Household Sharing and Commitment: Evidence from Panel Data on Individual Expenditures and Time Use

Jeremy Lise and Ken Yamada

Presented by: Nesile Ozder and Alyssa Ramos

Motivation

- Collective model of the household
  - (Chiappori, 1988, 1992; Apps and Rees, 1988)
- Relative allocations within households are related to relative bargaining positions i.e. relative market productivity, marriage market opportunities etc.
  - (Browning, Bourguignon, Chiappori Lechene, 1994; Lise and Seitz, 2011; Cherchye, De Rock, and Vermeulen 2012)
- Changes to bargaining position affects relative allocations during marriage.
  - (Attanasio and Lechene, 2014; Voena, 2015)

Motivation

- Mazzocco (2007) proposes a test to distinguish between dynamic collective models with and without commitment.
  - Rejects full commitment but is not able to provide estimates
  - Uses consumption at the household level
  - Doesn't track individuals over time
- No evidence so far on the relative importance of information known at the time of marriage and innovations during marriage

The Question

- How do allocations of time and consumption expenditures differ between households in the cross section? How do these change over time?
- How do these cross sectional differences relate to differences across households in information known at the time of marriage? During marriage?

Key Results

- Differences between wives and husbands at the time of marriage in expected wage profiles strongly influence the household weight in the cross section
- Realized deviations from expected wages trigger a move in the weight
- The weight responds to large but not to small wage shocks. Support for limited - as opposed to full commitment within households

Dynamic Model of Household Decision Making

The model builds on the insights of Mazzocco (2007). Two decision makers: Wife (W) and Husband (H).

- Each spouse $j \in \{W, H\}$ cares about his or her own:
  - private consumption: c_{jt}
  - private leisure: l_{jt}
  - household public good: q_t
- In addition to leisure, individuals spend time on:
  - market production: m_{jt}
  - home production: h_{jt}
- Distinct utility functions: u_t^W and u_t^H
- The relative extent to which wives and husbands care for their children is captured by their preferences for the public good

Dynamic Model of Household Decision Making

$$\max_{\{c_{jt},m_{jt},l_{jt},h_{jt},g_t\}} \mathbb{E}_0 \sum_{t=0}^{T} \delta^t \mu_t u_t^W(c_{Wt}, \ell_{Wt}, q_t)$$
$$+\delta^t(1-\mu_t)u_t^H(c_{Ht}, \ell_{Ht}, q_t)$$

subject to

- home production: $q_t = q(g_t, h_{Wt}, h_{Ht})$
- time constraint: $\ell_{jt} + h_{jt} + mjt = 1, \quad j = W, H$
- budget constraint:

$$c_{Wt} + c_{Ht} + g_t + w_{Wt}(\ell_{Wt} + h_{Wt}) + w_{Ht}(\ell_{Ht} + h_{Ht}) =$$
$$w_{Wt} + w_{Ht} + (1+r_t)a_t - a_{t+1} \equiv y_t$$

- non-negativity constraints: $c_{jt}, g_{jt}, \ell_{jt}, m_{jt} \geq 0$
- participation constraint

Wage Process

- AR(1) process

$$\log w_{jt} = \vartheta^j + \theta_1^j a_{jt} + \theta_2^j a_{jt}^2 + \varepsilon_{jt}, \qquad j \in W, H$$

- Individual fixed effect: ϑ^j
- Potential experience: a_{jt}
- The unobservable: $\varepsilon_{jt} = \varrho_{jt} + e_{jt}$
  - Permanent component: $\varrho_{jt} = \varrho_{j,t-1} + v_{jt}, \qquad \varrho_{j,t-1} = 0$

The Pareto Weight

Following the insights of Mazzocco (2007), commitment can be characterized in terms of household-specific Pareto weight μ_t.

- Full commitment (ex ante efficient allocation)

$$\mu_t = \mu(z_0) \quad \forall t$$

  including the forecastable components $z_0 \equiv \mathbb{E}_0\{z_t\}_{t=0}^{T}$

- Lack of commitment (allocations are efficient within period, but less insurance than ex ante efficient)

$$\mu_t = \mu(z_0, z_{1t})$$

  which depends on both z_0 and the realized deviations from this forecast $z_{1t} \equiv z_t - \mathbb{E}_0\, z_t$

The Pareto Weight

In the absence of full commitment, the Pareto weight can change with new information through

- A sequence of repeated static problems
- Renegotiation only when the participation constraint binds for one of the household member

$$\mu_t = \begin{cases} \mu_{t-1} & \text{if } \forall j \quad V_{jt}^{married} \geq V_{jt}^{single} \\ \mu(z_{1t}) & \text{if } \exists j \quad V_{jt}^{married} < V_{jt}^{single} \end{cases}$$

Pareto weight responds to large changes but not small changes in z_{1t}.

