A Bad Peace Is Better Than A Good War:
A Structural Model of Marital Disagreements

Oleksandr Zhylyevskyy

University of Virginia

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Marital Disagreements in the U.S.

Typical disagreement frequencies (NSFH, married couples):

- once a week $+$: 39 percent
- several times a week $+$: 23 percent
- almost everyday: 11 percent

Common disagreement areas:

- household tasks, money, spending time together

Evidence on dispute resolution:

- seldom/never discuss disagreements: 27 percent
- often/always heatedly argue or shout: 10 percent

Effects of Marital Disagreements

Impact on spouses (Booth et al., 2001):

- depression
- alcoholism, bad health
- poor parent-child relationship

Impact on children (Grych & Fincham, 2001):

- low self-esteem, depression
- bad health
- conduct problems, trouble with law enforcement
- poor school performance
- low social competence

Amato et al. (1995), Jekielek (1998), Hanson (1999):

- conflict may be more detrimental to children than divorce

Family Economics Literature

Marital dispute as outcome is absent in:

- unitary models (Becker, 1974)
- cooperative bargaining models (Manser & Brown, 1980)
- collective models (Chiappori, 1988)

Separate spheres model (Lundberg & Pollak, 1993):

- noncooperation is threat point, but cannot be outcome

Tartari (2005):

- presence of conflict is determined by exogenous stochastic process

Novelty and Contribution

Novel features:

- three outcomes of bargaining: cooperation, open disagreement, divorce
- noncooperative framework (e.g., Friedberg & Stern, 2006): allows for Pareto inferior outcomes
- two sources of asymmetric information
- adequate measure of "destructive" conflict
- detailed specification of divorce payoffs

Use the model to:

- quantify welfare losses due to marital conflict
- evaluate the effect of shorter separation periods
- analyze the impact of stronger child support enforcement

Preview of Results

Effects on marital surplus:

- positive impact: husband's education level, age, catholic religion
- negative impact: differences in spousal ages and education levels

Effects on divorce options:

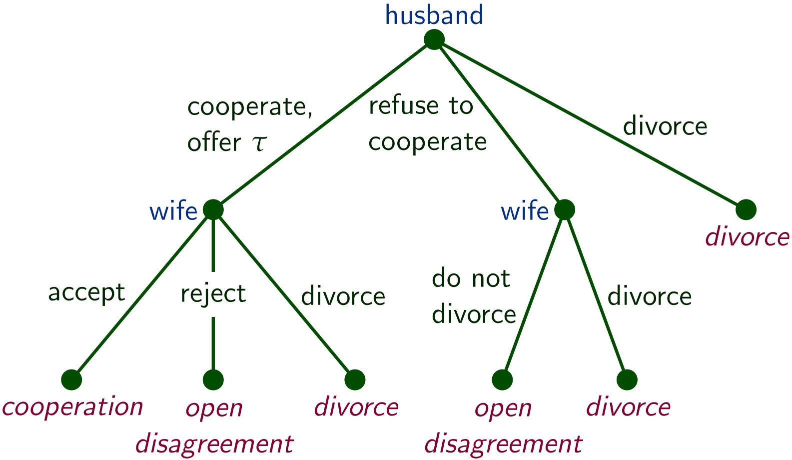
- positive impact: favorable marriage market conditions
- negative impact: separation period requirements

Most spouses are "soft bargainer – pessimists"

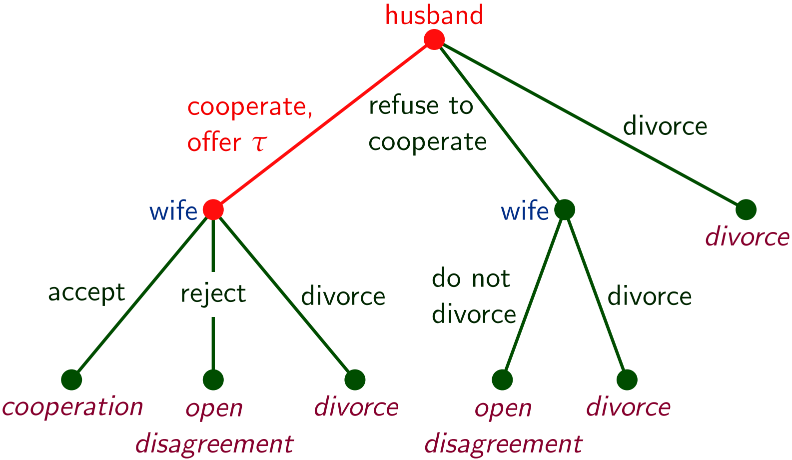
Outline

- Model
- Data and Variables
- Econometric Specification
- Estimation Strategy
- Results
- Conclusion

Bargaining Game Structure



Bargaining Game Structure



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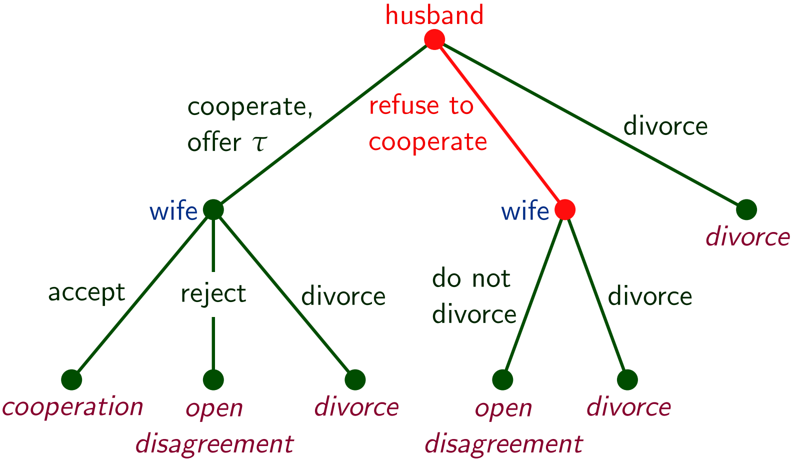

