{2\eta p(\beta-1)+\beta(1+\eta)-1}{(1-p+p\beta)(1+\eta(1+p))(\beta-1+\eta(\beta-2))}\right)$$

Recall $h''(\tau^M) < 0$, so this is negative as long as h''' is not too positive and $2\eta p(\beta-1)+\beta(1+\eta)-1 < 0$. This means that child investment rises in the cost of divorce, but less quickly for couples with more assets. Conversely, child investment falls as divorce becomes easier, but more so for couples with lower assets. In simple terms, lower asset individuals are more affected by changes in divorce laws than high asset individuals, for whom child investment is more stable.

The effect through child investment thus reinforces that the value of marriage will be particularly affected by changes in divorce laws for couples with limited amount of assets. Thus, marriage is likely to decrease when the cost of divorce falls, more strongly for low asset individuals.

Proposition 4 *Better paternity enforcement rules will lead to fewer marriages but more child investment for those in non-marital fertility. The decrease in marriage will be stronger for those with lower assets.*

Proof. A higher γ increases the value of non-marital fertility versus marriage and singlehood through two channels. It increases the utility of the couple, conditional on child investment. Furthermore, it increases child investment since

$$\frac{\partial \tau^{NM}}{\partial \gamma} = \frac{-\Omega_j \Omega_i)}{h''(\tau^{NM})(\Omega_i + \gamma\Omega_j)} > 0$$

,

which raises utility of the couple since non-marital child investment is too low compared to the social optimum.

The overall level of child investment may rise or fall, since for couples who are entering in non-marital fertility, there will be an increase in child investment, but child investment is higher in marriage than in cohabitation and there will be an increase in non-marital arrangements.

Conditional on the level of endowment of the couple, Ω_T, couples where the male has a higher share of assets will be more likely to prefer marriage to non-marital fertility. Thus, the change in paternity law will be more likely to alter the decisions of couples with lower assets than those with more. ■

Proposition 5 *A change in divorce laws that reduces the amount of asset sharing upon divorce will lead to more divorce petitions by men and decreased child investments within marriage, particularly for those with higher assets.*

If we have Pareto divorce, sharing rules are irrelevant. If we have non-Pareto divorce, then having less asset sharing will lead more men to demand divorce. This will increase the probability of divorce and decrease women's child investment, particularly for asset-rich couples. This will make marriage less attractive, particularly to those couples, and will lead them to turn to non-marital fertility as an alternative.

3.5 Adding fertility timing

3.5.1 Exogenous asset growth

A potential simplification of our previous set-up is that individuals simply decide which arrangements to engage in, not when they do so. We now expand our framework to allow individuals to select when and how they will form a partnership. We show that our previous result that higher asset individuals showed a preference for marriage versus alternative arrangement is only furthered in this case. High assets people will choose marriage, but delay it, while lower assets individuals will engage in early non-marital fertility.

To explore this, let us imagine now that individuals live for 3 periods. Assets grow by x in the second period. Individuals can either marry or have children without marrying in the first or the second period. They can only have one such event in their life. The quality of the marriage is revealed in period 3. The advantage of entering into a relationship at a young age is that one gets an extra period to enjoy the benefits of marriage and childbearing. The disadvantage is that one enters marriage with lower assets. We will assume that the wage penalty for child investment is for two periods.

The pay-out to remaining single now becomes:

$$U_i^S = 3\Omega_i$$

$$U_j^S = \Omega_j(3 + \alpha(2x - 3))$$

A woman i who has a non-marital child in period t receives

$$U_{it}^{NM} = 3\Omega_i + (4 - t) * (\Omega_i + \gamma\Omega_j) * h(\tau) - C' - \Omega_i\tau(3 - t)$$

One can show that child investment will be larger for those who delay than those who have children in the first period since

$$h'(\tau^{NM1}) = \frac{2\Omega_i}{3(\Omega_i + \gamma\Omega_j)} > h'(\tau^{NM2}) = \frac{\Omega_i}{2(\Omega_i + \gamma\Omega_j)}$$