Data: Japanese Panel Survey of Consumers (JPSC), 1993-2013

- Rich data on demographics, education, wages and labor supply
- Key: JPSC has a consumption expenditure module and a time use module.
  - Cohort 1 comprises 1,500 women aged 24 to 34 in 1993
  - Cohort 2 comprises 500 women aged 24 to 27 in 1997
  - Cohort 3 comprises 836 women aged 24 to 29 in 2003
  - Cohort 4 comprises 636 women aged 24 to 28 in 2008

Allocation of Household Expenditures

The JPSC asks for the breakdown of total household expenditures into the following five categories:

1. Expenses for all of your family
2. Expenses for you
3. Expenses for your husband
4. Expenses for your child(ren)
5. Expenses for other(s)

Categories (1),(4),(5) are treated as expenditures on household public goods g, category (2) as private consumption of the wife c_W, and category (3) as private consumption of the husband c_H.

TABLE A.1

Expenditure shares by person versus by item

	food	housing	utility	furniture	clothing	health	transp	commu	educ	culture	social	pocket	allowa
Panel A: Shares of expenditures for													
wife	–0.030	0.070	–0.049	0.041	0.145	0.062	–0.015	–0.003	–0.058	0.049	0.005	0.030	–0.073
	(0.029)	(0.030)	(0.012)	(0.014)	(0.016)	(0.018)	(0.024)	(0.012)	(0.016)	(0.011)	(0.014)	(0.030)	(0.023)
husband	0.002	–0.114	0.013	–0.001	–0.012	0.003	–0.018	0.015	–0.043	0.019	–0.040	0.489	–0.107
	(0.023)	(0.024)	(0.009)	(0.006)	(0.007)	(0.011)	(0.018)	(0.009)	(0.014)	(0.009)	(0.011)	(0.024)	(0.022)
family	0.113	0.088	0.027	0.017	0.0001	–0.0003	–0.021	0.009	0.010	0.030	–0.055	0.023	–0.095
	(0.015)	(0.016)	(0.006)	(0.004)	(0.005)	(0.005)	(0.012)	(0.006)	(0.009)	(0.005)	(0.008)	(0.010)	(0.020)
children	–0.005	–0.169	–0.009	–0.002	–0.004	–0.010	–0.047	–0.013	0.547	0.039	–0.089	0.101	–0.114
	(0.019)	(0.019)	(0.008)	(0.004)	(0.006)	(0.007)	(0.013)	(0.007)	(0.021)	(0.007)	(0.008)	(0.017)	(0.021)
others: base													
Panel B: Change in shares of expenditures for													
	food	housing	utility	furniture	clothing	health	transp	commu	educ	culture	social	pocket	allowa
wife	0.009	–0.035	0.014	0.017	0.092	0.083	0.019	0.015	–0.031	0.027	–0.051	0.019	–0.089
	(0.029)	(0.023)	(0.015)	(0.017)	(0.018)	(0.030)	(0.039)	(0.011)	(0.020)	(0.014)	(0.016)	(0.022)	(0.022)
husband	0.072	–0.036	0.029	–0.014	–0.012	0.004	–0.009	0.018	–0.026	–0.007	–0.039	0.285	–0.078
	(0.022)	(0.018)	(0.008)	(0.008)	(0.009)	(0.016)	(0.022)	(0.009)	(0.019)	(0.011)	(0.013)	(0.023)	(0.018)
family	0.090	0.027	0.027	0.007	0.005	0.001	0.003	0.013	0.006	0.012	–0.051	0.024	–0.064
	(0.013)	(0.014)	(0.005)	(0.004)	(0.006)	(0.005)	(0.013)	(0.006)	(0.010)	(0.006)	(0.009)	(0.011)	(0.014)
children	–0.036	–0.013	–0.005	–0.021	–0.019	–0.010	–0.035	–0.016	0.448	0.009	–0.085	0.028	–0.083
	(0.020)	(0.017)	(0.007)	(0.007)	(0.007)	(0.008)	(0.018)	(0.007)	(0.027)	(0.010)	(0.010)	(0.017)	(0.017)
others: base													

Allocation of Time

The JPSC asks for the breakdown of total hours in workday and day off into the following six activities:

1. Attending school or workplace
2. Work
3. Schoolwork (studies)
4. Housekeeping and child care
5. Hobby, leisure, social intercourse, etc.
6. Other activities such as sleeping, meals, taking a bath, etc.

