

DOES PERSONALITY AFFECT THE ALLOCATION OF RESOURCES WITHIN HOUSEHOLDS?

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SEPTEMBER, 2023

PERSONALITY IS RELEVANT FOR LIFE OUTCOMES

- **Personality traits:** patterns of thought, feelings, and behavior (Borghans et al., 2008).
- Impact aspects of our life: schooling, mortality, antisocial behavior, marital sorting, production of cognitive skills (Heckman et al., 2006, 2021; Cunha et al., 2010; Lundberg, 2011, 2012; Dupuy & Galichon, 2014).
- Economic literature focused on **labor market outcomes** (Heckman et al., 2010; Fletcher, 2013; Todd & Zhang, 2021).
- Less is known about personality traits and **intrahousehold behavior** (Flinn et al., 2018).

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- Economic literature focused on **labor market outcomes** (Heckman et al., 2010; Fletcher, 2013; Todd & Zhang, 2021).
- Less is known about personality traits and **intrahousehold behavior** (Flinn et al., 2018).
 - **Why it matters?** Intrafamily inequality, gender asymmetries, distribution of power, mortality rates of women (Dunbar et al., 2013; Cherchye et al., 2015, 2018; Calvi, 2021).
 - **Policy implication?** Interventions at early stages in life change personality over the life-cycle (Heckman, 2005; Borghans et al., 2008; Attanasio et al., 2020).

GOAL OF THIS PAPER

Does personality affect the allocation of resources within households?

What are the mechanisms and potential implications?

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What are the mechanisms and potential implications?

- 1 **Collective model** (Chiappori, 1998; 1992).
- 2 Test **theoretical restrictions** (Bourguignon et al., 2009).
 - Structural relation between personality and intrafamily behavior.
 - Personality as a **preference** and **power** shifter within households.
- 3 (Reduced-form) implication for **intrahousehold consumption inequality** (Cherchye et al., 2020).

SUMMARY

- 1 Motivation
- 2 A model of collective consumption
- 3 Data
- 4 Personality and intrahousehold allocations
- 5 Implications for consumption inequality
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$$\max_{c^m, c^f, \ell^m, \ell^f, C} \left[u^m(c^m, \ell^m, C; \xi) + \mu(w^m, w^f, y, \mathbf{z}) u^f(c^f, \ell^f, C; \xi) \right]$$

(P1)

where:

- Pareto weight: $\mu(w^m, w^f, y, \mathbf{z})$,
- Taste shifters: ξ ,
- Distribution factors: $\mathbf{z}$.

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The solution to (P1) implies a system of **household demand functions**:

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► Testable restrictions

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LISS DATA

Dutch longitudinal internet studies for the social sciences (LISS) panel with information on time use, earnings, and consumption.

Sample: ~1100 couples observed from 2009 to 2015.

Seven **personality traits** at the individual level:

Big Five (Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism) +

Rosenberg Scale (Self-Esteem) +

Need For Cognition Scale (Cognitive Engagement).

► Sample selection

► Summary statistics

► Personality traits

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PARAMETRIZATION OF HOUSEHOLD DEMAND FUNCTIONS

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is parametrized in **budget share form** (Bobonis, 2009):

$$\omega_{jh} = \alpha_{jh} + \ln(\beta' \mathbf{z}_{jh}) + a_{jh}(y) + b_{jh}(y^2) + \lambda' \ln(\mathbf{w}_{jh}) + \xi \delta' + \mathbf{X} + \varepsilon_{jh},$$

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where for household h and good $j \in \{\mathbf{c}, \ell, C\}$:

ω : budget share on good j ,

a, b : control functions for full income (y),

$\mathbf{w}$: prices of leisure,

$\mathbf{X}$: additional controls and FEs,

ξ : taste shifters; *linear* and *quadratic* effects of personality.

$\mathbf{z}$: distribution factors.

