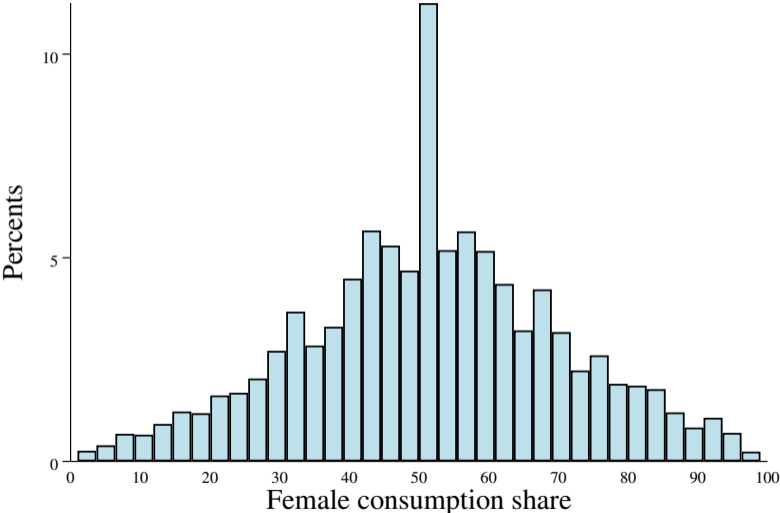


Private Information in the Family

Suzanne Bellue Matthias Doepke Michèle Tertilt



Consumption Shares in Couples are Widely Dispersed



What Explains Variation in How Couples Share Income?

- Cherchye, Demuynck, de Rock, Vermeulen (AER 2017): consumption shares are linked to income shares in Dutch data.
- In existing models, sharing rule determined by:
 - Outside option at time of marriage.
 - Outside options over time within marriage under limited commitment (e.g., Mazzocco 2007, Voena 2015, Lise & Yamada 2019).
- **This paper: Information frictions also matter!**

Literature on Information Frictions in the Family

- **Developing-country evidence on private information within couples:**
de Laat (2014): husbands invest significant resources monitoring their wives;
Antelman (2001): only 40% disclose HIV+ status to partner; Castilla (2015): people hide winnings from spouse even at a fee.
- **Developing-country RCTs & lab experiments:**
Whether transfers/choices are concealable matters for outcomes (Ashraf 2009, Castilla and Walker 2013, Kebede et al 2013, Hoel 2015, Schaner 2015, Aker et al 2016).
- **Theory on private information in the family:**
Largely static non-cooperative models, specific applications (Malapit 2012, Ziparo 2014, Castilla 2014, Fon 2021, and Zhang 2024).

Does Private Information Frictions also Matter in High-Income Countries?

So far, we don't know much.

To find out, we add questions on private information to the Dutch LISS panel in 2019.

The Data

- LISS panel: Dutch survey data.
- Representative sample of the population of couples.
- Information on relative consumption in waves 2009, 2010, 2012, 2015, 2017, 2019, 2020x2, 2021.
- We added questions on private information in 2019.
- 3,264 people and both partners in 931 heterosexual couples answered the survey.
- 847 couples answered private information module AND at least one consumption survey. Each wave: 416-580 couples.

Measuring Private Information in the Family

Income

- I know how much my partner earns.
- My partner knows how much I earn.

Expenses

- I am well informed about my partner's expenses for larger discretionary items (such as apparel, accessories, electronics, and entertainment).
- My partner is well informed about my expenses for larger discretionary items (such as apparel, accessories, electronics, and entertainment).

Debt

- I am well informed about my partner's debt.
- My partner is well informed about my debt.

Private Information in Dutch Couples

	Some private information		
	Couples		Individuals
Income	40.3	I do not know	21.8
		Partner does not know	20.1
Large expenses	22.8	I do not know	10.9
		Partner do not know	11.2
Debt	21.8	I do not know	11.5
		Partner does not know	11.4

We define couples to be fully informed if both questions are answered with “strongly agree” by both partners. If not, we say there is some private information in the couple.

details

How Correlated is Private Information Between Partners?

		Husband	
I do not know		1	0
Wife	1	9.1	15.3
	0	10.0	65.6

		Husband	
My partner does not know		1	0
Wife	1	7.6	11.5
	0	13.4	67.5

How to Keep Things Secret?

	Couples	Individuals
Couple has at least one separate bank account	50.6	45.8
I do not always inform partner about large expenses	40.9	25.5
We rarely or never talk about financial goals and values	27.0	16.2
I may have a secret credit card	3.3	1.8

question details

Does Secrecy Matter?

→ Financial Disagreement in the Family

	Some financial disagreement	
	Couples	Individuals
My partner spends too much money	25.8	14.6
Finance is the most stressful facet of our relationship	25.5	16.5
My partner is not competent at dealing with money	28.7	16.6
Frequent arguments about money	16.9	11.2

*numbers reported refer to couples arguing (very) frequently or sometimes about money.

Private Information and Models of Household Decision Making

Fully efficient household decision-making implies constant Pareto weights.

With private information, first-best allocation generally not achievable.

Two approaches for incorporating private information:

1. Direct assumptions on how information is revealed and on how public income is divided (Ziparo 2020, Zhang 2024).
2. Characterize constrained-efficient allocations (Doepke and Tertilt 2016, Fon 2020).

Example of Constrained-Efficient Income Sharing

- Wife earns private income $y_f \in [\underline{y}_f, \bar{y}_f]$; husband has fixed income y_m .
- Utility functions over individual consumption c_g , public consumption C , and the wife's hidden consumption \tilde{c}_f are:

$$u_f(c_f, C, \tilde{c}_f) = \log(c_f) + \gamma \log(C) + \phi \log(\bar{c} + \tilde{c}_f),$$
$$u_m(c_m, C) = \log(c_m) + \gamma \log(C).$$

- Parameter ϕ captures hidden consumption opportunities and the ease of hiding income.
- Focus on case where $\tilde{c}_f = 0$ in constrained-efficient allocation.
- In first-best allocation, c_f , c_m , and C are constant fractions of total income $y_f + y_m$.