In marriage, child investment is given by:

$$h'(\tau^{M1}) = \frac{(\beta + \beta p_1 + 1 - p_1)\Omega_i}{\Omega_T * (3 + \eta(2 + p_1))}$$

and

$$h'(\tau^{M2}) = \frac{\Omega_i\,(1 - p_2 + p_2\beta)}{\Omega_T * (2 + \eta(1 + p_2))}$$

For low values of p, investment will be higher when marrying young, but for higher values of p, the opposite will be true. Denote $\bar{p}$ as the p that would make the two investment levels equal to each other where

$$\bar{p} = \frac{1+\eta-\beta(2+\eta)}{1+\eta-\beta}.$$

The probability of divorce will differ depending on the age at which couples marry since those who marry young have less to lose upon divorce. The probability of remaining in a relationship p_t will be the fixed point of:

$$p_t = P(\phi > -D - \Omega_T * (h(\tau^{Mt}(p_t))) * \eta + \beta(1-\alpha)\Omega_j - \Omega_i(1-\tau^{Mt}(p_t))(1-\beta) + \alpha * (1 + x * (t-1))\Omega_j(\beta - 0.5))$$

At $\bar{p}$, couples who marry early and late would face exactly the same right-hand side equation, except for the fact that husbands who marry late will have less of an incentive to divorce since their asset wealth will be larger. This will imply that for any $p > \tilde{p}$ where $\tilde{p} < \bar{p}$, the right-hand side of the equation will be larger for those marrying late than those marrying early.

Assuming that

$$\bar{p} < P\left(\phi > -D - (\Omega_i + \Omega_j) * (h\left(\tau(\bar{p})\right) * \eta) + \beta(1-\alpha)\Omega_j - \Omega_i(1-\tau^{Mt}(\bar{p}))(1-\beta)\right)$$

we obtain a few results. First, even for $\alpha x = 0$, $p_2 > p_1$. For larger values of αx, this will simply be reinforced. Furthermore, this implies that $\tau^{M1}(p_1) < \tau^{M2}(p_2)$ for all αx, since the fixed point probability will always be at a range of the curves where $\tau^{M1} < \tau^{M2}$.

Finally, we can define total couple's utility in the three forms of partnerships. For singles:

$$U_T^S = 3\Omega_T + \alpha\Omega_j(2x-3)$$

For non-marital fertility in period 1:

$$U_T^{NM1} = U_T^S + 6(\Omega_i + \gamma\Omega_j)h(\tau^{NM1}) - 2\tau^{NM1}\Omega_i - 2C'$$

while in period 2:

$$U_T^{NM2} = U_T^S + 4(\Omega_i + \gamma\Omega_j)h(\tau^{NM2}) - \tau^{NM2}\Omega_i - 2C'$$

Non-marital fertility will be delayed when

$$4(\Omega_i + \gamma\Omega_j)h(\tau^{NM2}) - \tau^{NM2}\Omega_i > 6(\Omega_i + \gamma\Omega_j)h(\tau^{NM1}) - 2\tau^{NM1}\Omega_i$$

Marriage that occurs in period 1 generates joint utility of:

$$U_T^{M1} = U_T^S + 2\Omega_T h(\tau^{M1})(3 + \eta(2+p_1)) - 2\tau^{M1}\Omega_i - 2C + 2p_1 E(\phi|\phi > \bar{\phi_1}) + (1-p_1)(-2D)$$

and marriage that occurs in period 2:

$$U_T^{M2} = U_T^S + 2\Omega_T h(\tau^{M2})(2 + \eta(1 + p_2)) - \tau^{M2}\Omega_i - 2C + 2p_2 E(\phi|\phi > \bar{\phi_2}) + (1 - p_2)(-2D)$$

As assets increase, the difference between p_2 and p_1 will widen, and so will the difference in child investment. This will make later marriage more attractive than earlier marriage.

Proposition 6 *As α increases, we will observe a shift in partnership election from early non-marital fertility to late marriages. This will reinforce the difference in child investment between those whose fraction of assets are lower and those who have a higher proportion of assets.*

Proof. It was shown above that as αx increases, later marriage is more likely. The timing of non-marital fertility is orthogonal to α. It is also true, as before, that as α is larger, marriage is preferred to singlehood and non-marital fertility, for a given timing.