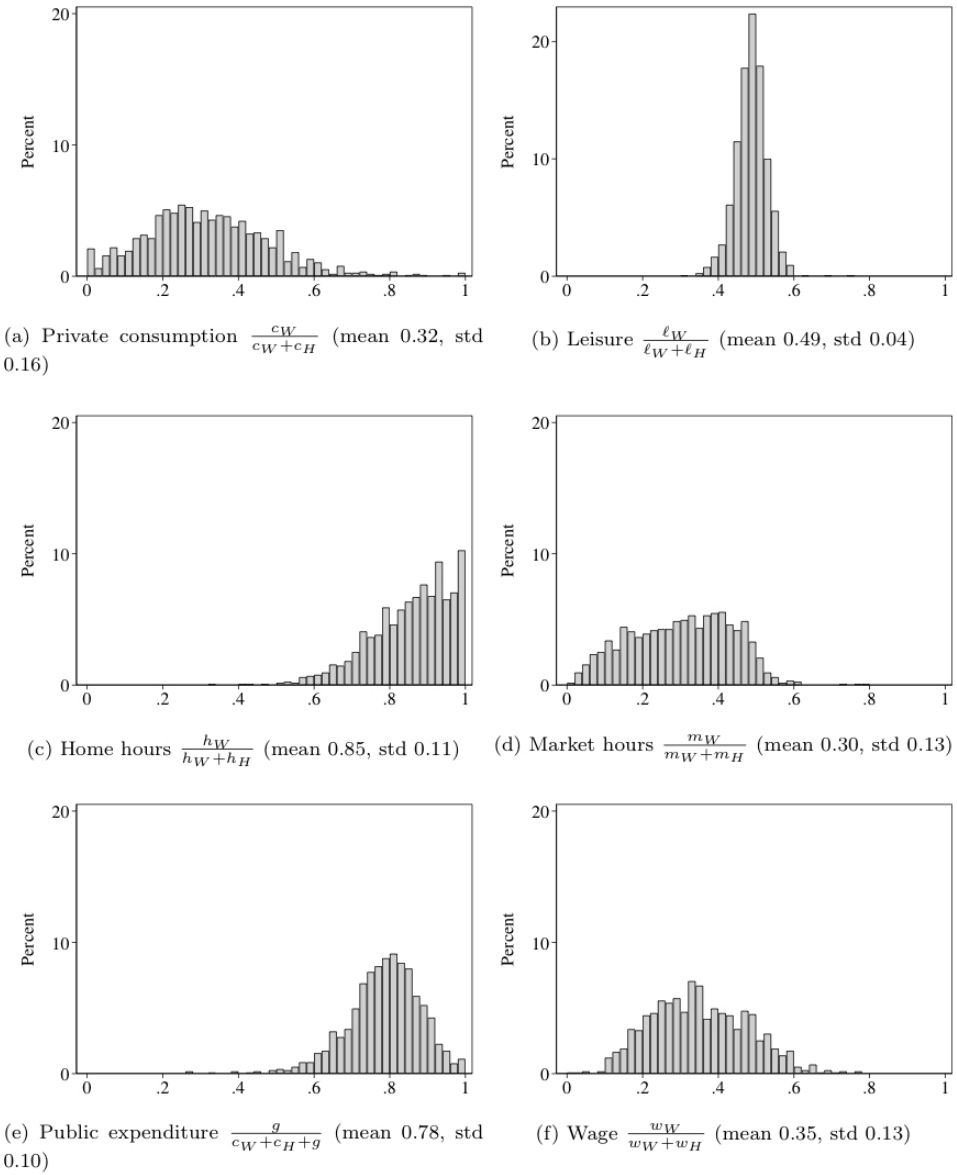
Activities (1), (2), and (3) are treated as market hours m_j, activity (4) as home hours h_j, and activities (5) and (6) as leisure hours l_j.

TABLE 1

Summary statistics JPSC 1993–2013

	Mean [standard deviation]		
	Wife	Husband	Household
Expenditure per month	36,711 [63,951]	77,650 [64,321]	442,640 [275,174]
(% of household total)	(6.5%)	(14.5%)	(79.0%)
Time use, hours per week			
(share of own time)			
Market work	29.7h [21.7]	62.7h [14.7]	
- including commuting	(17.7%)	(37.3%)	
Home production	44.0h [25.3]	7.4h [9.1]	
- including child care	(26.2%)	(4.4%)	
Leisure	94.2h [20.1]	97.9h [15.6]	
- including sleep	(56.1%)	(58.3%)	
Observables			
Age	36.5 [6.4]	38.9 [7.4]	
Education (years)	13.2 [1.6]	13.5 [2.3]	
Wage	925 [1,014]	1,676 [1,575]	
Children aged 0–6			0.62 [0.80]
Household size			4.24 [1.49]

Notes: All monetary values are in 2013 Japanese Yen. The sample comprises 1,149 households.



