Collateralized Marriage
Online Appendix *

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A Omitted proofs

A.1 Imperfect commitment leads to less than optimal specialization

If perfect commitment was possible, consumption sharing would be perfect in the second period and thus, we would have $c_2 \equiv \frac{1}{2} * (\Omega_i(1-\tau_i) + \Omega_j(1-\tau_j) + s(1+r))$ and $c_1 \equiv \frac{1}{2} * (\mu\Omega_i + \mu\Omega_j + A - s)$. Savings are determined by $u'(c_1) = u'(c_2)(1+r)$ and specialization occurs such that $\frac{\Omega_i}{\Omega_j} = \frac{\frac{\partial Q}{\partial \tau_i}}{\frac{\partial Q}{\partial \tau_j}}$

Instead, with imperfect commitment, second period consumption when divorced will thus now be given by:

$$c^d_{2i} = (1-\beta)\Omega_j(1-\tau_j) + \beta\Omega_i(1-\tau_i) + \delta s(1+r)$$

and

$$c^d_{2j} = \beta\Omega_j(1-\tau_j) + (1-\beta)\Omega_i(1-\tau_i) + (1-\delta)s(1+r).$$

It is easy to show that equal sharing will continue to occur in the first period, and in the second period whenever $\phi \geq \bar{\phi}$. However, the lower level of consumption sharing in either the renegotiated or divorced state will affect first period child investment decisions.

This will affect the investment decisions, τ_i and τ_j, which are determined by the following first-order conditions:

$$-\frac{\partial\left[E(u_{2i}) + E(u_{2j})\right]}{\partial \tau_k} = 4\frac{\partial Q}{\partial \tau_k}.$$

Defining the income sharing that occurs for any level of ϕ where renegotiation occurs as γ_ϕ weight placed on own income, where $\beta > \gamma_\phi > \frac{1}{2}$, the left-hand side of the expression will become:

$$\Omega_k\left((1-\bar{p})u'(c_2) + p(\beta u'(c^d_{2k}) + (1-\beta)u'(c^d_{2k'})) + \int_0^{\bar{\phi}} (\gamma_\phi u'(c'_{2k}) + (1-\gamma_\phi)u'(c'_{2k'}))l(\phi)d\phi\right). \tag{A.1}$$

Note that while investment will alter the renegotiation threshold $\bar{\phi}$, that derivative is not included in the expression since the utility of partners is the same in the married and the renegotiated outcome when ϕ is exactly equal to $\bar{\phi}$.

Given that $c^d_{2j} > c'_{2j} > c_2 > c'_{2i} > c^d_{2i}$, then $u'(c^d_{2j}) < u'(c'_{2j}) < u'(c_2) < u'(c'_{2i}) < u'(c^d_{2i})$. Since $\beta > \gamma_\phi > \frac{1}{2}$, we have

$$p(\beta u'(c^d_{2i}) + (1-\beta)u'(c^d_{2j})) > p(\beta u'(c^d_{2j}) + (1-\beta)u'(c^d_{2i}))$$

$$\int_0^{\bar{\phi}} (\gamma_\phi u'(c'_{2i}) + (1-\gamma_\phi)u'(c'_{2j}))l(\phi)d\phi > \int_0^{\bar{\phi}} (\gamma_\phi u'(c'_{2j}) + (1-\gamma_\phi)u'(c'_{2i}))l(\phi)d\phi.$$

This implies that what is inside the parenthesis of Equation (A.1) will be larger for women than for men, thus leading to:

$$\frac{\Omega_i}{\Omega_j} < \frac{\frac{\partial Q}{\partial \tau_i}}{\frac{\partial Q}{\partial \tau_j}},$$

which implies less specialization than in perfect commitment.

This will lead to lower Q with imperfect commitment, since the household has added constraints compared to the case of perfect commitment. The only way that public good creation could rise is if households previously sacrificed public goods to achieve more consumption sharing. But this is impossible since perfect household sharing decreases the marginal cost of investing in public goods for the household. Thus, imperfect commitment will also decrease household public goods.

A.2 Proof that the commitment savings vehicle will be desired

Assume we allow couples to choose whether to save in a vehicle that will be split according to $\delta \leq 1-\beta$, or to save in a vehicle where the lower earning partner receives share $\alpha > 1-\beta$. Denote savings placed in the vehicle split by α as s_α, and savings placed in the vehicle split according to δ as s_δ.[1] Then, the couple's second period divorced consumption levels will now be given by:

$$c_{2i}^d = (1-\beta)\Omega_j(1-\tau_j) + \beta\Omega_i(1-\tau_i) + \delta(1+r)s_\delta + \alpha(1+r)s_\alpha$$

and

$$c_{2j}^d = \beta\Omega_j(1-\tau_j) + (1-\beta)\Omega_i(1-\tau_i) + (1-\delta)(1+r)s_\delta + (1-\alpha)(1+r)s_\alpha.$$

Define $\bar{\alpha}(s^*)$ as the savings-sharing rule that would make $c_{2i}^d = c_2$, the full commitment consumption level. Up to that point, the higher is α, and the higher portion of savings placed in the α vehicle, the closer resource sharing gets to the perfect commitment case, leading to more specialization and more public good investments.