For a given endowment level, Ω_T, as α increases, preference for later marriages will be more marked compared to early marriages, but also compared to non-marital fertility. On the other hand, preference for timing of non-marital fertility will be independent of α. Thus, assuming that early non-marital fertility is preferred to later non-marital fertility, as α increases, for x large enough, we will see that couples will move from early non-marital fertility to later marriages.

We have shown that investments will be smaller in non-marital fertility than in marriages. Since, as αx increases, marital investments will be even larger in later marriages than in earlier ones, we will see that investments will be widened by later marriage timing versus non-marital fertility, and thus those with higher assets will have higher relative child investments. ■

3.5.2 Endogenous asset growth

Instead of having assets growth at an exogenous rate of x, we could instead think that individuals can invest part of their first period income and that this determines by how much their future assets will grow. In that case, individuals who form partnerships young will have less incentives to invest in their future assets. This is because child quality will not increase in assets accumulation for them. This would lead them to have lower levels of assets and thus be more likely to choose non-marital partnerships. On the other hand, individuals who delay fertility would have more incentives to save, which would raise their return to marriage compared non-marital partnerships and thus those who delay would be more likely to be higher assets individuals, which would lead to higher marriage rates, higher child investments and lower divorces. Introducing savings into our model, thus, would simply reinforce the pattern we are discussing.

3.6 Model summary

Our model thus provides a key role for assets in marriage that was not considered previously by the literature. In particular, assets are here something that increases the commitment level of the husband to the relationship. This allows the female partner to feel “safer” about making investments in public goods related to the marriage. This is a very different type of explanation that has been provided previously. While most previous models have suggested that marriage may have an advantage for child-rearing, we highlight the fact that, with unilateral divorce, women may fear that marriage will not be as lasting as they had anticipated and thus require some insurance which is more easily provided by men with assets who face a bigger loss upon divorce.

Our model provides several intuitive results that align with current marriage patterns and changes over time. We find that higher endowed individuals will be more likely to prefer marriage to non-marital fertility, which aligns with expectations, but add that conditional on endowment, those with higher assets receive more value from marriage. The model also specifies that child investment will be higher in marriage, but this is a consequence of underlying heterogeneity that determines marriage's value, rather than heterogeneous tastes for investment. The model predicts that unilateral divorce will increase divorce levels, but provides the testable implication that this increase will be less severe for those with higher assets. Additionally, we find that better non-marital contracting will increase parental investments for those who would have chosen non-marital fertility anyway, but will also move individuals from marriage to non-marital fertility—something that was found by Rossin-Slater (2016). However, our model introduces the testable implication of heterogeneity in this effect by asset level.

Finally, the model provides the prediction that those with higher assets should prefer later marriage, while those with lower assets apt to choose non-marital fertility have no reason to not do so in the first period, something that aligns with marriage timing patterns. We now look for evidence of the model's comparative statics in historical data from the United States.

4 Empirical Results

Having shown that a simple model can explain the stylized facts we presented above, we now turn to further exploring empirically the predictions of the model using different empirical strategies and data sources.

We divide our empirical test of the model's predictions into two parts. First, we test the model's predictions of how the relationship between marriage rates and assets change with shifts in policies regarding non-marital parental rights and responsibilities as well as US divorce law. Second, we examine the model's micro predictions of mechanisms, using housing markets to generate quasi-exogenous variation in asset possession.

4.1 Using legal changes to understand relationship between marriage rates and assets

We show that the connection between marriage rates and assets has grown stronger as US marriage and child custody laws have changed in two ways: 1) Childbearing without marriage has become closer to marriage in legal framework, by allowing for both parental rights and obligations through child support, and 2) Divorce has become easier. We use state-year variation in these laws to test how marriage rates change for individuals of different asset levels as the legal framework changes.