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PERSONALITY AS A DISTRIBUTION FACTOR (**z**)

- **Wage offers** and **job performance** are a function of agreeableness, conscientiousness, neuroticism, and cognitive engagement (Fleischhauer et al., 2010; Almlund et al., 2011; Flinn et al., 2021).
- Hence, the **relative** amount of these traits compared to your partner could impact your **bargaining position** (à la wage ratio).

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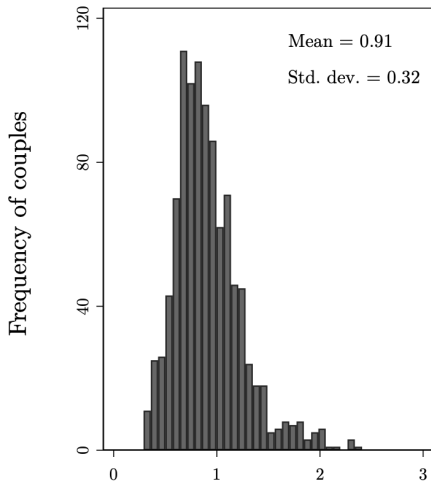
**Table 2. Principal Component Analysis.
Personality indices relevant for the labor market**

Personality:	PC1	PC2
1. Agreeableness	0.56	0.48
2. Conscientiousness	0.73	0.30
3. Neuroticism	0.66	-0.48
4. Cognitive engagement	-0.20	0.80
Eigenvalue	1.14	1.09
Variance share	33.04%	29.90%

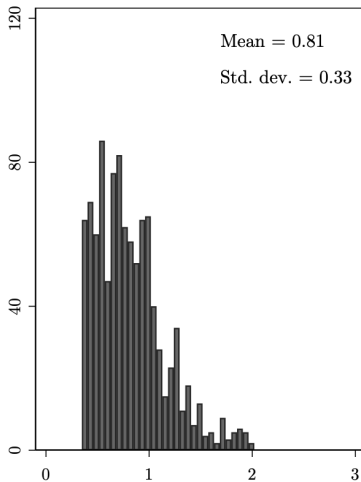
Notes: Explained share of the observed variance: 62.94%. The table indicates the loadings of each personality on the first two principal components.

PERSONALITY AS A DISTRIBUTION FACTOR (**z**)

$$z_1 = PC_1^f / PC_1^m$$



$$z_2 = PC_2^f / PC_2^m$$



Female's share on personality indices

RESULTS

PERSONALITY DRIVES PREFERENCES OVER COMMODITIES

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Table 3. OLS estimates of the effect of personality on household consumption.

	Dependent variable: budget share				
	ω_{c^m}	ω_{c^f}	ω_{ℓ^m}	ω_{ℓ^f}	ω_c
Woman's:					
<i>Agreeableness</i>	-.150 (.126)	-.245⁺ (.022)	.417⁺ (.175)	.593⁺ (.217)	-.606⁺ (.268)
<i>Conscientiousness</i>	-.002 (.068)	-.142⁺ (.046)	.159⁺ (.087)	.123 (.120)	-.137 (.139)
<i>Neuroticism</i>	-.006 (.456)	-.015⁺ (.087)	.025⁺ (.015)	.054⁺ (.019)	-.058⁺ (.025)
<i>Openness</i>	-.027 (.295)	-.021 (.025)	.030 (.057)	-.010 (.061)	.028 (.077)
<i>Extraversion</i>	.019⁺ (.059)	.007 (.010)	-.006 (.021)	-.075⁺ (.027)	.054⁺ (.026)
<i>Cognitive Engagement</i>	-.017 (.265)	-.040⁺ (.013)	.075⁺ (.026)	.097⁺ (.034)	-.115⁺ (.040)
<i>Self-esteem</i>	-.001 (.949)	-.002⁺ (.011)	-.005 (.018)	.001 (.026)	.007 (.029)

Notes: Sample size of 1101 couples. Robust standard errors clustered at the household level are in parentheses. PC: principal component. Additional covariates: linear control function for full income and its square instrumented with household potential income; the log of spouses' wages and the interaction between them; the square of husband's wage; husband's age and its square; husband's educational level; the number of children the couple has; marital status; the log of spouses' PCs in levels and their squares; and personality ratios. ⁺ : Significant with at least 90% of confidence.