(a) Private consumption $\frac{c_W}{c_W+c_H}$ (mean 0.32, std 0.16)

(b) Leisure $\frac{\ell_W}{\ell_W+\ell_H}$ (mean 0.49, std 0.04)

(c) Home hours $\frac{h_W}{h_W+h_H}$ (mean 0.85, std 0.11)

(d) Market hours $\frac{m_W}{m_W+m_H}$ (mean 0.30, std 0.13)

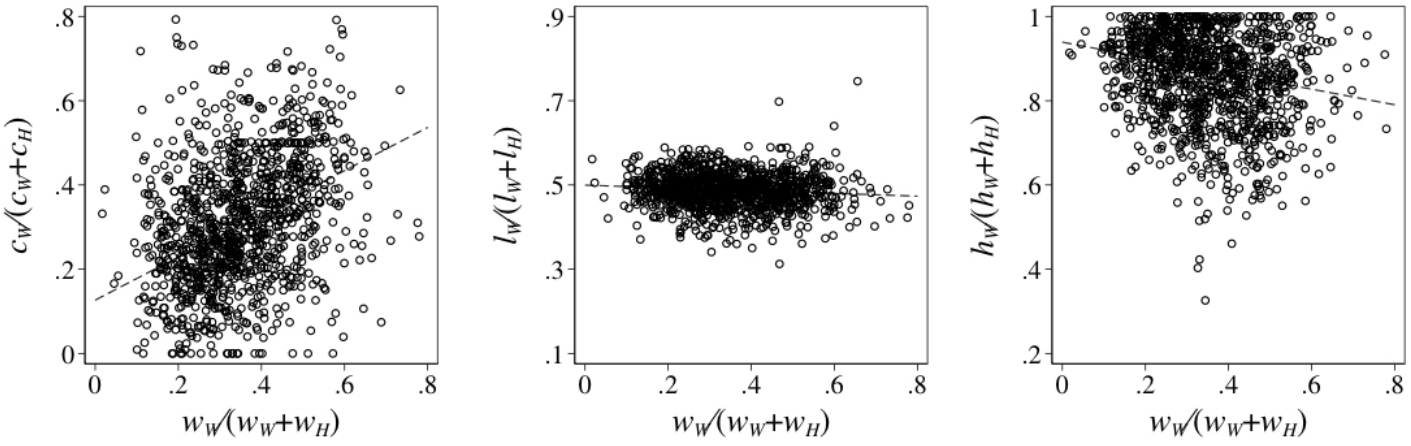
(e) Public expenditure $\frac{g}{c_W+c_H+g}$ (mean 0.78, std 0.10)

(f) Wage $\frac{w_W}{w_W+w_H}$ (mean 0.35, std 0.13)

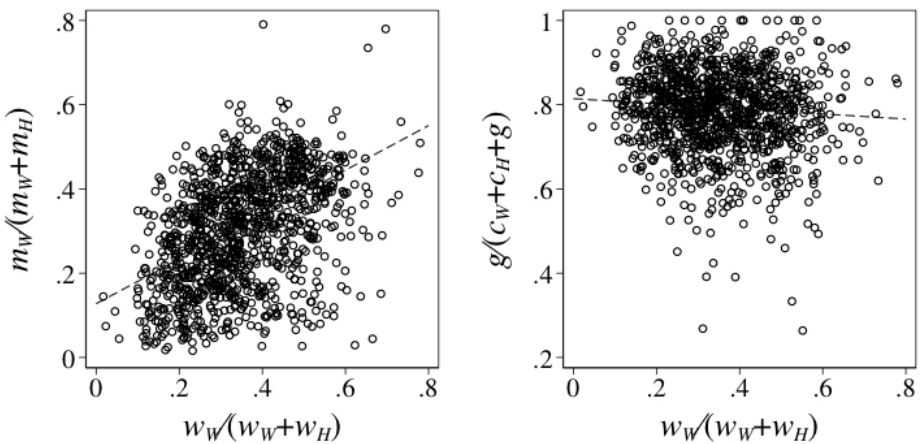
FIGURE 1

Distributions across households of consumption, hours and wage shares

Notes: Mean and standard deviation in parenthesis.



(a) Private consumption (corr 0.32) (b) Leisure hours (corr –0.07) (c) Home hours (corr –0.19)



(d) Market hours (corr 0.42) (e) Public expenditure (corr –0.11)

FIGURE 2

Allocation shares versus wage shares

Notes: Correlation in parenthesis. The dashed line is the median regression line.