We first use data from the 1992, 1993, and 1996 waves of the SIPP to test whether the impact of in-hospital voluntary paternity establishment (IHVPE) differed for those with and without assets. IHVPE, and

Table 1: Paternity establishment laws and marriage rates, by asset status

	Dependent variable: Ever Married			
	(1)	(2)	(3)	(4)
IHVPE × Assets	0.0284**	0.0285**	0.0319**	0.0308**
	(0.0126)	(0.0126)	(0.0126)	(0.0126)
IHVPE Laws	-0.00754	-0.00751	-0.00855	-0.0136
	(0.0101)	(0.0101)	(0.0100)	(0.0102)
Assets (binary)	0.0446***	0.0438***	0.0152*	0.0155**
	(0.00750)	(0.00751)	(0.00776)	(0.00778)
Age		0.000979	0.000865	0.000855
		(0.000615)	(0.000635)	(0.000637)
State/Year FEs	YES	YES	YES	YES
Inc, educ, race controls			YES	YES
State specific time trend				YES
Observation	15797	15797	15797	15797
R-Squared	0.0317	0.0319	0.0466	0.0496

the era of non-marital rights and responsibilities (verified through DNA if necessary) it signaled, created a stronger alternative to marriage, that, from an income-division perspective, was very close to marriage, without the asset-sharing component that marriage offers. Our model would predict this legal change would widen the marriage gap between high and low asset individuals.

We assemble a data set encompassing all men aged 21-35 who are enter the SIPP data unmarried.The SIPP data generally includes individuals for up to four years, or 16 waves of quarterly data collection. We regress "ever married" and "time to marriage" on asset holding and IHVPE policy in the initial period, controlling for state and year fixed effects. Our data on IHVPE dates comes from Rossin-Slater (2016), and all of these policies were implemented in the 90s, during the period of welfare reform. Assets are specifically listed in the SIPP data, and we divide individuals into "asset holding," those with assets greater than zero, and not.

The equation being estimated is:

$$Y_i = \beta IHVPE_{st} \times assets_i + \nu assets_i + \gamma IHVPE_{st} + \eta_s + \delta_t + \varepsilon_i \tag{1}$$

Where s and t represent the state and year the individual first appears in the data. We add individual-level controls as well as state-specific time trends in subsequent specifications.

Table 1 shows that IHVPE is correlated with lower marriage rates overall, but higher marriage rates for those possessing assets. The effect size remains consistent even when state-specific time trends are accounted for.

Table 2 shows that IHVPE is also associated with a longer time to marriage in general, but a shorter time to marriage for those with higher levels of assets.

We next turn to examining whether increased ease of divorce, as well as a switch from dual to unilateral decision-making, through no-fault divorce laws, led to an increased relationship between assets and marriage,

Table 2: Paternity establishment laws and time to marriage, by asset status

	Dependent variable: Time to Marriage			
	(1)	(2)	(3)	(4)
IHVPE × Assets	-0.220*	-0.222*	-0.251**	-0.239**
	(0.117)	(0.117)	(0.116)	(0.117)
IHVPE Laws	0.0339	0.0334	0.0430	0.114
	(0.0949)	(0.0949)	(0.0939)	(0.0936)
Assets (binary)	-0.416***	-0.404***	-0.150*	-0.153**
	(0.0743)	(0.0743)	(0.0767)	(0.0769)
Age		-0.0158**	-0.0149**	-0.0148**
		(0.00621)	(0.00641)	(0.00642)
State/Year FEs	YES	YES	YES	YES
Inc, educ, race controls			YES	YES
State specific time trend				YES
Observation	15797	15797	15797	15797
R-Squared	0.0319	0.0324	0.0459	0.0491

signaling an erosion of marriage value for those without assets. We implement this empirical test using the PSID, since the PSID contains data for the time period when no-fault divorce laws were introduced.

Similarly to our strategy with the SIPP, we construct a dataset of unmarried men aged 21-35. To make these results comparable to the SIPP results, we look at ever married and time to marriage over a four-year period, even though the potential PSID panel is longer. We designate asset-holding individuals from those who own a home or car, have business or farm assets, or have household savings greater than two months of income. We regress marriage in the subsequent period on assets in the current period (the PSID is annual) interacted with the state's no-fault divorce policy. The PSID does not include assets for individuals who are not the head of household, so we assume these individuals possess no assets. To confirm this assumption is not driving our results, in the appendix we substitute home ownership as our measure of asset holding, since individuals who are not head of households almost certainly do not own homes, and our results remain largely unchanged.