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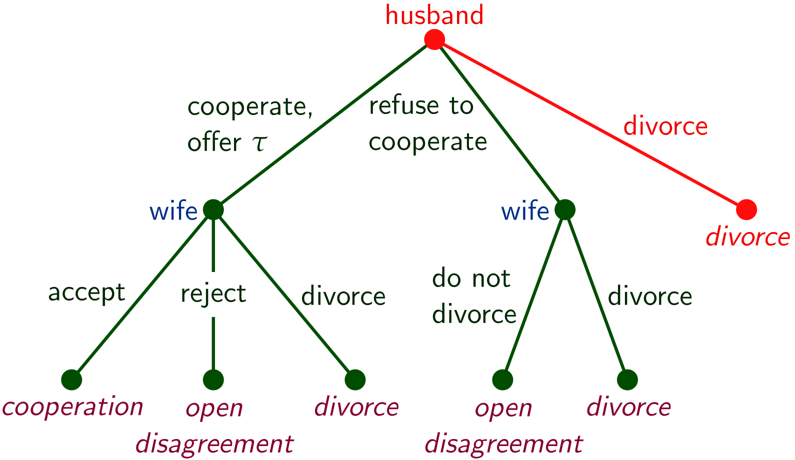

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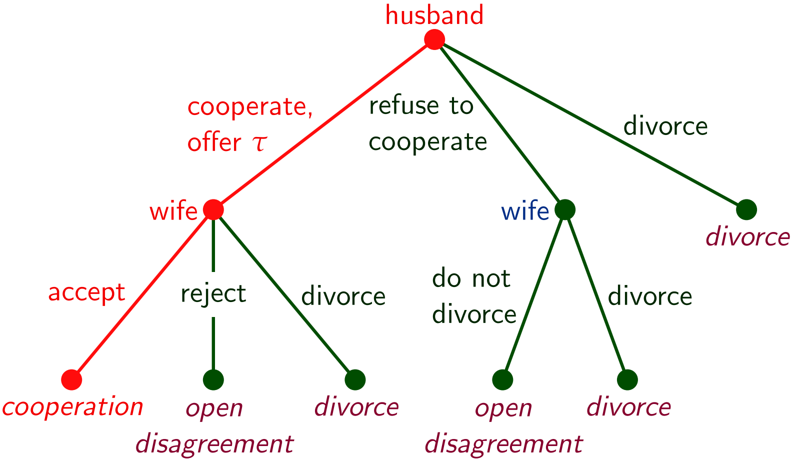

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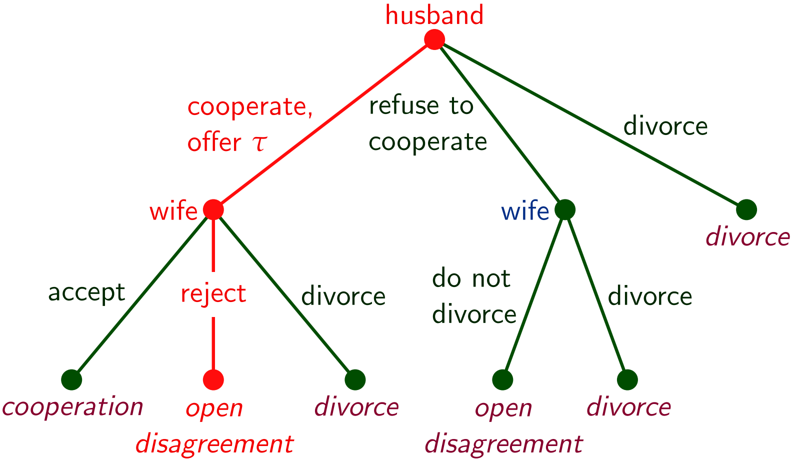

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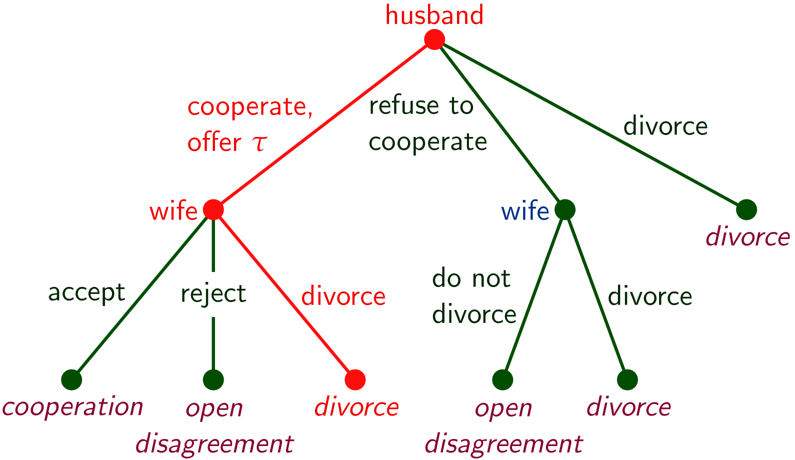


Spousal Types and Husband's Beliefs

Two sources of unobserved heterogeneity:

- Bargaining "strength": "soft" (S) vs. "hard" (H) bargainer
- Divorce prospect: "pessimist" (P) vs. "optimist" (O)

Spousal type (k) combines trait levels:

- e.g., type HO stands for "hard bargainer – optimist"
- $k \in \{HO, HP, SO, SP\}$

Knowledge about types:

- type is private information
- husband has beliefs $\left(\delta^{HO}, \delta^{HP}, \delta^{SO}, \delta^{SP}\right)'$

Utilities

Cooperation: utilities are type invariant:

- $u_h(-\tau)$ and $u_w(\tau)$

Open disagreement: bargaining "strength" matters:

- $v_h^k = \begin{cases} v_h^H, k = HO, HP \\ v_h^S, k = SO, SP \end{cases}$ and $v_w^k = \begin{cases} v_w^H, k = HO, HP \\ v_w^S, k = SO, SP \end{cases}$
- $v_h^H > v_h^S$ and $v_w^H > v_w^S$

Divorce: optimism matters:

- $y_h^k = \begin{cases} y_h^O, k = HO, SO \\ y_h^P, k = HP, SP \end{cases}$ and $y_w^k = \begin{cases} y_w^O, k = HO, SO \\ y_w^P, k = HP, SP \end{cases}$
- $y_h^O > y_h^P$ and $y_w^O > y_w^P$

Solution Approach

Backward recursion:

stage 2: wife maximizes her utility

stage 1: husband anticipates wife's best response,
maximizes his *expected* utility

Husband's strategies and expected utilities:

- strategies: $(\tau;\mathcal{C})$, $\mathcal{R}$, $\mathcal{D}$
- expected utilities: $\hat{E}\mathcal{V}_h^k(\tau;\mathcal{C})$, $\hat{E}\mathcal{V}_h^k(\mathcal{R})$, $\hat{E}\mathcal{V}_h^k(\mathcal{D})$ expressions

Technical issues:

- uncountably many transfers: game is infinite
- $\hat{E}\mathcal{V}_h^k(\tau;\mathcal{C})$ is discontinuous in τ

Game Properties

Theorem

All strategies $(\tau;\mathcal{C})$ *with* $\tau : u_h(-\tau) < y_h^k$ *are dominated.*

Theorem

Strategy $\mathcal{R}$ *is dominated.*

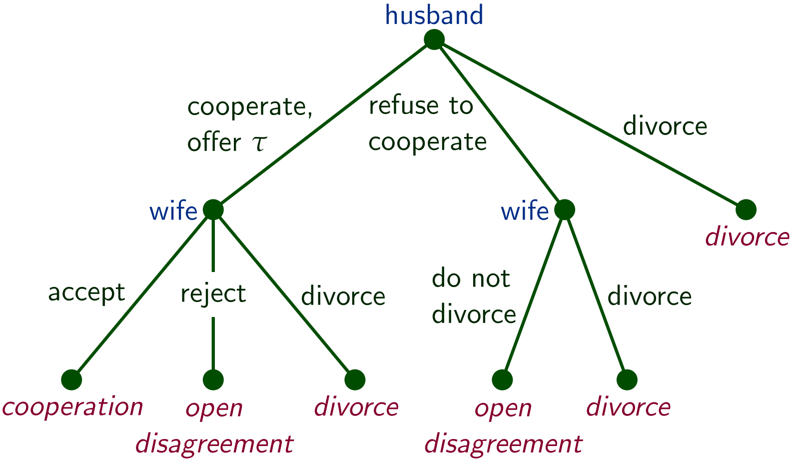
Theorem

Let $T^k = \{\tau : u_h(-\tau) \geq y_h^k\}$. *Solution to husband's problem:*

$$\max_{\{\mathcal{C},\ \mathcal{D}\}} \left\{ \max_{\tau \in T^k} \hat{E}\mathcal{V}_h^k(\tau;\mathcal{C}),\ \hat{E}\mathcal{V}_h^k(\mathcal{D}) \right\}$$

always exists.

Simplified Game Structure



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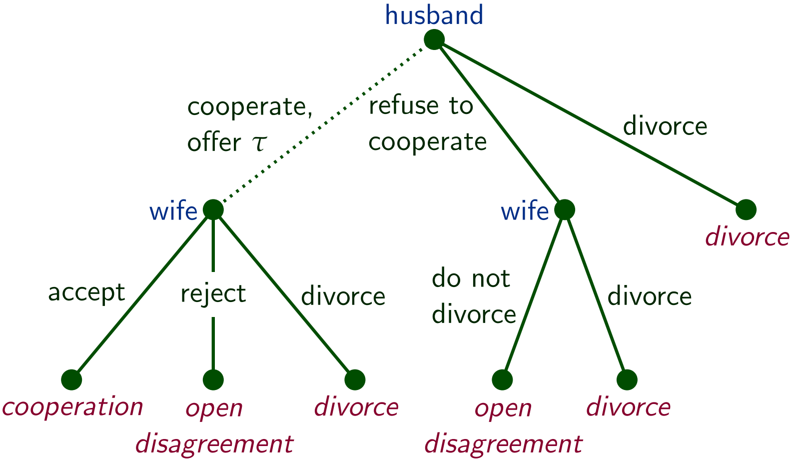