PERSONALITY SHIFTS POWER DYNAMICS

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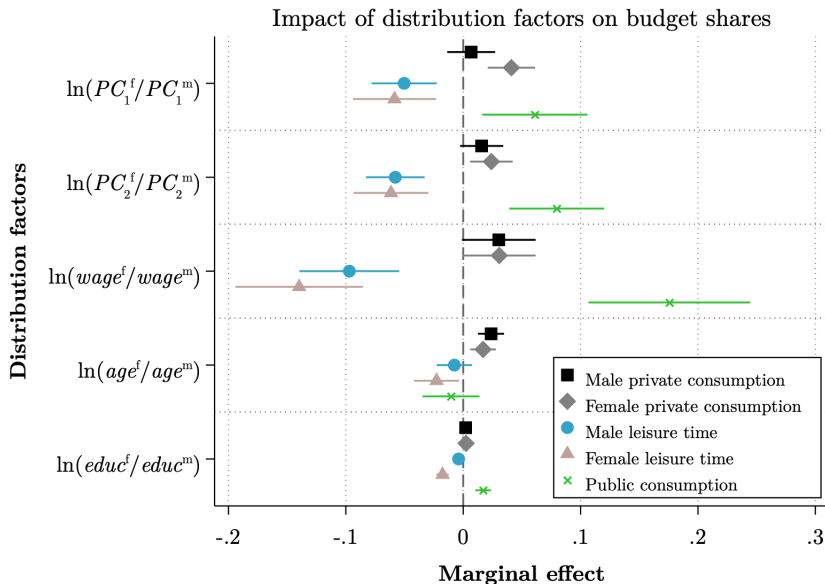
Table 4. OLS estimates of the effect of personality on household consumption.

Dependent variable: budget share					
	ω_{c^m}	ω_{c^f}	ω_{ℓ^m}	ω_{ℓ^f}	ω_c
$\ln(\frac{PC1^f}{PC1^m})$	.006 (.012)	.041⁺ (.011)	-.050⁺ (.019)	-.057⁺ (.028)	.059⁺ (.032)
$\ln(\frac{PC2^f}{PC2^m})$	.180 (.012)	.026⁺ (.011)	-.062⁺ (.021)	-.067⁺ (.025)	.085⁺ (.030)
Proportionality test	$\chi^2(4) = 2.660$ (p -value = .616)				
Collective test	$\chi^2(4) = 2.960$ (p -value = .565)				

Notes: Sample size of 1101 couples. Robust standard errors clustered at the household level are in parentheses. *PC*: principal component. Additional covariates: linear control function for full income and its square instrumented with household potential income; the log of spouses' wages and the interaction between them; the square of husband's wage; husband's age and its square; husband's educational level; the number of children the couple has; marital status; the log of spouses' PCs in levels and their squares; and personality ratios.

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AND COMPARED TO OTHER POWER SHIFTERS? (BROWNING ET AL., 1994; 2009; 2016)