The equation being estimated is:

$$Y_i = \beta nofault_{st} \times assets_i + \nu assets_i + \gamma nofault_{st} + \eta_s + \delta_t + \varepsilon_i \tag{2}$$

With, again, individual-level controls as well as state-specific time trends being included in subsequent specifications.

Table 3 shows that the introduction of no-fault divorce laws decrease marriage rates overall, as our model predicts, but that this effect is cancelled out for individuals possessing assets. Again, the effect size remains stable with the introduction of individual controls and state-specific time trends. This aligns with our hypothesis that having assets allows marriage to retain value—through increased commitment and protection for the lower earning spouse—even in the presence of one-sided divorce decision-making. Table 4 shows that when time to marriage is used as the dependent variable instead, no fault divorce tends to

Table 3: No fault divorce laws and marriage rates, by asset status

	Dependent variable: Ever Married			
	(1)	(2)	(3)	(4)
No Fault × Assets	0.143***	0.144***	0.132***	0.142***
	(0.0411)	(0.0407)	(0.0402)	(0.0397)
No Fault Divorce	-0.0983***	-0.0962***	-0.0959***	-0.0998***
	(0.0347)	(0.0350)	(0.0343)	(0.0358)
Assets (binary)	0.0898**	0.101***	0.0570	0.0433
	(0.0371)	(0.0368)	(0.0365)	(0.0358)
Age		-0.00474*	-0.00437	-0.00307
		(0.00275)	(0.00295)	(0.00285)
State/Year FEs	YES	YES	YES	YES
Inc, educ, race controls			YES	YES
State specific time trend				YES
Observations	4127	4127	4127	4127
R-Squared	0.234	0.235	0.261	0.277

extend unmarried time, but, again, this is counteracted for those with assets. Appendix Table 8 shows that substituting homeownership for asset possession does not alter our results.

4.2 Exploring drivers of marriage rates through changes in house prices

We then turn to the mechanisms driving our model. Our model predicts that marriage erodes for people with lower assets with easier divorce because child investment decreases. Additionally, our model also predicts that individuals with higher levels of assets should have longer-lasting marital union so we will measure the probability that the individual is currently divorced.

Measuring this requires a source of quasi-exogenous variation in asset holding at the time of the marriage. We rely on state-by-year variation in housing prices at the time of the marriage. Our hypothesis is that higher housing price at the moment of marriage would make the union unlikely to start their marital life as owners and make asset accumulation as the marriage evolves more difficult. Clearly, housing prices also influences rental prices, but in periods of "bubbles" the two usually become disjoined, making housing price more likely to make ownership difficult than rental.

Our data source is the American Community Survey from 2008-2014. This survey has the advantage of including the age at first marriage, from which we can derive the year in which individuals married. We restrict our sample to households where it is one individual's first marriage and where the marriage occurred between 1991 and 2014. We merge this database by year of marriage and state of residence to the Federal Housing Finance Agency's housing price index based on purchases only data. The data are available at a quarterly frequency and by state, for which we average over all quarters in a year to obtain our annual index.

Thus, our general empirical strategy will consist in estimating the following equation

$$Y_{ismt} = \beta HPI_{sm} + \eta_s + \nu_m + \gamma X_{ismt} + \delta_t + \psi HPI_{st} + \varepsilon_{ismt} \tag{3}$$