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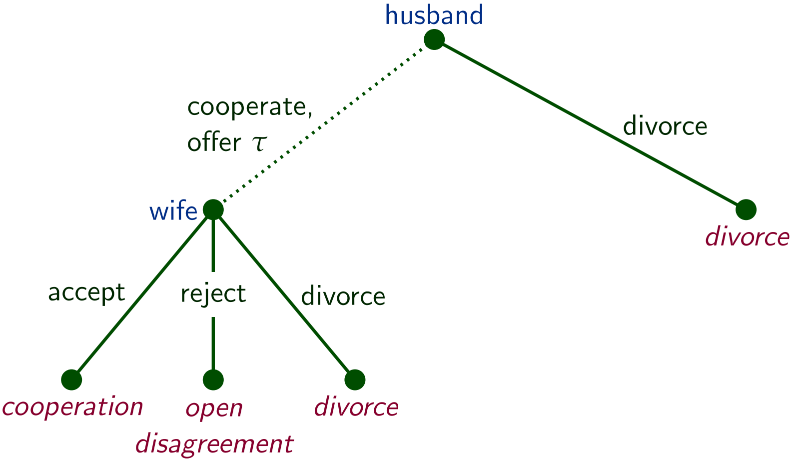


Primary Data Source: NSFH

National Survey of Families and Households (NSFH):

- nationally representative panel of households
- 3 data collection waves: 1987-88, 1992-94, 2001-02
- variety of information on family life
- spouses answered separate questionnaires
- initial sample: 5,270 married couples

Analyzed sample:

- 3,878 married couples
- reasons for exclusion from initial sample:
  - missing data (575 couples)
  - attrition (477 couples)
  - spousal death (340 couples)

Additional Data Sources

Marriage market conditions:

- availability ratio (Goldman et al., 1984)
- source: 1990 Census (5-percent PUMS)

Divorce regulations:

- separation period requirements
- source: Friedberg (1998)

Child support enforcement:

- collection rate (Nixon, 1997)
- source: Office of CSE reports to Congress

jump to marital state assignment

Marital and Spousal Characteristics

Variable	Mean	(Std.Dev.)	Min	Max
children, $<$ 6 year old	0.45	(0.73)	0	5
children, $\geq$ 6 year old	0.57	(0.94)	0	5
children, wife's	0.14	(0.47)	0	5
marriage duration	14.51	(13.23)	0	63.58
home ownership	0.75	(0.43)	0	1
age, husband's	41.02	(13.75)	17	90
age, absolute difference	3.62	(3.84)	0	38
black husband	0.09	(0.29)	0	1
catholic husband	0.23	(0.42)	0	1
religion, difference	0.33	(0.47)	0	1
high school, husband	0.51	(0.50)	0	1
college, husband	0.33	(0.47)	0	1
education, difference	0.38	(0.48)	0	1

Location-Specific Data, Beliefs, and Opinions

Variable	Mean	(Std.Dev.)	Min	Max
availability ratio, husband	1.25	(0.24)	0.56	2.43
availability ratio, wife	0.84	(0.16)	0.22	1.45
separation, $\leq$ 1 year	0.18	(0.39)	0	1
separation, $>$ 1 year	0.33	(0.47)	0	1
collection rate	0.11	(0.10)	0	0.35
same happiness, belief	0.19	(0.39)	0	1
more happy, belief	0.08	(0.27)	0	1
same happiness, husband	0.17	(0.38)	0	1
more happy, husband	0.06	(0.23)	0	1
worthy person, husband	0.38	(0.49)	0	1
same happiness, wife	0.15	(0.36)	0	1
more happy, wife	0.07	(0.26)	0	1
worthy person, wife	0.42	(0.49)	0	1

Marital State

Divorce:

- legally divorced or separated as of wave 2

Open disagreement:

- disagree about at least one aspect of marriage as of wave 2
- disputes occur several times a week or more often
- seldom/never discuss disputes or often/always shout

Cooperation:

- intact couples not in the state of open disagreement

Marital State	Frequency	Share (%)
cooperation	2,948	76.02
open disagreement	416	10.73
divorce	514	13.25
Total	3,878	100.00

Parameterized Utilities

	Husband	Wife
Cooperation:	$u_h = x'\alpha_h - \tau + \theta_1$	$u_w = x'\alpha_w + \tau + \theta_3$
Disagreement:	$v_h^S = x'\beta_h + \theta_2$	$v_w^S = x'\beta_w + \theta_4$
	$v_h^H = v_h^S + \beta_h^H$	$v_w^H = v_w^S + \beta_w^H$
Divorce:	$y_h^P = z_h'\gamma_h$	$y_w^P = z_w'\gamma_w$
	$y_h^O = y_h^P + \gamma_h^O$	$y_w^O = y_w^P + \gamma_w^O$

- x: vector of marital and spousal data ▸ list of variables
- z_h, z_w: vectors of location-specific data ▸ lists of variables
- type-specific constants: $\beta_h^H, \beta_w^H, \gamma_h^O, \gamma_w^O > 0$
- cannot separately identify α_h and α_w; estimate $\alpha \equiv \alpha_h + \alpha_w$

Parameterized Type Probabilities and Beliefs

Type probabilities (Degan & Merlo, 2006):

$$\pi_h^k = \frac{\exp\left(a_h' \lambda_h^k\right)}{\sum_j \exp\left(a_h' \lambda_h^j\right)}, \quad \pi_w^k = \frac{\exp\left(a_w' \lambda_w^k\right)}{\sum_j \exp\left(a_w' \lambda_w^j\right)}$$

- a_h, a_w: vectors of spousal answers ▸ lists of variables
- normalization: $\lambda_h^{SP} = 0$ and $\lambda_w^{SP} = 0$