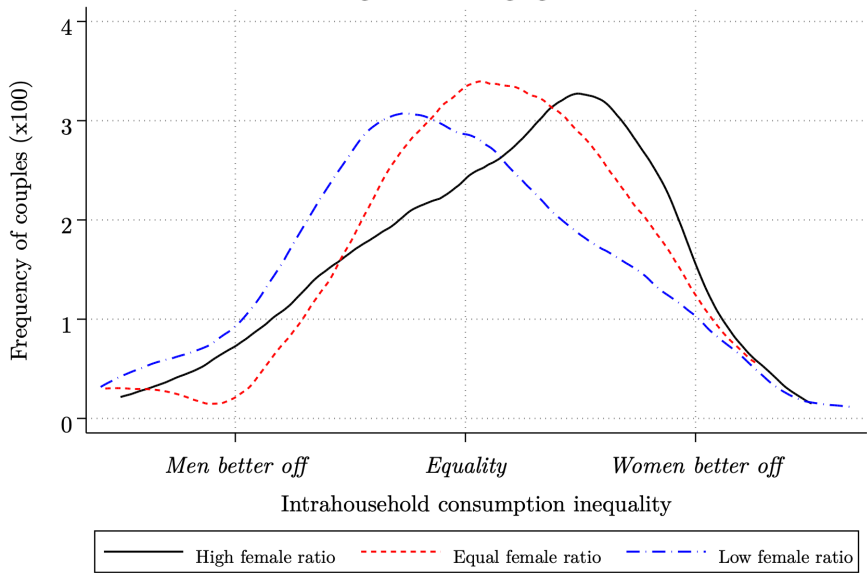


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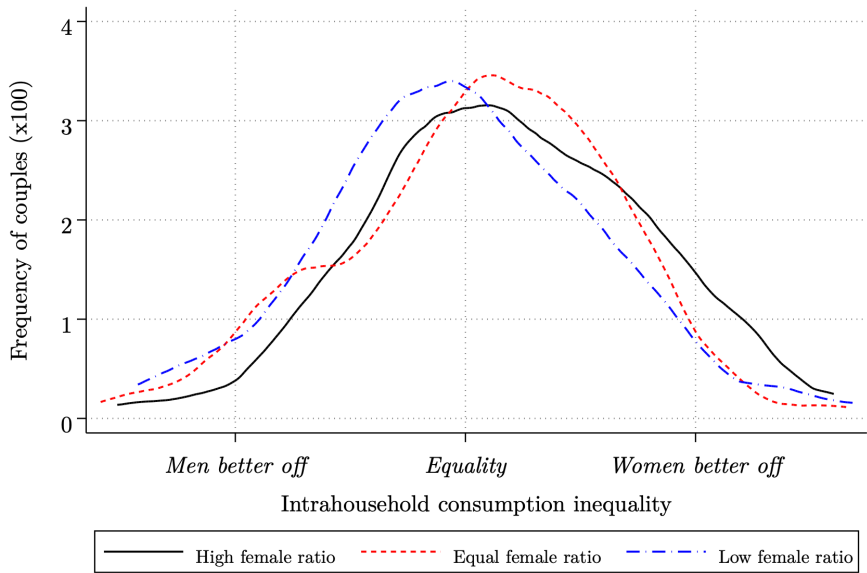
CONSUMPTION INEQUALITY AND PERSONALITY

Cognitive Engagement



CONSUMPTION INEQUALITY AND PERSONALITY

Conscientiousness



CONSUMPTION INEQUALITY AND PERSONALITY

	<u>How many extra resources</u> <u>women get if she would</u> <u>have relatively more</u> <u>personality than her partner?</u>
Personality scales:	
Agreeableness	.428%
Conscientiousness	3.949%
Neuroticism	.476%
Cognitive engagement	4.486%

Notes: Panel A shows the results of a bootstrapped t -test of equal mean between the black and blue distributions shown in the previous figure. I estimate both the t -statistic and p -value on their bootstrap distribution over 1000 replications. Panel B shows the difference in the average intrahousehold inequality between black and blue distributions shown in Figure 2.

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CONCLUSION

- Theory-based evidence about the role that **personality** has in the efficient **allocation of resources**.
- Personality affects **preferences** but also the **bargaining process** inside households.
- Women relatively more attractive to the labor market than their male partners, present a **larger fraction of intrafamily resources**.
- Structural models to investigate these mechanisms:
 - **Second chapter PhD**: personality traits, marriage market, and household behavior.
 - **JMP**: personality traits and the development of children.