Table 4: No fault divorce laws and time to marriage, by asset status

	Dependent variable: Time to Marriage			
	(1)	(2)	(3)	(4)
No Fault × Assets	-0.383***	-0.385***	-0.359***	-0.388***
	(0.117)	(0.116)	(0.116)	(0.114)
No Fault Divorce	0.246**	0.241**	0.238**	0.246**
	(0.0973)	(0.0982)	(0.0971)	(0.101)
Assets (binary)	-0.261**	-0.288***	-0.172*	-0.137
	(0.104)	(0.103)	(0.104)	(0.101)
Age		0.0112	0.00954	0.00549
		(0.00793)	(0.00851)	(0.00828)
State/Year FEs	YES	YES	YES	YES
Inc, educ, race controls			YES	YES
State specific time trend				YES
Observations	4127	4127	4127	4127
R-Squared	0.208	0.209	0.228	0.246

where the outcome of interest of a household i, in state s, married in year m and observed in year t is correlated with the household price index that was in place at the time of marriage m in the state where they currently reside s. Given that states may differ in many ways in addition to the evolution of their price index, we include fixed effects for each state. We also include fixed effects for each year of marriage m. To rule out that correlation with current housing prices (which may affect these outcomes in various ways) accounts for our results, we also control for the housing price index in the survey year. We include, depending on the specification, some controls such as the age of the married individual, their gender, and their educational attainment. We also include a fixed effect for the year of the survey to capture changes in economic environment at the time of the survey.

We will include a number of outcomes to try to capture the patterns our model suggested we could see. First, we will measure divorce, based on the time of marriage. Second, to proxy for child investment, we use a measure of the fraction of the children in the household who are in a grade below what their age would suggest. We also measure the number of children since, while our model supposes that couples have only one child and they are able to increase the quality of that child, it is probably more likely that they may also invest in having more children. Finally, we also directly measure the hours worked of the parents as a way to see whether investment is altered. We treat women's hours worked as an inverse proxy for investment, as our model directly predicts women who invest more in children decreasing their work investments accordingly. We then use men's hours worked as a placebo test, and additionally take the difference between women's and men's hours.

First, we show that our right-hand side variable indeed creates variation in the endogenous variable of interest, homeownership, in Table **??**.

Table 5 shows the impact of the home price index at the time of marriage on the probability that the person interviewed is found to be divorced at the time of the survey. In the first 3 columns, we include the housing price index in the year where the person declared having been married. Since house purchase may

Table 5: Correlations between house price at marriage year and home ownership

	Dependent variable: Own Home		
	(1)	(2)	(3)
House Price Index	-0.0280***	-0.0280***	-0.0328***
	(0.00695)	(0.00696)	(0.00761)
Year of Survey FEs	No	Yes	Yes
Additional Controls	No	No	Yes
Observations	1643538	1643538	1643538
R-Squared	0.0581	0.0587	0.121

Table 6: Correlations between house price around marriage year and divorce probability

	Dependent variable: Divorce Status					
	Year of Marriage			Year Before Marriage		
	(1)	(2)	(3)	(4)	(5)	(6)
House Price Index	0.00815*	0.00827*	0.00869*	0.0110*	0.0110*	0.0114*
	(0.00484)	(0.00483)	(0.00493)	(0.00566)	(0.00564)	(0.00585)
Year of Survey FEs	No	Yes	Yes	No	Yes	Yes
Additional Controls	No	No	Yes	No	No	Yes
Observations	3114646	3114646	3114646	2977375	2977375	2977375
R-Squared	0.0279	0.0311	0.0402	0.0281	0.0316	0.0406

be a requirement for some individuals before marriage, we also include, in the last 3 columns, the price index in the year preceding the nuptials. We add year of survey fixed effects in columns (2)-(3) and (5)-(6). The last set of columns also include controls, namely age, gender, and education. We divided the price index by 100, implying that a change of 1 in our index corresponds to an increase of 1 percent in housing prices.

The results suggest that facing a one percent increase in the housing price in one's state of residence at the time of marriage increases the probability that the person is currently divorced by 0.8 percentage point for the year of marriage and around 1.1 percentage point for the year before the marriage. The results are fairly robust as we increase the controls. This is a small but not irrelevant effect given that the average divorce probability in our sample is 13 percent. We may think that this should be stronger for individuals living in metropolitan areas and this is exactly what we find. The correlation rises to more than 1 percent for the year of the marriage when focusing on individuals currently living inside a metropolitan area and is below 0.5 percent for those not living in a metropolitan area.