We now show that under imperfect commitment, if a couple has access to a savings vehicle through which savings are divided more favorably to the lower-earning partner than is income, they will choose to save 100% of their savings in this vehicle as long as $\alpha < \bar{\alpha}(s^*)$

To demonstrate this, denote the optimal utility obtained from the relationship by the couple as V_M. By the envelope theorem, the impact of an increase in α on the ex-ante utility of the couple will be given by

$$\frac{\partial V_M}{\partial \alpha} = p(1+r)s * (u'(c_{2i}^d) - u'(c_{2j}^d)) > 0 \quad \forall \alpha < \bar{\alpha}(s^*)$$

Thus, a couple will always prefer having a larger α. The return on their investment will be larger, and they will save all their savings in this vehicle.

A.3 Completion of Proof of Proposition 1

We need to show that under the commitment technology, savings do not adjust so as to undo the impact of the commitment technology on the ratio of marginal utilities of consumption, which drives specialization.

If a couple has access to the commitment technology, they will pick an optimal savings level $s^*(\tau_i, \tau_j)$ which will give the higher earning partner a consumption level of $c_{2j}^d(\tau_i, \tau_j)$ for each level of investment and

[1] One should have in mind that the higher earning partner could choose savings vehicles that are easy for him to liquidate or dissolve in case of marriage dissolution, or savings vehicles that are illiquid and easily observable by both parties. Joint marital accounts and homeownership are examples of the latter vehicle.

the lower earning partner $c^d_{2i}(\tau_i, \tau_j)$. If they do not have access to that technology, they will pick a savings level given by $\tilde{s}(\tau_i, \tau_j)$ which will give them consumption levels $\tilde{c^d_{2j}}(\tau_i, \tau_j)$ and $\tilde{c^d_{2i}}(\tau_i, \tau_j)$, respectively.

In the absence of any adjustment to savings, the consumption by partner i would increase with the commitment technology, due to her higher share of assets, and the consumption of partner j would decrease. We will first show that it is not possible that savings decrease with commitment enough that partner i's consumption stays the same (or decreases). For that, we can show that a savings level $s^* < \tilde{s}$ such that $c^d_{2i}(\tau_i, \tau_j) = \tilde{c^d_{2i}}(\tau_i, \tau_j)$, which necessarily implies that $c^d_{2j}(\tau_i, \tau_j) < \tilde{c^d_{2j}}(\tau_i, \tau_j)$, is not possible, because the marginal return to savings under commitment when divorced is given by:

$$(1 + r) \left(\alpha u'(c^d_{2i}) + (1 - \alpha)u'(c^d_{2j})\right),$$

while the return without commitment is:

$$(1 + r) \left(\delta u'(\tilde{c^d_{2i}}) + (1 - \delta)u'(\tilde{c^d_{2j}})\right).$$

If savings were decreased to the point that $c^d_{2i}(\tau_i, \tau_j) = \tilde{c^d_{2i}}(\tau_i, \tau_j)$, then the return with commitment is clearly lower, since the two marginal utilities of consumption are the same or lower, $u''(\cdot) < 0$, and $\delta < \alpha$. Furthermore, the probability of renegotiating would be larger, since $c^d_{2j} < \tilde{c^d_{2j}}$, which would further reduce the return to savings. But then this means that there would be a higher return to savings under commitment than not, meaning it would be impossible for savings to adjust to that point or beyond with commitment.

Thus, the optimal savings with the commitment technology would thus necessarily imply that the consumption of the lower income partner would be higher in divorce when one has access to the commitment technology.