Model Parametrization

- Utility function

$$u^j(c_{jt}, l_{jt}, q_t) = \frac{\xi_t^j}{1-\sigma^j}(\alpha_{1t}^j c_{jt}^{\phi^j} + \alpha_{2t}^j l_{jt}^{\phi^j} + (1-\alpha_{1t}^j - \alpha_{2t}^j) q_t^{\phi^j})^{\frac{1-\sigma^j}{\phi^j}}$$

- Home production function

$$q(h_{Wt}, h_{Ht}, g_t) = (\pi_t h_{Wt}^{\gamma} + (1-\pi) h_{Ht}^{\gamma})^{\frac{\rho}{\gamma}} g_t^{1-\rho}$$

- 11 estimating equations from the first order conditions, intra-temporal

▸ Optimality Conditions

Heterogeneity and Stochastic Process for Wages

- Parametrize the heterogeneity in preferences and home productivity in terms of observable characteristics.
- Preference heterogeneity

$$\alpha_{kt}^{j} = \frac{\exp(\alpha_k^{j\prime}\mathbf{x}_{jt})}{1+\exp(\alpha_1^{j\prime}\mathbf{x}_{jt})+\exp(\alpha_2^{j\prime}\mathbf{x}_{jt})} \quad \text{for} \quad k=1,2$$

- Home production heterogeneity

$$\pi_t = \frac{\exp(\pi\mathbf{x}_t)}{1+\exp(\pi\mathbf{x}_t)} \quad \text{and} \quad \rho = \frac{\exp(\rho_0)}{1+\exp(\rho_0)}$$

Stochastic Wage Process

- Prediction of the wage at any future time is

$$\omega_{jt} = \hat{\vartheta}^j + \hat{\theta}_1^j \alpha_{jt} + \hat{\theta}_2^j \alpha_{jt}^2$$

- Realized deviation of the wage from the time zero forecast

$$\varepsilon_{jt} = \sum_{s=0}^{t} \upsilon_{js} + e_{jt} = \log w_t - \omega_{j,t}$$

- Estimation of the full income

$$\log y_{it} = \vartheta^y + \theta_1^y \alpha_{Wt} + \theta_2^y \alpha_{Wt}^2 + \theta_3^y \alpha_{Ht} + \theta_4^y \alpha_{Ht}^2$$

- ν_0 is the predicted value for the income level at the time of marriage.

The Pareto Weight

- They specify the weight on the wife's utility as

$$\mu_t = \frac{\exp(\mu_0' \mathbf{z}_0 + \mu_1' \mathbf{z}_{1t})}{1 + \exp(\mu_0' \mathbf{z}_0 + \mu_1' \mathbf{z}_{1t})}$$

  where $\mathbf{z}_0$ are distribution factors known or forecast at the time of marriage, and $\mathbf{z}_{1t} \equiv \mathbf{z}_t - \mathbb{E}_0 \mathbf{z}_t$ is the realized deviation from this time zero prediction.
- $\mathbf{z}_0 = \{\omega_{W,0} - \omega_{H,0}, \Delta\omega_{W,10} - \Delta\omega_{H,10}, \nu_0, ...\}'$
- $\mathbf{z}_{1t} = \{\varepsilon_{Wt} - \varepsilon_{Ht}, ...\}$

Home production and preferences

- Home production:
  - Home hours of the wife and husband are quite substitutable (elasticity of 3.1).
  - The estimate of π indicates that women are moderately less productive at home than men (at the mean observables)
- Preferences:
  - Husbands are more willing to substitute between private consumption, leisure, and public goods than wives
  - Wives put more weight on the public good than their husbands.
  - Both place higher weight on public good as the number of children increases.

▸ Table of Estimates

Preferences for Public Consumption

TABLE 3

How preferences vary with the number of children

	Number of children			
	0	1	2	3
α_1^W	0.218	0.198	0.178	0.158
	(0.018)	(0.016)	(0.015)	(0.014)
α_2^W	0.312	0.281	0.251	0.222
	(0.027)	(0.025)	(0.023)	(0.022)
α_3^W	0.470	0.521	0.571	0.620
	(0.014)	(0.013)	(0.013)	(0.013)
α_1^H	0.452	0.435	0.418	0.400
	(0.019)	(0.020)	(0.021)	(0.022)
α_2^H	0.197	0.187	0.177	0.167
	(0.013)	(0.012)	(0.011)	(0.011)
α_3^H	0.351	0.378	0.405	0.433
	(0.012)	(0.013)	(0.015)	(0.017)

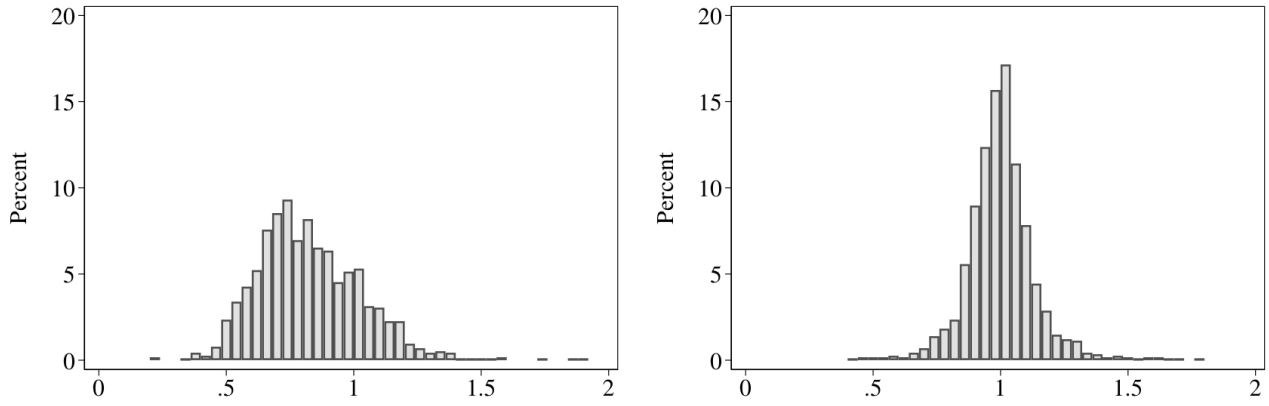
Notes: The parameter estimates reported in column I of Table 2 are used.