In our model, the probability that a couple divorces is directly related to the quality of the public good that is being produced jointly by the couple, which in turn determines their likelihood of entering marriage. We here attempt to measure this by using three different proxies of child quality: whether the child is delayed in school progression, the number of children below age 5 within the household, and mother's time investments. We chose to look at the children below age 5 because this makes it more likely that they are the children of the marriage we are examining. The first outcome id only available for households that have children of school age, which implies that our sample size is lower. Table 6 shows each outcome in two separate columns. The odd columns correspond to a model where we include our basic specification plus year

Table 7: Correlations between house price around marriage year and child investment

	Grade Retention		Number of Children	
	(1)	(2)	(3)	(4)
House Price Index	0.0112***	0.0127***	-0.0266**	-0.0247*
	(0.00239)	(0.00273)	(0.0128)	(0.0128)
Additional Controls	No	Yes	No	Yes
Observations	2019144	2019144	3153969	3153969
R-Squared	0.00852	0.0267	0.113	0.147

fixed effects; the even columns add to that additional controls. What the table suggests is that households that were limited by high housing prices in the year they were married also showed some evidence of changes in investment behavior. The results are more robust and stronger when looking at grade retention and in the direction predicted by our model. In this case, we find that those who entered marriage with less assets because of high housing prices are more likely to see their children repeat grades. A one percent increase in the housing price index raises the probability of having a child who has repeated a grade by 2 percentage point, out of a base of 17 percent. The results shown in columns (5) and (6) are also in agreement with our model. Parents with lower levels of assets because of high housing prices are less likely to have young children in the household. A one percent increase in the price index reduces the number of children by 0.02, out of a base of 0.42.

We then looked at labor force participation since our model suggests that labor market participation would be what one household member would need to sacrifice in order to make higher investment in children. We present these results in Table 7 where the odd columns present the results with our basic specification augmented with year fixed effects and the even columns add additional controls. We find that women who faced higher home prices at the time of marriage are more likely to work in the year of the survey, although this is only significant when we do not add controls in Column (1). The same holds for the results for usual hours worked, which are shown in Columns (3) and (4). We find a strong positive correlation between housing prices at the time of marriage and current hours worked but the magnitude is reduced and the significance disappears once we include controls for age and education. The magnitudes would suggest that a one percent increase in housing price would increase the probability of working by 0.5 to 1 percentage point and the usual hours worked by 0.4 to 0.5 hours. What is suggestive of our hypothesis in that we do not observe at all a similar pattern for men, as shown in the last four columns of the table. All results indicate a negative correlation for them, albeit very small and non-statistically significant. Nevertheless, this is suggestive that we are not simply confounding housing prices with some characteristics of the labor market, which should affect both genders similarly. Additionally, our results without additional controls hold in a difference specification between men's and women's hours.

5 Conclusion

We introduce a possible explanation for a heterogeneous retreat from marriage that does not rely on differing tastes for child investment: as marriage becomes a less binding contract, only those who possess

Table 8: Correlations between house price around marriage year and parental labor force

	Women			
	Worked Last Year		Usual Hours Worked	
	(1)	(2)	(3)	(4)
House Price Index	0.00741**	0.00440	0.557**	0.399
	(0.00345)	(0.00420)	(0.231)	(0.252)
Additional Controls	No	Yes	No	Yes
Observation	1592666	1592666	1593231	1593231
R-Squared	0.0117	0.0577	0.0112	0.0615

	Men			
	Worked Last Year		Usual Hours Worked	
	(1)	(2)	(3)	(4)
House Price Index	-0.00113	-0.000817	-0.0217	-0.0199
	(0.00263)	(0.00250)	(0.149)	(0.133)
Additional Controls	No	Yes	No	Yes
Observation	1560078	1560078	1560738	1560738
R-Squared	0.00791	0.0770	0.0101	0.0807