We next show that for α large enough, it is not possible that savings increase with commitment enough that partner j's consumption stays the same (or increases). For that, we can show that a savings level $s^* > \tilde{s}$ such that $c^d_{2j}(\tau_i, \tau_j) = \tilde{c^d_{2j}}(\tau_i, \tau_j)$, which necessarily implies that $c^d_{2i}(\tau_i, \tau_j) > \tilde{c^d_{2i}}(\tau_i, \tau_j)$, is not possible because at that point the marginal return to savings when divorced is lower under commitment for large enough values of α. To see this, note that the marginal return is clearly lower for $\bar{\alpha}(s^*)$, the savings-sharing rule that makes $c^d_{2i} = c_2$, since at that point, $c^d_{2j} = c^d_{2i} = \tilde{c^d_{2j}} > \tilde{c^d_{2i}}$. Thus for $\alpha = \bar{\alpha}$, for j to have equal consumption under commitment, the return to savings under commitment must be lower, making it impossible for savings to adjust to that point or beyond with commitment. More generally, the difference in the return to savings with commitment to that without commitment (when $c^d_{2j}(\tau_i, \tau_j) = \tilde{c^d_{2j}}(\tau_i, \tau_j)$) changes with α in the following way:

$$-u'(c^d_{2i}) - u'(c^d_{2j}) + (1 + r)s^* \left((\alpha - \delta)u''(c^d_{2j}) + \alpha u''(c^d_{2i}) + \frac{\delta u''(\tilde{c^d_{2i}})}{1 - \delta}\right)$$

The first term is positive while the second is negative. For high enough values of α, the first term is relatively small and the second will be large, leading to the derivative being negative. Thus, for large enough values of α, if savings made up for partner j's lost consumption, the return would be lower for the case with commitment when divorced, which would make that option not optimal. A similar argument would hold for the renegotiation case. Here, the probability of renegotiation remains the same because the higher earning partner has the same level of consumption.

Thus, the optimal savings with the commitment technology would necessarily imply that the consumption of the higher income partner be lower in divorce when the couple has access to the commitment technology, for large enough values of α.

Thus, when a couple has access to the commitment technology, we know that the difference between the divorced consumption of the high- and low-income partner will shrink.

A.4 Proof that a fall in housing prices leads to more specialization

Assume only couples with initial $A > \lambda$ are able to access to a commitment technology. A fall in λ will lead to more specialization, higher public good provision, and more relationship stability. Conditional on marriage, this will be the case unless selection into marriage undoes the main effect.

To show this, denote V_M as the value of marriage when a couple has access to the commitment technology and $\widetilde{V_M}$ when it does not with $V_M(A, \Omega_i, \Omega_j, F) > \widetilde{V_M}(A, \Omega_i, \Omega_j, F)$. Define F_M as and $\widetilde{F_M}$ as the maximum cost such that marriage (with commitment and without, respectively) is preferred to non-marital fertility where $\widetilde{F_M} < F_M$. From Proposition 2, we know that $\frac{\partial F_M}{\partial A} > 0$ while $\frac{\partial \widetilde{F_M}}{\partial A} = 0$. This allows us to separate the population into 3 different groups based on F. For those with $F > F_M$, $V_N > \widetilde{V_M}$, a fall in λ will have no effect. For those with $F < \widetilde{F_M}$, $V_M > \widetilde{V_M} > V_N$, a fall in λ will not impact selection into marriage. However, for those where A was originally lower than λ but now can access the commitment device, Proposition 1 details that they will have more specialization, higher public good provisions and higher relationship stability. Finally, for $F_M > F > \widetilde{F_M}$, a fall in λ will cause those for which $A > \lambda$ to select into marriage and from Proposition 1, have more specialization, higher public good provisions and higher relationship stability. However, they have lower levels of A than existing married couples, which could influence their specialization, household public good provision, or relationship stability. Thus, a fall in λ will increase public good provision and specialization. *Conditional on marriage* specialization and public good provision should also increase, unless the proportion of new couples selecting into marriage is very large, and their lower A leads to lower public good provision and specialization, dominating the effect for existing married couples.

A.5 Completion of Proof of Proposition 2

To complete the proof presented in the main text, we must show that savings will be larger when one has access to the α asset than when one only has access to the δ asset. Denote the consumption levels of partners when divorced when having access to the α asset as c^d_{2i} and c^d_{2j} and that when having only access to the δ asset as $\widehat{c^d_{2i}}$ and $\widehat{c^d_{2j}}$.

Since $\alpha > 1 - \beta \geq \delta$, we can show that the ratio of marginal returns to savings when investing in the α asset compared to the marginal return when investing in the δ asset is always larger than the ratio of marginal costs of investing in τ_j in both cases since this is akin to:

$$\frac{\alpha u'(c^d_{2i}) + (1-\alpha)u'(c^d_{2j})}{\delta u'(\widehat{c^d_{2i}}) + (1-\delta)u'(\widehat{c^d_{2j}})} > \frac{(1-\beta)u'(c^d_{2i}) + \beta u'(c^d_{2j})}{(1-\beta)u'(\widehat{c^d_{2i}}) + \beta u'(\widehat{c^d_{2j}})}$$