Pareto Weight Estimates

TABLE 2

	Estimates								
	I	II	III	IV	V	VI	VII	VIII	IX
Pareto weight μ (at sample mean)	0.438	0.438	0.435	0.437	0.434	0.439	0.438	0.437	0.423
	(0.008)	(0.008)	(0.011)	(0.011)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)
$\omega_{W,0} - \omega_{H,0}$	0.404	0.407	0.419	0.414	0.401	0.401	0.404	0.405	0.495
	(0.027)	(0.023)	(0.044)	(0.043)	(0.027)	(0.029)	(0.027)	(0.027)	(0.020)
$\Delta\omega_{W,10} - \Delta\omega_{H,10}$	0.306	0.285	0.328	0.286	0.293	0.287	0.306	0.307	0.403
	(0.174)	(0.148)	(0.256)	(0.242)	(0.170)	(0.181)	(0.174)	(0.174)	(0.147)
ν_0	0.028	0.027	0.028	0.028	0.028	0.027	0.027	0.028	0.024
	(0.013)	(0.012)	(0.020)	(0.020)	(0.012)	(0.013)	(0.013)	(0.013)	(0.012)
z_{1t}	0.338					0.328	0.342	0.374	0.439
	(0.015)					(0.016)	(0.016)	(0.021)	(0.031)
Δz_{1t}		0.350	0.362	0.372					
		(0.012)	(0.025)	(0.033)					
$z_{1,t-1}$		0.347	0.359	0.351					
		(0.016)	(0.030)	(0.039)					
$z_{1,t-2}$			0.001						
			(0.022)						
$\Delta z_{1,t+1}$				0.023					
				(0.022)					
$z_{1t} \times \mathbf{1}\{z_{1t} < q_1\}$					0.368				
					(0.026)				
$z_{1t} \times \mathbf{1}\{q_1 \leq z_{1t} < q_2\}$					0.503				
					(0.108)				
$z_{1t} \times \mathbf{1}\{q_2 \leq z_{1t} < q_3\}$					0.057				
					(0.309)				
$z_{1t} \times \mathbf{1}\{q_3 \leq z_{1t} < q_4\}$					0.187				
					(0.103)				
$z_{1t} \times \mathbf{1}\{q_4 \leq z_{1t}\}$					0.290				
					(0.032)				
$z_{1t} \times$ divorce						0.340			
						(0.137)			
$z_{1t} \times$ new child							–0.051		
							(0.055)		
$z_{1t} \times$ wallet sharing								–0.070	
								(0.030)	
$z_{1t} \times \mathbf{1}\{\text{ind}_W \neq \text{ind}_H\}$									–0.063
									(0.037)

Decomposition of the relative Pareto Weight



(a) Initial cross section, $\mu_0(z_0)$ (b) Revisions over time, $\mu_1(z_{1,t})$

FIGURE 3

Decomposition of the relative Pareto weight $\mu_t/(1-\mu_t) = \mu_0(\mathbf{z}_0) \times \mu_1(\mathbf{z}_{1,t})$

Notes: The Pareto weight is based on the results reported in column I of Table 2, using data for the last period the household is observed in the data.

- The main source of dispersion in the Pareto weight comes at the time of marriage.

Pareto Weight

- Most of the variation in household Pareto weights over 20 years sample period comes heterogeneity across households at the time of marriage.

$$\underset{0.0278}{\text{Var}}(\log \hat{\mu}_{it}) = \underset{0.0217}{\text{Var}}(\mathbb{E}[\log \hat{\mu}_{it}|i]) + \underset{0.0061}{\mathbb{E}}(\text{Var}[\log \hat{\mu}_{it}|i])$$

- While the estimates reject the null hypothesis of full commitment, the effect of the revisions is small relative to differences in initial conditions at marriage.