	Difference		
	Usual Hours Worked		
	(1)	(2)	(3)
House Price Index	-0.579*	-0.577*	-0.514
	(0.327)	(0.327)	(0.344)
Year of Survey FEs	No	Yes	Yes
Additional Controls	No	No	Yes
Observation	2419628	2419628	2419628
R-Squared	0.0127	0.0128	0.0241

assets are able to insure partners who invest time into child human capital against divorce. This insurance enables efficient investment, which reduced the income-earning potential of one partner to the benefit of both partners through child human capital. Thus, marriage retains value relative to non-marital childbearing arrangements. To the contrary, for individuals without assets, increased divorce rates and non-marital paternity establishment programs create a suitable substitute for marriage, since income-sharing is enforced through child support and asset-sharing is irrelevant. Thus, without the insurance provided by assets, the costly contracting of marriage provides no additional benefit, and non-marital fertility is chosen. We show empirical support for this model, first by demonstrating that increased ease of non-marital contracting has starkly different effects for those without assets than those with assets. We then show that easier, unilateral divorce additionally erodes marriage only for those who lack assets. Finally, we demonstrate that our model's proposed mechanisms are active, and those families with higher asset value appear to divorce less and invest more in children.

References

Aizer, A. and S. McLanahan (2005, August). The impact of child support enforcement on fertility, parental investment and child well-being. Working Paper 11522, National Bureau of Economic Research.

Akerlof, G. A., J. L. Yellen, and M. L. Katz (1996). An analysis of out-of-wedlock childbearing in the united states. *The Quarterly Journal of Economics 111*(2), 277–317.

Duncan, G. J. and S. D. Hoffman (1990). Welfare benefits, economic opportunities, and out-of-wedlock births among black teenage girls. *Demography 27*(4), 519–535.

Friedberg, L. (1998, 06). Did unilateral divorce raise divorce rates? evidence from panel data. *The American Economic Review 88*(3), 608–627. Copyright - Copyright American Economic Association Jun 1998; Last updated - 2016-04-30; CODEN - AENRAA; SubjectsTermNotLitGenreText - US.

Lundberg, S. and R. A. Pollak (2015). The evolving role of marriage: 1950-2010. *The Future of Children 25*(2), 29–50.

Mechoulan, S. (2011). The external effects of black male incarceration on black females. *Journal of Labor Economics 29*(1), 1–35.

Neal, D. (2004). The relationship between marriage market prospects and never-married motherhood. *The Journal of Human Resources 39*(4), 938–957.

Nechyba, T. J. (2001, June). Social Approval, Values, and AFDC: A Reexamination of the Illegitimacy Debate. *Journal of Political Economy 109*(3), 637–666.

Rosenzweig, M. R. (1999). Welfare, marital prospects, and nonmarital childbearing. *Journal of Political Economy 107*(S6), S3–S32.

Rossin-Slater, M. (2016). Signing up new fathers: Do paternity establishment initiatives increase marriage, parental investment, and child well-being? *American Economic Journal: Applied Economics. Forthcoming.*

Tannenbaum, D. I. (2015). The effect of child support on selection into marriage and fertility.

Voena, A. (2015, August). Yours, mine, and ours: Do divorce laws affect the intertemporal behavior of married couples? *American Economic Review 105*(8), 2295–2332.

Willis, R. J. (1999). A theory of out?of?wedlock childbearing. *Journal of Political Economy 107*(S6), S33–S64.

Wolfers, J. (2006, December). Did Unilateral Divorce Laws Raise Divorce Rates? A Reconciliation and New Results. *American Economic Review 96*(5), 1802–1820.

6 Appendix

Table 9: No fault divorce laws and time to marriage, by homeownership status

	Dependent variable: Time to Marriage			
	(1)	(2)	(3)	(4)
No Fault $\times$ Homeownership	0.170***	0.177***	0.157***	0.150***
	(0.0635)	(0.0626)	(0.0593)	(0.0523)
No Fault Divorce	-0.0619*	-0.0609*	-0.0630**	-0.0652*
	(0.0317)	(0.0320)	(0.0312)	(0.0338)
Homeownership	0.0774	0.0857	0.0356	0.0286
	(0.0584)	(0.0575)	(0.0544)	(0.0468)
Age		-0.00358	-0.00353	-0.00217
		(0.00284)	(0.00301)	(0.00292)
State/Year FEs	YES	YES	YES	YES
Inc, educ, race controls			YES	YES
State specific time trend				YES
Observations	4127	4127	4127	4127
R-Squared	0.234	0.235	0.261	0.277