Thus, to prove by contradiction, assume the optimal savings when having only access to the δ asset is higher than the one when having access to the α savings. It must then be the case that $\tau_j > \widehat{\tau_j}$, that is the optimal investment of partner j in child quality must be higher when having access to the commitment device than when not since the higher return to savings require a higher marginal cost for that partner. The combination of lower savings and higher investment will automatically imply that $c^d_{2j} < \widehat{c^d_{2j}}$. By proposition 3, we also know that $\tau_i > \widehat{\tau_i}$ since having access to α asset increases specialization thus leading to the low-income partner to invest more. If this increased investment was such that $c^d_{2i} < \widehat{c^d_{2i}}$, then the marginal return to investment when having access to the α asset would automatically be larger than when not having access to that asset, which would contradict our assumption above. We must thus have $c^d_{2i} > \widehat{c^d_{2i}}$. In this case, we can show that for α large enough, δ small enough, or for $u''' < 0$, the return to saving with commitment would be larger than that without, which would imply that optimal savings cannot be smaller when having access to the α asset than when not.

For the second part of the proposition, let us define the consumption level in the second period for a marriage with full commitment as $\overline{c_2}$ while that of marriage with imperfect commitment but access to α assets as c^d_{2i} and c^d_{2j}.

Because $\alpha > 1 - \beta$, the ratio of marginal returns to investing in savings between marriage with full commitment and that with imperfect commitment (but access to α savings) will be smaller than the ratio of marginal costs of investing in τ_j for both cases since this is akin to:

$$\frac{u'(\overline{c_2})}{\alpha u'(c^d_{2i}) + (1-\alpha)u'(c^d_{2j})} < \frac{u'(\overline{c_2})}{(1-\beta)u'(c^d_{2i}) + \beta u'(c^d_{2j})}$$

Assume by way of contradiction that the optimal savings in the case with full commitment are larger than that in imperfect commitment. It must then also be that investments in τ_j in the case of full commitment are lower than that in imperfect commitment based on the above inequality. For α large enough (necessarily if $\alpha > 0.5$), this implies that $\overline{c_2} > c^d_{2j}$ which would then imply that the return to saving would be larger for the case with imperfect than perfect commitment, which contradicts our premise. Thus, savings will be larger in the case where there is imperfect commitment than when there is full commitment.

Let us now compare savings in non-marital fertility when income sharing increases such that we compare low income sharing at $\underline{\beta}$ with higher income sharing at β, where $\underline{\beta} > \beta$ (i.e., each partner retains a higher share of their own income). In both cases, savings are divided using the δ sharing rule. Defining consumption as c^d_{2i} and c^d_{2j} when income sharing is higher and $\underline{c^d_{2i}}$ and $\underline{c^d_{2j}}$ when income sharing is lower, we can argue that the ratio of marginal returns to savings with high versus low income sharing will always be less than the ratio of marginal costs of investing in τ_j in both cases since

$$\frac{\delta u'(c^d_{2i}) + (1-\delta)u'(c^d_{2j})}{\delta u'(\underline{c^d_{2i}}) + (1-\delta)u'(\underline{c^d_{2j}})} < \frac{(1-\beta)u'(c^d_{2i}) + \beta u'(c^d_{2j})}{(1-\underline{\beta})u'(\underline{c^d_{2i}}) + \underline{\beta} u'(\underline{c^d_{2j}})}.$$

Given this, if the optimal savings with more income sharing was above that with less income sharing, it must also be true that the investment in child quality by the high income partner must be lower when non-marital fertility has higher income sharing since the marginal cost will be higher in this case. These combined imply that $c^d_{2j} > \underline{c^d_{2j}}$. By a similar argument as in the proof of the previous proposition, it must also be that $\underline{c}_{2i}^d > c_{2i}^d$. Combining these, for δ low enough or for $u''' < 0$, returns to savings would be larger in marriage than in non-marital fertility, which would imply that the optimal savings cannot be smaller with less income sharing. Thus, savings are decreasing in income sharing.

A.6 Extensions

Alternative decision-making Our model assumes collective decision-making, but the result of joint savings increasing specialization would carry through with a non-cooperative model where each partner picks individually the amount of investment they wish to make in the public good. Joint savings would decrease the differential in marginal utilities of consumption between women and men in the second period, thus bringing investments closer to the efficient Ω-driven ratio. In this case, one can think of joint savings as lessening the "public goods' problem" of specialized investment. As we earlier discussed, our model is also robust to collective decision making with unequal weights, as long as the weights are such that consumption is shared more equally in marriage than in divorce.