Husband's beliefs:

$$\delta^k = \frac{\exp\left(b' \rho^k + \eta^k\right)}{\sum_j \exp\left(b' \rho^j + \eta^j\right)}$$

- b: vector of husband's reported beliefs ▸ list of variables
- normalization: $\rho^{SP} = 0$ and $\eta^{SP} = 0$

Distributions of Unobservables

Unobservable components of utilities:

$$\underset{4\times 1}{\theta} \sim i.i.d.\ N\left(0, \Sigma\right)$$

Unobservable components of beliefs:

$$\underset{3\times 1}{\eta} \sim i.i.d.\ N\left(0, \Omega\right)$$

Overview of Estimation Approach

Strategy:

- use data as of wave 1 to predict marital state as of wave 2
- express marital state probabilities in easy to simulate way
- find parameters by maximum simulated likelihood method

Implementation:

- solve for marital state probabilities in terms of conditional probabilities given spousal types
- express conditional probability as integral of indicator function
- find boundaries of integration analytically
- simulate integrals by GHK

jump to results

Estimation Specifics

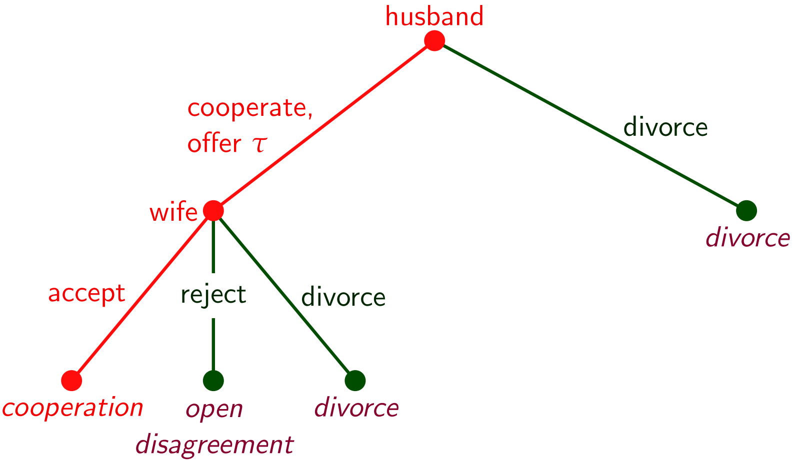
Notation:

- marital state: s
- data: X ▸ list of variables
- parameters: Γ ▸ list of parameters

Marital state probability:

$$\Pr\left[s = \textit{coop.} | X, \Gamma\right] = \sum_k \sum_l \pi_h^k \cdot \pi_w^l \cdot \Pr\left[s = \textit{coop.} | k, l, X, \Gamma\right]$$

Estimation Specifics



Estimation Specifics

Notation:

- marital state: s
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Marital state probability:

$$\Pr\left[s = \mathit{coop.}|X,\Gamma\right] = \sum_k \sum_l \pi_h^k \cdot \pi_w^l \cdot \Pr\left[s = \mathit{coop.}|k,l,X,\Gamma\right]$$

Conditional marital state probability:

$$\Pr\left[s = \mathit{coop.}|k,l,X,\Gamma\right] = E_{\theta,\eta}\mathbf{1}\begin{pmatrix} \tau^* = \arg\max_\tau \hat{E}\mathcal{V}_h^k\left(\tau;\mathcal{C}\right), \\ \hat{E}\mathcal{V}_h^k\left(\tau^*;\mathcal{C}\right) \geq y_h^k, \\ u_w\left(\tau^*\right) \geq v_w^l, \\ u_w\left(\tau^*\right) \geq y_w^l \end{pmatrix}$$

Estimation Specifics

Notation:

- marital state: s
- data: X list of variables
- parameters: Γ list of parameters

Marital state probability:

$$\Pr\left[s = \textit{coop.} | X, \Gamma\right] = \sum_k \sum_l \pi_h^k \cdot \pi_w^l \cdot \Pr\left[s = \textit{coop.} | k, l, X, \Gamma\right]$$

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Estimation Specifics

Notation:

- marital state: s
- data: X ▸ list of variables
- parameters: Γ ▸ list of parameters

Marital state probability:

$$\Pr\left[s = coop.|X,\Gamma\right] = \sum_k \sum_l \pi_h^k \cdot \pi_w^l \cdot \Pr\left[s = coop.|k,l,X,\Gamma\right]$$

Conditional marital state probability:

$$\Pr\left[s = coop.|k,l,X,\Gamma\right] = E_{\theta,\eta}\mathbf{1}\left(\begin{array}{l} \tau^* = \arg\max_\tau \hat{E}\mathcal{V}_h^k\left(\tau;\mathcal{C}\right), \\ \hat{E}\mathcal{V}_h^k\left(\tau^*;\mathcal{C}\right) \geq y_h^k, \\ u_w\left(\tau^*\right) \geq v_w^l, \\ u_w\left(\tau^*\right) \geq y_w^l \end{array}\right)$$

Integration Bounds

Simulation approach:

- transform $E_{\theta,\eta}\mathbf{1}(\theta,\eta \in S) = \int\limits_S f(\theta,\eta)\, d\theta d\eta$: solve for integration bounds that represent set S
- simulate $\int\limits_S f(\theta,\eta)\, d\theta d\eta$ with GHK

Transformation algorithm:

step 1: partition θ_4 domain; then, on each interval:
step 2: find discontinuity points of $\hat{E}\mathcal{V}_h^k(\tau;\mathcal{C})$
step 3: find acceptable transfer(s) to wife of type l
step 4: write out inequalities when husband of type k chooses to offer such transfer(s)
step 5: solve inequalities for integration bounds example
step 6: repeat steps 2 – 5 for all θ_4 intervals