THANK YOU!

IF YOU WANT TO REACH OUT: GFERNANDEZ@KULEUVEN.BE

TESTABLE IMPLICATIONS

- ① **Distribution factor proportionality.** Cross-equation restrictions on the household demand system $\mathbf{g}$:

$$\frac{\partial c^m / \partial z_1}{\partial c^m / \partial z_k} = \frac{\partial c^f / \partial z_1}{\partial c^f / \partial z_k} = \frac{\partial \ell^m / \partial z_1}{\partial \ell^m / \partial z_k} = \frac{\partial \ell^f / \partial z_1}{\partial \ell^f / \partial z_k} = \frac{\partial C / \partial z_1}{\partial C / \partial z_k} \quad \forall \quad k = 2, \dots, K.$$

- ② **z-conditional demand system.** Under further assumptions on $\mathbf{g}$ and $\mathbf{z}$, we get:

$$\tilde{\mathbf{g}} = \tilde{\mathbf{g}}(w^m, w^f, y, c^m, \mathbf{z}_{-1}; \xi).$$

The restriction based on the estimation of $\tilde{\mathbf{g}}$, states that subject to the conditioning good (c^m), the demand for the remaining goods should be independent of all other distribution factors:

$$\frac{\partial \tilde{\mathbf{g}}(w^m, w^f, y, c^m, \mathbf{z}_{-1}; \xi)}{\partial z_k} = 0 \quad \forall \quad k = 2, \dots, K.$$

SAMPLE SELECTION CRITERIA

Sample selection (Cherchye et al., 2012; 2017) :

- Couples with both adults are between 25 and 65 years old,
- With or without children,
- No other member than children living at home (e.g., friends),
- Both adults work at least 10 hours per week,
- No self-employed adults.

SUMMARY STATISTICS

Table A1: Economic and demographic variables.

	Mean	Std. dev.	Min	Max
A. Economic variables:				
Male wage rate	13.63	3.71	6.88	29.90
Female wage rate	12.05	3.16	4.03	21.80
Male weekly hours worked	37.43	4.74	12	60
Female weekly hours worked	25.98	7.99	10	48
Full income	2820.69	576.79	1357.20	4770.11
Household private consumption	2241.59	472.04	1142.50	4089.12
Assig. male private consumption	89.97	51.78	15	453.72
Assig. female private consumption	95.25	54.11	19.38	507.66
Public consumption	579.10	229.75	102.96	1898.35
Total household consumption	764.32	256.07	173.21	2284.98
Male weekly leisure	74.56	4.74	52	100
Female weekly leisure	86.01	7.99	64	102
B. Demographic variables:				
Male age	47.39	9.76	25	65
Female age	45.46	9.90	25	65
Number of children	1.16	1.11	0	5
Male dummy low education	.20	.40	0	1
Female dummy low education	.43	.49	0	1
Male dummy middle education	.36	.48	0	1
Female dummy middle education	.23	.42	0	1
Male dummy high education	.43	.49	0	1
Female dummy high education	.32	.47	0	1

► Return

Notes: Sample size of 1130 couples. LISS waves 2009, 2010, 2012, 2015, and 2017 pooled up. All economic variables are in weekly 2015 euros.

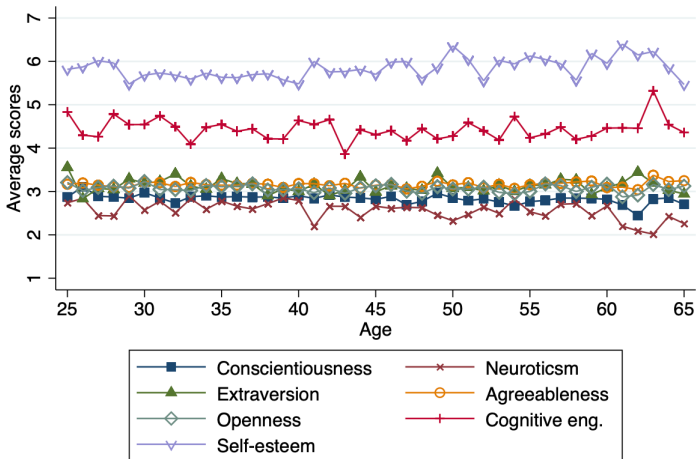
SUMMARY STATISTICS (CONT.)