Linear utility If we assume that a couple makes investment decisions jointly, like in our main model, for joint utility to fall with imperfect commitment, we rely on the concavity of the utility function. Since our model emphasizes uncertainty, it is natural to include risk aversion in the model. However, we could alter our model to one where consumption is valued linearly as long as investment decisions were taken individually, as stated above. With linear utility, the role of joint savings would be to reduce the probability that a man would want to divorce, and thus decrease the marginal cost of investments to the woman by shifting weights to a scenario where they absorb less of the cost.

Other sources of heterogeneity In addition to selection on assets, higher earning couples will be more likely to choose marriage, as would, for example, couples who had a Q function that yielded higher utility from public goods, e.g., children. But note, one key insight of our model is that this relationship between marriage and public good provision like children may not only be selection, but may be a causal effect of marriage. In our model, couples who choose marriage will have more specialization and higher public goods than that same couple would have had counterfactually if they were restricted to a non-marital relationship.

Utility cost of divorce Also, in the model above, the utility a couple obtains from household public goods is the same within and outside of a relationship. If we assume instead that the enjoyment that a couple derives from public goods is reduced when divorced or separated, we generate some interesting additional insights. Formally, let us assume that the utility from public goods becomes ηQ, where $\eta < 1$ when a couple is separated. This will now shift the divorce threshold as the husband will be less keen on divorcing than before since he will lose public goods upon divorce. Thus, even with $\phi < 0$, couples will be willing to remain together. Furthermore, the threshold of ϕ that will determine divorce will depend on Q.

In this context, if a couple has access to a joint savings technology, they will have higher household public goods, which will raise the cost of divorce. This lower probability of divorce influences investment in return through two channels: it makes specialization more likely since the couple will be with a higher probability in the "married state" where marginal costs of investing for the lower earning partner are lower; it can also decreases specialization since the lower earning partner will have a lower incentive to invest as to decrease the probability of divorce. As long as the second effect does not undo the first, we will have even lower costs of divorce. These couples would thus have higher relationship stability than those without access to the commitment technology.

Marriage timing Another potential simplification in our model is that individuals marry in the first period as we abstract from marriage timing. To explore this, let us imagine now that individuals live for 3 periods. Individuals can either marry in the first or the second period. They can only have one such event in their life. They all receive the love shock after the second period. Those who marry early can enjoy the public goods of marriage for an extra period. For individuals with little assets, this change will be irrelevant. They will marry in the first period (if at all) and will not use the commitment technology. But for couples with more assets, there will be an advantage to delay marriage as to either gain access to the commitment technology or to increase the amount of savings that can be placed in the commitment vehicle if the benefits of adding or increasing commitment to the relationship compensates for the loss of one period of marriage. Thus, individuals who have higher endowments would be more likely to delay marriage since this allows them to save larger amounts in the joint savings vehicle, thereby strengthening further the relationship. Poorer individuals would see less benefits to delaying marriage since they would not be able to improve commitment in that fashion. In that world, wealthier individuals will choose marriage, but delay it, while lower asset individuals will engage in early non-marital fertility. This matches the fact that there has recently been a crossover in the US between age at first birth and age at first marriage, with people having children younger on average (due to non-marital fertility) despite marrying later (Arroyo et al., 2012).

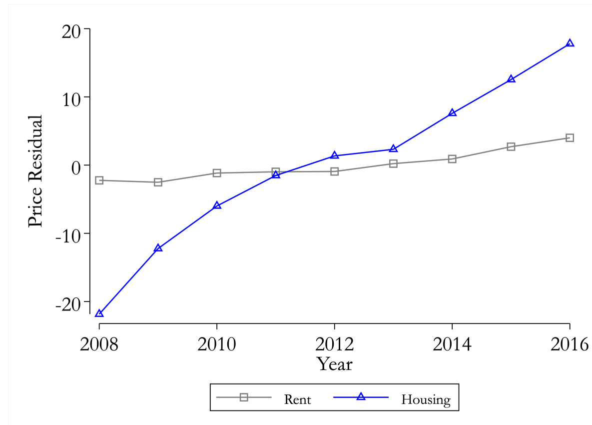
References

Arroyo, Julia, Krista K Payne, Susan L Brown, and Wendy D Manning. 2012. "Crossover in median age at first marriage and first birth: Thirty years of change." *National Center for Family & Marriage Research.*