Intact Marriage Utilities

	Cooperation		*Open Disagreement*			
			Husband		Wife	
Variable	Coeff.	Std.Err.	Coeff.	Std.Err.	Coeff.	Std.Err.
constant	4.4799***	(0.0890)	−3.3420***	(0.0945)	−0.4905***	(0.0726)
children, $<$ 6 y.o.	0.2367***	(0.0690)	−0.3217***	(0.0760)	0.2362***	(0.0686)
children, $\geq$ 6 y.o.	0.0208	(0.0634)	0.4793***	(0.0607)	0.5113***	(0.0521)
children, wife's	−0.1823***	(0.0673)	0.2131***	(0.0798)	0.5708***	(0.0733)
duration	1.1308***	(0.0789)	0.1018	(0.0830)	−0.3311***	(0.0583)
home ownership	0.0988	(0.0857)	1.1574***	(0.0859)	−0.1530**	(0.0716)
age, husb.'s	0.5055***	(0.0712)	1.7136***	(0.0722)	0.0839	(0.0597)
age, abs. diff.	−0.1430***	(0.0530)	−0.7814***	(0.0699)	−0.0080	(0.0502)
black husb.	0.3063***	(0.0818)	−1.4418***	(0.0798)	0.4589***	(0.0930)
catholic husb.	0.2397***	(0.0858)	0.8132***	(0.0948)	0.2994***	(0.0726)
religion, diff.	0.0551	(0.0728)	−0.8312***	(0.0836)	0.0080	(0.0684)
high sch., husb.	0.3271***	(0.0688)	0.8873***	(0.0853)	−0.3419***	(0.0723)
college, husb.	0.2457***	(0.0808)	0.1665**	(0.0763)	−0.9109***	(0.0659)
education, diff.	−0.2787***	(0.0763)	0.1530*	(0.0796)	0.3574***	(0.0680)
HO/HP constant	–		3.1811***	(0.1497)	2.7123***	(0.1125)

*, **, and *** denote significance at 10, 5, and 1 percent levels.

results w/o p.e. variables

Divorce Utilities

	Husband		Wife	
Variable	Coeff.	Std.Err.	Coeff.	Std.Err.
availability ratio, husband	0.4030***	(0.0613)	–	
availability ratio, wife	–		1.5427***	(0.0810)
separation, $\leq$ 1 year	−0.1464*	(0.0792)	−0.0002	(0.0753)
separation, $>$ 1 year	−0.2091***	(0.0770)	−0.3166***	(0.0772)
collection rate	−0.4174***	(0.0922)	0.0001	(0.0929)
HO/SO constant	3.6410***	(0.1763)	0.5688***	(0.0374)

*, **, and *** denote significance at 10, 5, and 1 percent levels.

results w/o p.e. variables

Type Probabilities and Beliefs

		True Types		Beliefs
Spousal Type		Husband	Wife	Husband
HO	(hard bargainer – optimist)	0.1086	0.0382	0.0943
HP	(hard bargainer – pessimist)	0.1264	0.2420	0.0466
SO	(soft bargainer – optimist)	0.0146	0.0516	0.1165
SP	(soft bargainer – pessimist)	0.7505	0.6682	0.7426

results w/o p.e. variables

Conclusion

Key contributions:

- marital dispute is outcome of bargaining
- model allows for Pareto inferior outcome and information asymmetry
- disagreement indicator incorporates data on conflict resolution
- policy variables affect divorce payoffs

Further directions:

- evaluation of welfare effects
- analysis of policy changes

Questions?

Appendix Outline

Husband's Expected Utilities

Action $(\tau;\mathcal{C})$:

$$\hat{E}\mathcal{V}_h^k(\tau;\mathcal{C}) = \sum_l \delta^l \Bigg[y_h^k \cdot \mathbf{1}\begin{pmatrix} y_w^l > v_w^l, \\ y_w^l > u_w(\tau) \end{pmatrix} + \\ + v_h^k \cdot \mathbf{1}\begin{pmatrix} v_w^l \geq y_w^l, \\ v_w^l > u_w(\tau) \end{pmatrix} + \\ + u_h(-\tau) \cdot \mathbf{1}\begin{pmatrix} u_w(\tau) \geq y_w^l, \\ u_w(\tau) \geq v_w^l \end{pmatrix} \Bigg].$$

Action $\mathcal{R}$:

$$\hat{E}\mathcal{V}_h^k(\mathcal{R}) = \sum_l \delta^l \left[y_h^k \cdot \mathbf{1}\left(y_w^l > v_w^l\right) + v_h^k \cdot \mathbf{1}\left(v_w^l \geq y_w^l\right) \right]$$

Action $\mathcal{D}$:

$$\hat{E}\mathcal{V}_h^k(\mathcal{D}) = y_h^k$$

back to solution approach

Explanatory Vectors

x	z_h	z_w
constant	avail. ratio, husb.	avail. ratio, wife
children, <6 y.o.	separation, ≤ 1 year	separation, ≤ 1 year
children, ≥ 6 y.o.	separation, >1 year	separation, >1 year
children, wife's	collection rate	collection rate
duration (std)		
home ownership		
age, husb.'s (std)		
age, abs. diff. (std)		
black husb.		
catholic husb.		
religion, diff.		
high sch., husb.		
college, husb.		
education, diff.		