Table A2: Personality traits.

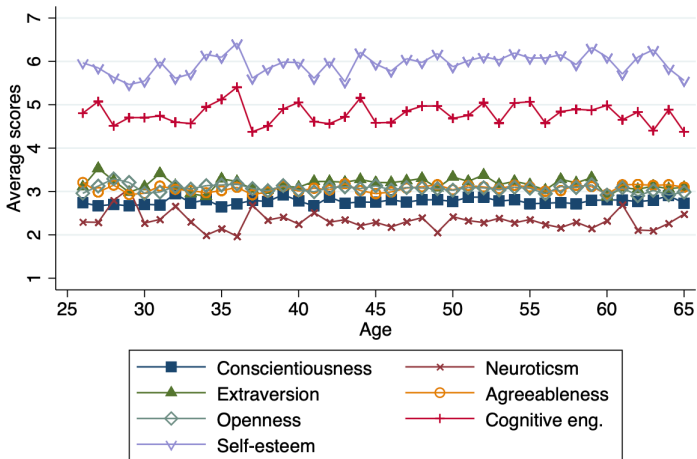
	Mean	Std. dev.	Min	Max
<i>C. Personality traits:</i>				
Male Openness	3.07	.26	1.37	3.87
Female Openness	3.07	.28	1.87	3.87
Male Extraversion	3.18	.51	1.33	4.50
Female Extraversion	3.12	.51	1.33	4.50
Male Agreeableness	3.07	.25	2.00	3.75
Female Agreeableness	3.16	.20	2.37	3.75
Male Neuroticism	2.29	.57	1.00	4.22
Female Neuroticism	2.59	.59	1.00	4.33
Male Conscientiousness	2.78	.27	1.88	3.66
Female Conscientiousness	2.85	.24	1.77	3.55
Male Self-esteem	5.98	.65	3.80	7.00
Female Self-esteem	5.85	.72	3.70	7.00
Male Cognitive engagement	4.78	.86	2.66	7.00
Female Cognitive engagement	4.39	.84	2.25	6.75

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STABILITY OF PERSONALITY - WOMEN



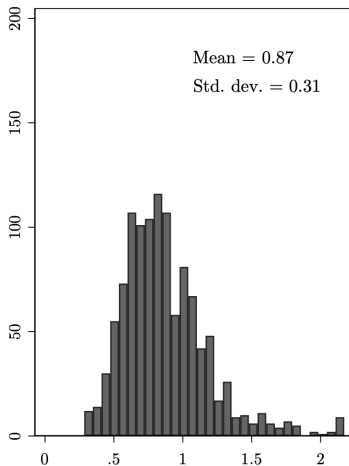
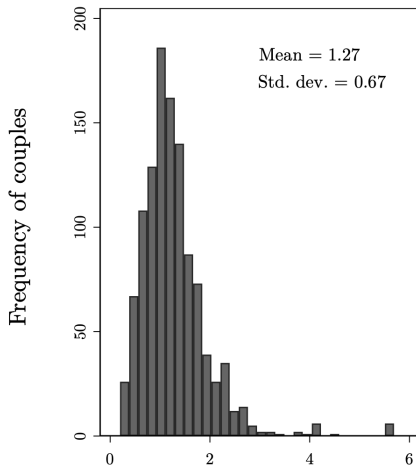
STABILITY OF PERSONALITY - MEN