Dual vs Single Earner Households

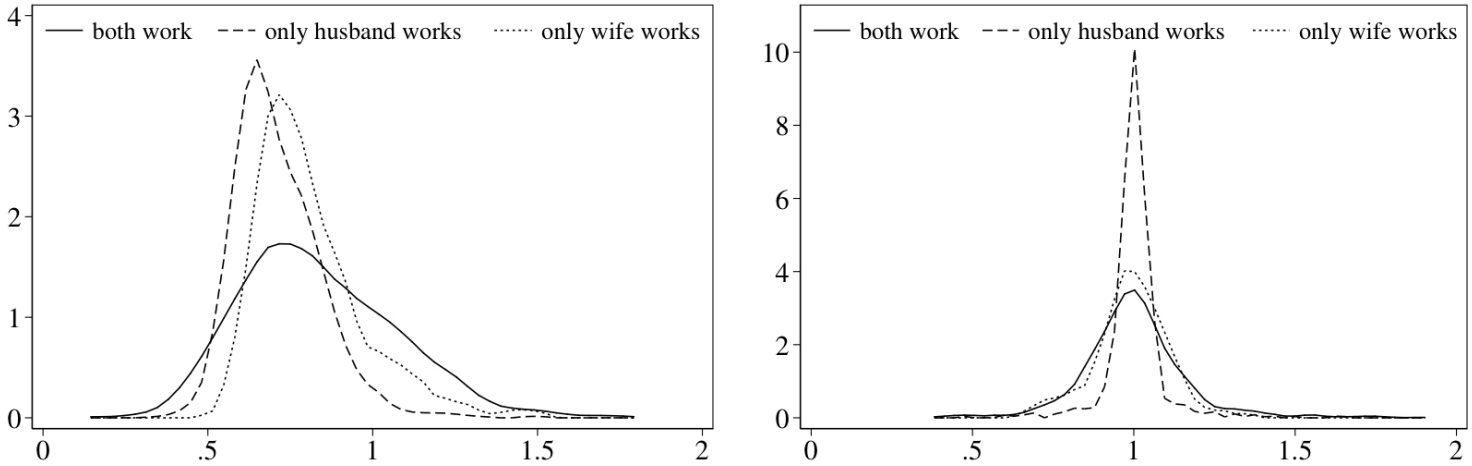
TABLE 4

Dual vs Single Earner Households

Pareto weight			
μ (at sample mean)	0.434		
	(0.009)		
$\omega_{W,0} - \omega_{H,0}$	0.477	ν_0	0.026
	(0.022)		(0.012)
$(\omega_{W,0} - \omega_{H,0}) \times \mathbf{1}\{m_{Wt} = 0\}$	–0.274	$\nu_0 \times \mathbf{1}\{m_{Wt} = 0\}$	–0.011
	(0.055)		(0.021)
$(\omega_{W,0} - \omega_{H,0}) \times \mathbf{1}\{m_{Ht} = 0\}$	–0.283	$\nu_0 \times \mathbf{1}\{m_{Ht} = 0\}$	0.077
	(0.105)		(0.075)
$\Delta\omega_{W,10} - \Delta\omega_{H,10}$	0.108	z_{1t}	0.380
	(0.174)		(0.017)
$(\Delta\omega_{W,10} - \Delta\omega_{H,10}) \times \mathbf{1}\{m_{Wt} = 0\}$	1.396	$z_{1t} \times \mathbf{1}\{m_{Wt} = 0\}$	–0.174
	(0.381)		(0.044)
$(\Delta\omega_{W,10} - \Delta\omega_{H,10}) \times \mathbf{1}\{m_{Ht} = 0\}$	0.869	$z_{1t} \times \mathbf{1}\{m_{Ht} = 0\}$	–0.194
	(0.581)		(0.119)

Notes: Standard errors in parentheses are computed by block bootstrap with 300 replications.

Dual vs Single Earner Households



(a) Initial cross section, $\mu_0(\mathbf{z}_0)$ (b) Revisions over time, $\mu_1(\mathbf{z}_{1,t})$

FIGURE 4

Decomposition of the relative Pareto weight $\mu_t/(1-\mu_t) = \mu_0(\mathbf{z}_0) \times \mu_1(\mathbf{z}_{1,t})$

Notes: The differences in the distribution of Pareto weights reflect both structural differences in how the weights relate to initial wage differences and innovations but also differences between these groups in relative wages and innovations.

Summary

- Expected relative wage profiles have a strong impact on the wife's weight in household decision making at the time of marriage.
- During marriage, unpredicted deviations in the relative wage impact this weight.
  - The weight responds to large but not to small wage shocks.
  - The weight is twice as responsive to shocks in the year prior to divorce.
  - There are substantial gender asymmetries in the relative preference for public consumption.
  - There is a structural difference in the response of the weight between households in which both spouses are employed compared to those in which only the husband works.

Further Research

- Endogenous human capital accumulation? What if wages depend on actual rather than potential experience?
- Fertility choice?