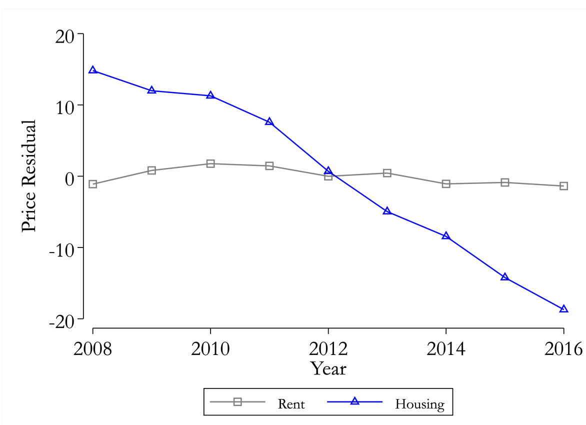
B Appendix Tables and Figures

Figure B.1: Comparison of rental and housing price index residuals by state

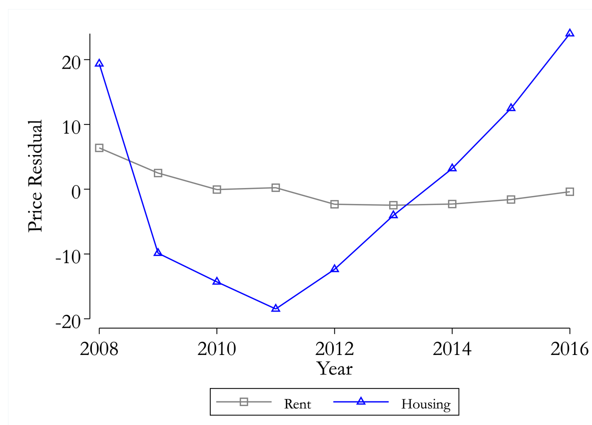
(a) New York



(b) Texas



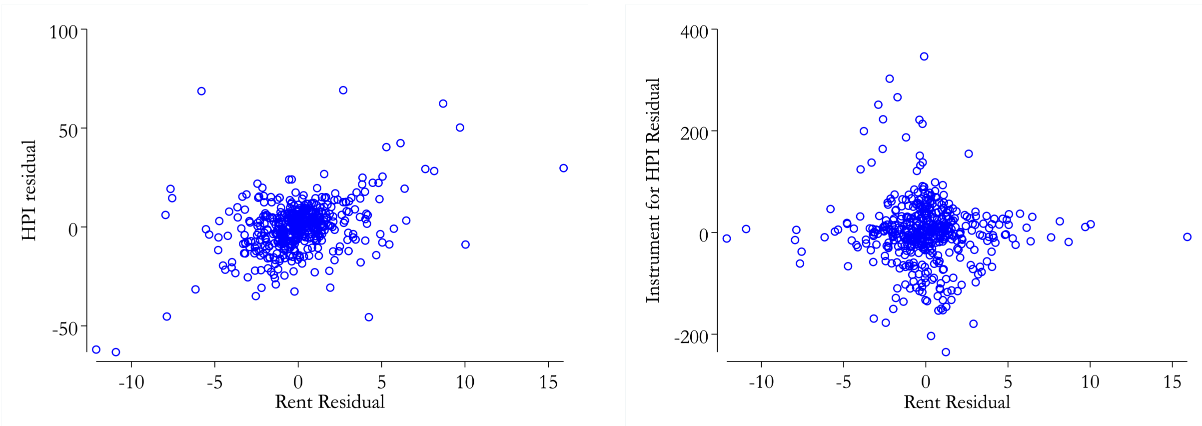
(c) Illinois



(d) Florida

Notes: Housing price index from the Federal Housing Finance Agency based on purchase-only data. Rental price index from the Bureau of Economic Analysis. Both series represent the residuals of the data against year fixed effects and state fixed effects.

Figure B.2: Comparison of rental and HPI residuals / HPI instrument across all states and years



(a) HPI vs. Rent Residuals

(b) HPI Instrument vs. Rent Residuals

Notes: Housing price index from the Federal Housing Finance Agency based on purchase-only data. Instrument is constructed by taking the pre-period volatility coefficient, sigma, and multiplying it by the leave-one-out national price index. Rental price index from the Bureau of Economic Analysis. Both series represent the residuals of the data against year fixed effects and state fixed effects.

Table B.1: Relationship between property regime and female − male working behavior

Dependent variable:	Usual hours worked (1)	Worked last year (2)
Female × Comm. Prop.	-1.357***	-0.043***
	(0.464)	(0.009)
Female	-12.35***	-0.160***
	(0.201)	(0.003)
Comm. Prop.	0.090	0.005
	(0.687)	(0.005)
Constant	43.60***	1.019***
	(0.388)	(0.010)
Observations	4,969,945	4,968,091
R-Squared	0.166	0.121

Notes: Data uses all couples in the 2008-2014 ACS married within the last eighteen years. Controls for age, educational category, and race fixed effects included. Arizona, California, Idaho, Louisiana, Nevada, New Mexico, Texas, Washington, and Wisconsin are community property states, while the remaining stats are equitable division.