RELATIVE PERSONALITY BETWEEN PARTNERS

$$z_1 = PC_1^f / PC_1^m$$

$$z_2 = PC_2^f / PC_2^m$$



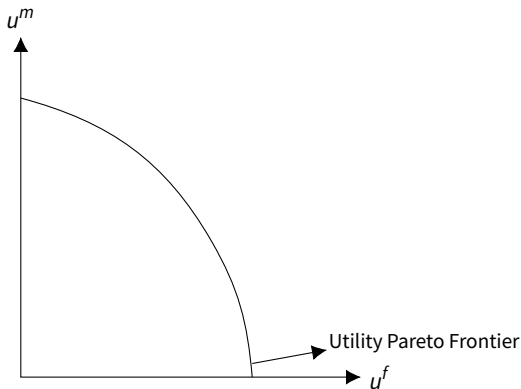
Female's share of within-couple personality

EMPIRICAL TESTS ON DISTRIBUTION FACTORS

H_0 : Differences in personality traits between spouses ($\mathbf{z}$) impact intrahousehold allocations ($\mathbf{g}$) by only changing the bargaining process (μ).

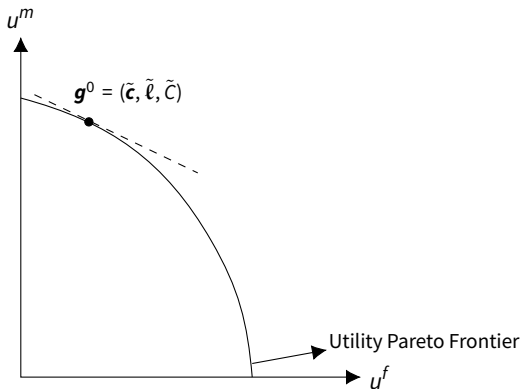
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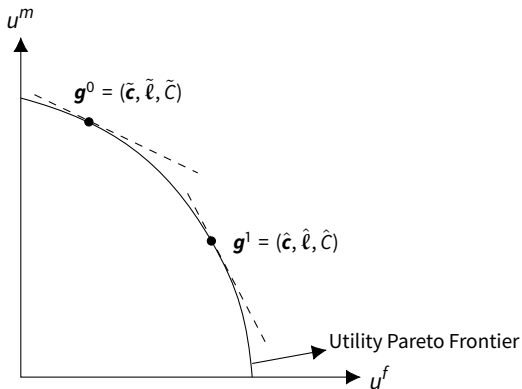
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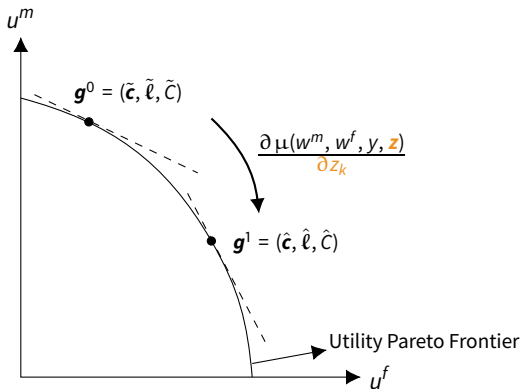
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A variation on distribution factors $\mathbf{z}$ only affects reallocations of resources by shifting the individual bargaining weights.

EMPIRICAL TESTS

1 Distribution factor proportionality.

$$\frac{\partial \ln(\omega_j)/\partial \ln(z_1)}{\partial \ln(\omega_j)/\partial \ln(z_2)} = \frac{\partial \ln(\omega_s)/\partial \ln(z_1)}{\partial \ln(\omega_s)/\partial \ln(z_2)},$$
$$\frac{\beta_{j1}}{\beta_{j2}} = \frac{\beta_{s1}}{\beta_{s2}}.$$

2 z-conditional demand system.

$$\frac{\partial \ln(\omega_s)}{\partial \ln(z_1)} = \theta_s = 0 \quad \forall \quad s \neq c^m.$$