back to parameterized utilities

Vectors of Answers and Beliefs

a_h	a_w	b
constant	constant	constant
same happiness, husb.	same happiness, wife	same happiness
more happy, husb.	more happy, wife	more happy
worthy person, husb.	worthy person, wife	

back to parameterized types and beliefs

Data Vector

x	marital and spousal characteristics
z_h	location-specific characteristics of husband
z_w	location-specific characteristics of wife
a_h	husband's own divorce prospect and opinions
a_w	wife's own divorce prospect and opinions
b	husband's beliefs about wife's divorce prospect

back to estimation specifics

Parameter Vector

α	parameters of $u_h + u_w$
β_h	parameters of v_h^S and v_h^H
β_h^H	hard bargainer's constant for husband, $\beta_h^H > 0$
β_w	parameters of v_w^S and v_w^H
β_w^H	hard bargainer's constant for wife, $\beta_w^H > 0$
γ_h	parameters of y_h^P and y_h^O
γ_h^O	optimist's constant for husband, $\gamma_h^O > 0$
γ_w	parameters of y_w^P and y_w^O
γ_w^O	optimist's constant for wife, $\gamma_w^O > 0$
λ_h^k	parameters of π_h^k, $k = \{HO, HP, SO, SP\}$
λ_w^k	parameters of π_w^k, $k = \{HO, HP, SO, SP\}$
ρ^k	parameters of δ^k, $k = \{HO, HP, SO, SP\}$
Σ	covariance matrix of θ
Ω	covariance matrix of η

back to estimation specifics

Integration Bounds Example

The example shows a small part of the integration region for the state of *cooperation* when husband's type is k (generic) and wife's type is SP ($l = SP$):

$$I_5^C = \int_{\Re^3} \int_{f_1}^{f_2} \int_{-\infty}^{+\infty} \int_{f_3(\eta,\theta_4)}^{+\infty} \int_{f_4(\eta,\theta_2,\theta_3)}^{f_5(\eta,\theta_2,\theta_3,\theta_4)} f(\theta,\eta)\, d\theta_1 d\theta_2 d\theta_3 d\theta_4 d\eta$$

Definitions:

$$\begin{aligned} f_1 &= y_w^P - \bar{v}_w^H \\ f_2 &= \min\left\{ y_w^P - \bar{v}_w^S, y_w^O - \bar{v}_w^H \right\} \\ f_3(\eta,\theta_4) &= y_h^k - \bar{v}_h^k + \frac{\delta^{SP}(\eta)}{\delta^{HP}(\eta)} \left(y_w^P - \bar{v}_w^H \right) - \frac{\delta^{SP}(\eta)}{\delta^{HP}(\eta)} \theta_4 \end{aligned}$$

back to integration bounds | continue example

Integration Bounds Example (Continued)

Definitions (continued):

$$f_4(\eta,\theta_2,\theta_3) = -\bar{u}_h - \bar{u}_w - \theta_3 + \\ + \max\left\{ \begin{array}{c} y_h^k + y_w^P, \\ y_w^P + \frac{\left(\delta^{HP}(\eta)+\delta^{SP}(\eta)\right)y_h^k - \delta^{HP}(\eta)\left(\bar{v}_h^k+\theta_2\right)}{\delta^{SP}(\eta)} \end{array} \right\}$$

$$f_5(\eta,\theta_2,\theta_3,\theta_4) = -\bar{u}_h - \bar{u}_w - \theta_3 + \\ + \min\left\{ \begin{array}{c} \bar{v}_h^k + \theta_2 + \frac{\left(\delta^{HP}(\eta)+\delta^{SP}(\eta)\right)\left(\bar{v}_w^H+\theta_4\right) - \delta^{SP}(\eta)y_w^P}{\delta^{HP}(\eta)}, \\ \frac{\left(\delta^{HO}(\eta)+\delta^{SO}(\eta)\right)y_h^k + \delta^{HP}(\eta)\left(\bar{v}_h^k+\theta_2\right) + y_w^O - \delta^{SP}(\eta)y_w^P}{1-\delta^{SP}(\eta)} \end{array} \right\}$$

back to integration bounds

Intact Marriage Utilities (w/o P.E. Variables)

	Cooperation		*Open Disagreement*			
			Husband		Wife	
Variable	Coeff.	Std.Err.	Coeff.	Std.Err.	Coeff.	Std.Err.
constant	3.4776^{***}	(0.0604)	-3.2457^{***}	(0.0674)	-0.4973^{***}	(0.0697)
children, $<$ 6 y.o.	–		–		–	
children, $\geq$ 6 y.o.	–		–		–	
children, wife's	-0.2237^{***}	(0.0468)	0.0726	(0.0736)	0.1554^{***}	(0.0578)
duration	–		–		–	
home ownership	–		–		–	
age, husb.'s	0.7119^{***}	(0.0465)	1.2218^{***}	(0.0615)	-0.3976^{***}	(0.0452)
age, abs. diff.	-0.2985^{***}	(0.0320)	-0.2235^{***}	(0.0514)	0.1895^{***}	(0.0395)
black husb.	-0.0532	(0.0629)	-0.8016^{***}	(0.0736)	0.3347^{***}	(0.0616)
catholic husb.	0.2120^{***}	(0.0501)	0.2921^{***}	(0.0668)	0.1697^{***}	(0.0642)
religion, diff.	-0.1561^{***}	(0.0560)	-0.0645	(0.0666)	0.1055	(0.0679)
high sch., husb.	0.1586^{***}	(0.0584)	0.3507^{***}	(0.0723)	-0.3929^{***}	(0.0609)
college, husb.	0.3386^{***}	(0.0582)	-0.2169^{***}	(0.0769)	-0.9688^{***}	(0.0634)
education, diff.	-0.3138^{***}	(0.0528)	0.5966^{***}	(0.0715)	0.3030^{***}	(0.0626)
HO/HP constant	–		3.5164^{***}	(0.1186)	2.9047^{***}	(0.1012)

*, **, and *** denote significance at 10, 5, and 1 percent levels.