Table B.2: Relationship between house prices at marriage and individual's years of education

	(1)	(2)	(3)	(4)
House Price Index	0.113*	0.110*	0.574**	0.573**
	(0.0594)	(0.0590)	(0.225)	(0.222)
Survey Year HPI Control	No	Yes	No	Yes
Additional Controls	No	No	No	No
Observations	2,804,269	2,804,269	2,524,620	2,524,620

Notes: Data uses individuals in the 2008-2014 ACS married within the last eighteen years. House Price Index represents state-level housing prices from the Federal Housing Finance Agency in the year of marriage, divided by 100, with the last two columns instrumented for with $-\widehat{\text{HPI}}$, as defined in equation (3). Fixed effects for the year of marriage, current year, and state are included in all specifications. Standard errors are clustered at the state level.

Table B.3: Relationship between house prices at age 25 and total work hours of a couple

	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
House Price Index	0.260	0.228	0.287	1.900	1.874	1.947
	(0.304)	(0.303)	(0.261)	(1.473)	(1.492)	(1.276)
Survey Year HPI Control	No	Yes	Yes	Yes	Yes	Yes
Additional Controls	No	No	Yes	No	No	Yes

Notes: Data uses all couples in the 2008-2014 ACS who turned 18 within the last eighteen years. House Price Index represents state-level housing prices from the Federal Housing Finance Agency at age 25, divided by 100, with the last three columns instrumented for with $-\widehat{\text{HPI}}$, as defined in equation (3). Fixed effects for birth cohort, current year, and state are included in all specifications. Standard errors are clustered at the state level. N=2,124,604 for the first three columns and N=1,899,797 for the last three.

Table B.4: Relationship between house price at age 25 and specialization

	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Labor Supply					
	Worked Last Year					
House Price Index	-0.004	-0.004	-0.003	-0.012**	-0.013**	-0.017**
	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.007)
HPI × female	0.013***	0.013***	0.011***	0.019***	0.019***	0.017***
	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
	Usual Hours Worked					
House Price Index	-0.418***	-0.424***	-0.409***	0.105	0.101	-0.239
	(0.127)	(0.126)	(0.117)	(0.546)	(0.553)	(0.570)
HPI × female	1.335***	1.335***	1.186***	1.518***	1.517***	1.399***
	(0.258)	(0.258)	(0.249)	(0.316)	(0.316)	(0.293)
	Panel B: Wages					
	Wage (level)					
House Price Index	-3680***	-3728***	-3722***	-3594	-3620	-6190***
	(809)	(799)	(739)	(2428)	(2388)	(2128)
HPI × female	7858***	7859***	7063***	8337***	8330***	7672***
	(992)	(992)	(962)	(1003)	(1007)	(939)
	Log hourly wage					
House Price Index	-0.018*	-0.020*	-0.019***	0.063**	0.062**	-0.002
	(0.010)	(0.010)	(0.006)	(0.030)	(0.030)	(0.013)
HPI × female	0.090***	0.090***	0.067***	0.089***	0.089***	0.069***
	(0.012)	(0.012)	(0.010)	(0.014)	(0.014)	(0.012)
Survey Year HPI Control	No	Yes	Yes	No	Yes	Yes
Additional Controls	No	No	Yes	No	No	Yes

Notes: Data uses individuals in the 2008-2014 ACS who married within the last eighteen years. House Price Index represents state-level housing prices from the Federal Housing Finance Agency in the year and state of current residence divided by 100. Fixed effects for the year of marriage, current year, and state are included in all specifications. Additional controls include a linear control for age and dummies for 4 educational categories. Standard errors are clustered at the state level. For OLS, N=3,702,212 for all outcomes except log hourly wage where N=2,900,523. For IV, N=3,330,278 for all outcomes except log hourly wage where N=2,612,991.

Table B.5: Relationship between house prices at age 25 and specialization: robustness

	Worked Last Year		Usual Hours Worked	
	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)
	Renters			
House Price Index	-0.001	-0.008	0.039	-0.276
	(0.003)	(0.010)	(0.144)	(0.643)
HPI × female	-0.006	-0.002	-0.326	-0.023
	(0.004)	(0.006)	(0.205)	(0.307)
N	1,280,958	1,197,915	1,280,958	1,197,915
	Never married individuals			
House Price Index	0.004	-0.008	0.360*	-0.793*
	(0.004)	(0.009)	(0.188)	(0.455)
HPI × female	-0.017***	-0.017***	-1.178***	-1.129***
	(0.003)	(0.004)	(0.197)	(0.219)
N	1,540,216	1,428,561	1,540,216	1,428,561
	Using state of residence			
House Price Index	-0.011***	-0.026***	-0.780***	-1.541**
	(0.003)	(0.009)	(0.175)	(0.576)
HPI × female	0.020***	0.032***	1.695***	2.476***
	(0.005)	(0.007)	(0.312)	(0.410)
N	4,609,404	4,362,719	4,609,404	4,362,719
	Without 2008-2011			
House Price Index	-0.007*	-0.007	-0.828***	-0.998***
	(0.004)	(0.005)	(0.216)	(0.369)
HPI × female	0.015**	0.019**	1.514***	1.830***
	(0.006)	(0.008)	(0.379)	(0.488)
N	2,953,635	2,592,470	2,953,635	2,592,470
Additional Controls	No	Yes	No	Yes