Optimality Conditions

- Home Production Technology

$$\left(\frac{\pi_t}{1-\pi_t}\right)\left(\frac{h_{Wt}}{h_{Ht}}\right)^{\gamma-1} = \frac{w_{Wt}}{w_{Ht}}$$

$$\pi_t\left(\frac{\rho}{1-\rho}\right)\left(\frac{h_{Wt}^{\gamma-1}}{G_t}\right) g_t = w_{Wt}$$

$$(1-\pi_t)\left(\frac{\rho}{1-\rho}\right)\left(\frac{h_{Ht}^{\gamma-1}}{G_t}\right) g_t = w_{Ht}$$

where we define $G_t = \pi_t h_{Wt}^{\gamma} + (1-\pi)h_{Ht}^{\gamma}$

Optimality Conditions

- Private consumption and leisure

$$\frac{\alpha_{1t}^{j}}{\alpha_{2t}^{j}}\left(\frac{c_{jt}}{l_{jt}}\right)^{\phi^{j}-1}=\frac{1}{w_{jt}},\quad j\in\{W,H\}$$

$$\left(\frac{\mu_t}{1-\mu_t}\right)\left(\frac{A_{Wt}^{\frac{1-\sigma^{W}-\phi^{W}}{\phi^{W}}}\alpha_{1t}^{W}c_{Wt}^{\sigma^{W}-1}}{A_{Ht}^{\frac{1-\sigma^{H}-\phi^{H}}{\phi^{H}}}\alpha_{1t}^{H}c_{Ht}^{\sigma^{H}-1}}\right)\left(\frac{\xi_t^{W}}{\xi_t^{H}}\right)=1$$

$$\left(\frac{\mu_t}{1-\mu_t}\right)\left(\frac{A_{Wt}^{\frac{1-\sigma^{W}-\phi^{W}}{\phi^{W}}}\alpha_{2t}^{W}l_{Wt}^{\sigma^{W}-1}}{A_{Ht}^{\frac{1-\sigma^{H}-\phi^{H}}{\phi^{H}}}\alpha_{2t}^{H}l_{Ht}^{\sigma^{H}-1}}\right)\left(\frac{\xi_t^{W}}{\xi_t^{H}}\right)=\frac{w_{Wt}}{w_{Ht}}$$

where we define $A_jt=\alpha_{1t}^{j}c_{jt}^{\phi^{j}}+\alpha_{2t}^{j}l_{jt}^{\phi^{j}}+(1-\alpha_{1t}^{j}\alpha_{2t}^{j}q_t^{\phi^{j}})$

back

Table of Estimates

TABLE 2

Estimates

	I	II	III	IV	V	VI	VII	VIII	IX
Home production									
γ	0.682	0.676	0.647	0.650	0.682	0.667	0.682	0.678	0.606
	(0.037)	(0.036)	(0.042)	(0.042)	(0.037)	(0.038)	(0.037)	(0.037)	(0.044)
π (at sample mean)	0.459	0.462	0.471	0.471	0.456	0.464	0.459	0.461	0.487
	(0.018)	(0.017)	(0.020)	(0.020)	(0.018)	(0.018)	(0.018)	(0.018)	(0.020)
ρ	0.080	0.079	0.077	0.078	0.080	0.079	0.079	0.079	0.075
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Preferences									
ϕ^W	0.158	0.162	0.179	0.151	0.161	0.151	0.159	0.164	0.172
	(0.052)	(0.019)	(0.022)	(0.017)	(0.055)	(0.041)	(0.052)	(0.052)	(0.046)
ϕ^H	0.624	0.607	0.576	0.575	0.630	0.607	0.624	0.620	0.564
	(0.039)	(0.040)	(0.067)	(0.065)	(0.039)	(0.040)	(0.039)	(0.040)	(0.049)
α_1^W (at sample mean)	0.184	0.184	0.184	0.179	0.186	0.182	0.184	0.185	0.188
	(0.015)	(0.005)	(0.007)	(0.006)	(0.016)	(0.012)	(0.015)	(0.015)	(0.014)
α_2^W (at sample mean)	0.259	0.255	0.241	0.257	0.258	0.259	0.258	0.255	0.253
	(0.024)	(0.012)	(0.015)	(0.014)	(0.025)	(0.020)	(0.024)	(0.024)	(0.022)
α_1^H (at sample mean)	0.423	0.416	0.405	0.400	0.424	0.415	0.422	0.422	0.396
	(0.021)	(0.017)	(0.026)	(0.025)	(0.021)	(0.019)	(0.020)	(0.020)	(0.023)
α_1^W (at sample mean)	0.180	0.186	0.194	0.193	0.179	0.184	0.181	0.182	0.200
	(0.012)	(0.013)	(0.025)	(0.025)	(0.011)	(0.012)	(0.012)	(0.012)	(0.015)

back