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Divorce Utilities (w/o P.E. Variables)

	Husband		Wife	
Variable	Coeff.	Std.Err.	Coeff.	Std.Err.
availability ratio, husband	0.2274^{***}	(0.0555)	–	
availability ratio, wife	–		1.5431^{***}	(0.0560)
separation, ≤ 1 year	-0.0584	(0.0597)	-0.0002	(0.0610)
separation, > 1 year	-0.0768	(0.0570)	-0.2196^{***}	(0.0595)
collection rate	-0.3066^{***}	(0.0795)	0.0001	(0.0634)
HO/SO constant	2.4080^{***}	(0.1040)	0.3087^{***}	(0.0161)

*, **, and *** denote significance at 10, 5, and 1 percent levels.

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Type Probabilities and Beliefs (w/o P.E. Variables)

Spousal Type		True Types		Beliefs
		Husband	Wife	Husband
HO	(hard bargainer – optimist)	0.0977	0.0428	0.0735
HP	(hard bargainer – pessimist)	0.1336	0.2449	0.0536
SO	(soft bargainer – optimist)	0.0119	0.0373	0.0874
SP	(soft bargainer – pessimist)	0.7568	0.6750	0.7856

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Reduced Form Trinomial Model

	Open Disagreement		*Divorce*	
Variable	Coeff.	Std.Err.	Coeff.	Std.Err.
constant	-2.1053^{***}	(0.5154)	-2.3055^{***}	(0.5307)
children, $<$ 6 y.o.	0.0341	(0.0612)	-0.0627	(0.0604)
children, $\geq$ 6 y.o.	0.1251^{***}	(0.0479)	0.0962^{*}	(0.0515)
children, wife's	0.1426^{*}	(0.0825)	0.1594^{**}	(0.0766)
duration	-0.0776	(0.0858)	-0.4670^{***}	(0.0931)
home ownership	-0.2451^{***}	(0.0892)	-0.3002^{***}	(0.0847)
age, husb.'s	-0.3631^{***}	(0.1017)	-0.3904^{***}	(0.0969)
age, abs. diff.	0.1182^{***}	(0.0453)	0.1928^{***}	(0.0439)
black husb.	0.3901^{***}	(0.1340)	0.4010^{***}	(0.1394)
catholic husb.	0.1703^{*}	(0.0894)	-0.1259	(0.0930)
religion, diff.	0.1303	(0.0823)	0.1619^{**}	(0.0796)
high sch., husb.	-0.3716^{***}	(0.1171)	-0.2770^{**}	(0.1224)
college, husb.	-0.4728^{***}	(0.1220)	-0.5409^{***}	(0.1244)
education, diff.	0.1336^{*}	(0.0809)	0.1798^{**}	(0.0807)
avail. ratio, husb.	0.8260^{***}	(0.2764)	0.4914^{*}	(0.2983)
avail. ratio, wife	-0.3923	(0.3654)	0.5411	(0.3546)
separation, $\leq$ 1 year	-0.1874^{*}	(0.1093)	-0.1096	(0.1046)
separation, $>$ 1 year	0.0163	(0.0853)	-0.2157^{**}	(0.0869)
collection rate	0.7281	(0.5151)	0.2811	(0.4985)

*, **, and *** denote significance at 10, 5, and 1 percent levels.

results w/o p.e. variables

Reduced Form Trinomial Model (w/o P.E. Variables)

	Open Disagreement		*Divorce*	
Variable	Coeff.	Std.Err.	Coeff.	Std.Err.
constant	-2.0584^{***}	(0.4985)	-2.5020^{***}	(0.5095)
children, $<$ 6 y.o.	–		–	
children, $\geq$ 6 y.o.	–		–	
children, wife's	0.1115	(0.0772)	0.2398^{***}	(0.0709)
duration	–		–	
home ownership	–		–	
age, husb.'s	-0.4566^{***}	(0.0700)	-0.7374^{***}	(0.0715)
age, abs. diff.	0.1417^{***}	(0.0394)	0.2958^{***}	(0.0388)
black husb.	0.4361^{***}	(0.1324)	0.4363^{***}	(0.1364)
catholic husb.	0.1754^{**}	(0.0890)	-0.1144	(0.0921)
religion, diff.	0.1183	(0.0813)	0.1951^{**}	(0.0783)
high sch., husb.	-0.3956^{***}	(0.1153)	-0.2602^{**}	(0.1192)
college, husb.	-0.5210^{***}	(0.1187)	-0.5141^{***}	(0.1203)
education, diff.	0.1240	(0.0805)	0.1816^{**}	(0.0799)
avail. ratio, husb.	0.7545^{***}	(0.2710)	0.4834^{*}	(0.2891)
avail. ratio, wife	-0.4683	(0.3620)	0.5872^{*}	(0.3480)
separation, $\leq$ 1 year	-0.2101^{*}	(0.1085)	-0.1190	(0.1031)
separation, $>$ 1 year	0.0137	(0.0850)	-0.2052^{**}	(0.0859)
collection rate	1.2183^{***}	(0.4120)	0.0897	(0.3968)

*, **, and *** denote significance at 10, 5, and 1 percent levels.

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