Notes: Data uses individuals in the 2008-2014 ACS who turned 25 within the last eighteen years. House Price Index represents state housing prices from the Federal Housing Finance Agency at age 25 , divided by 100. Fixed effects for birth cohort, current year, and state of birth are included in all specifications. Additional controls include a linear control for age and dummies for 4 educational categories. Standard errors are clustered at the state level. First panel only includes renters. Second panel only includes never married individuals. Third panel uses the state of residence instead of state of birth. Fourth panel excludes the years of the Financial Crisis.

Table B.6: Relationship between house prices at age 25 and time use (in minutes per day, <43 years old)

	Dependent variable, time in:					
	Work		Home Production		Leisure	
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: OLS					
House Price Index	-1.503	0.0864	-1.143	-1.713	0.469	-0.605
	(6.813)	(6.729)	(5.336)	(5.472)	(7.604)	(7.465)
HPI × female	18.31***	16.28**	-18.03***	-17.25***	-0.948	0.328
	(6.733)	(6.321)	(4.154)	(3.869)	(4.803)	(4.712)
Observations	55801	55801	55801	55801	55801	55801
R-Squared	0.231	0.240	0.120	0.122	0.179	0.183
	Panel B: IV					
House Price Index	-0.0762	0.366	-54.99*	-55.14*	56.78**	56.41**
	(14.34)	(13.52)	(30.56)	(29.59)	(27.14)	(27.76)
HPI × female	22.41***	19.97**	-21.95***	-20.72***	-0.661	0.593
	(8.185)	(8.034)	(5.383)	(5.144)	(5.595)	(5.649)
Observations	42627	42627	42627	42627	42627	42627
R-Squared	0.227	0.236	0.115	0.119	0.176	0.179
Survey Year HPI Control	Yes	Yes	Yes	Yes	Yes	Yes
Additional Controls	No	Yes	No	Yes	No	Yes

Notes: Data uses American Time Use Survey from 2003 to 2019, for individuals who turned 25 no more than 18 years ago. Work is both work and work related travel. Home production includes childcare, housework, and errands, and all related travel. Leisure includes recreation, sleep, and volunteer and educational time. House Price Index represents state-level housing prices from the Federal Housing Finance Agency in the year of turning 25, divided by 100. Fixed effects for the year of birth, current year, and state are included in all specifications, as well as fixed effects for day of the week and holidays. Additional controls include a linear control for age and dummies for 4 educational categories. Standard errors are clustered at the state level.

Table B.7: Relationship between house prices at age 25 and time spent on physical space

	Dependent variable: Time on physical space			
	Younger than 35		Younger than 43	
	(1)	(2)	(3)	(4)
	Panel A: OLS			
House Price Index	-1.424	-1.581	-1.913	-2.037
	(2.111)	(2.140)	(2.073)	(2.097)
HPI × female	0.640	0.783	0.819	0.936
	(1.438)	(1.441)	(1.261)	(1.271)
Observations	33015	33015	55801	55801
R-Squared	0.0254	0.0262	0.0257	0.0262
	Panel B: IV			
House Price Index	-2.863	-2.927	-3.518	-3.579
	(4.228)	(4.087)	(4.320)	(4.204)
HPI × female	0.484	0.624	-0.132	-0.016
	(1.933)	(1.926)	(1.496)	(1.495)
Observations	30879	30879	42627	42627
R-Squared	0.0248	0.0256	0.0234	0.0241
Additional Controls.	No	Yes	No	Yes

Notes: Data uses American Time Use Survey from 2003 to 2019, for individuals who either turned 25 no more than 18 years ago or no more than 10 years ago. Physical space upkeep includes interior and exterior maintenance and lawn and garden care. House Price Index represents state-level housing prices from the Federal Housing Finance Agency in the year of turning 25, divided by 100. Fixed effects for the year of birth, current year, and state are included in all specifications, as are controls for year-of-survey HPI, and fixed effects for day of the week and holidays. Additional controls include a linear control for age and dummies for 4 educational categories. Standard errors are clustered at the state level.