Constrained-Efficient Income Sharing

- Constrained-efficient allocation solves:

$$\max \{ \mu (\log(c_f(y_f)) + \gamma \log(C(y_f))) + (1 - \mu) (\log(c_m(y_f)) + \gamma \log(C(y_f))) \}$$

subject to:

$$c_f(y_f) + c_m(y_f) + C(y_f) = y_f + y_m$$

and subject to truth-telling constraint: for any hidden income $\tilde{y}_f \in [0, y_f]$:

$$\log(c_f(y_f)) + \gamma \log(C(y_f)) + \phi \log(\bar{c}) \geq \log(c_f(y_f - \tilde{y}_f)) + \gamma \log(C(y_f - \tilde{y}_f)) + \phi \log(\bar{c} + \tilde{y}_f).$$

- Sufficient to impose a marginal truth-telling constraint at $\tilde{y}_f = 0$:

$$\phi \frac{1}{\bar{c}} \leq \frac{c'_f(y_f)}{c_f(y_f)} + \gamma \frac{C'(y_f)}{C(y_f)}.$$

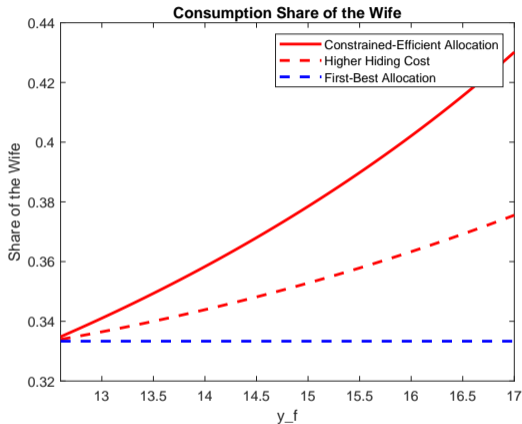
The Constrained-Efficient Outcome

- The wife's consumption is:

$$c_f = \frac{\mu + \lambda_2}{1 + \lambda_2 + \gamma} (y_f + y_m),$$

where λ_2 is the Lagrange multiplier on the truth-telling constraint.

- **Because the temptation to lie (and hence λ_2) increases with y_f , the wife's consumption share increases with her income.**



Private Information and Consumption Shares

Positive relationship between individual income and consumption shares also arises with:

1. **Private information for both spouses.**
2. **Hidden consumption as part of constrained-efficient allocation.**
3. **More general utility functions.**
4. **Implementation with income hiding rather than truth-telling.**
5. **Dynamic insurance rather than public goods to provide incentives for truth-telling.**

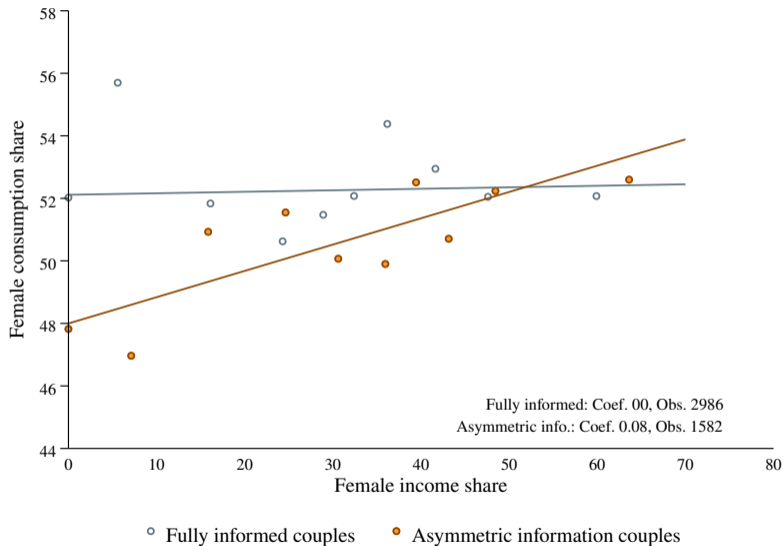
Measuring Consumption Shares in the LISS Data

LISS contains questions on private consumption expenditures.

- 2009-2012: monthly spending on eating outdoor, cigarettes, clothing, personal care, leisure, schooling, donations, other.
- 2015-2017: Only one overall question on personal expenditures.
- 2019-2021: monthly spending on eating indoors, eating outdoor, clothing, software (2020), leisure (2021), other.

We add private consumption across all categories for each individual and then compute the shares within couples.

Female Income and Consumption Shares by Couple Type



Main Regression Specification

$$Cshare_{it}^f = \beta_0 + \beta_1 lshare_{it}^f + \beta_2 D_i^{info} + \beta_3 lshare_{it} \times D_i^{info} + X_{it} + \epsilon_{it}$$

where

- D_i^{info} : dummy whether couple is fully informed.
- X_{it} : year dummies, education dummies, age for each partner
- With and w/o couple FE.

Main Result: Consumption and Income Shares Correlated only Among Uninformed Couples

	Female consumption share			
	(1)	(2)	(3)	(4)
Female income share	0.045*** (0.015)	0.091*** (0.025)	0.047 (0.030)	0.185*** (0.055)
Informed couples		0.033*** (0.011)		- -
(Female income share).(Informed couples)		-0.073** (0.030)		-0.198*** (0.066)
Couple fixed effect	No	No	Yes	Yes
Controls	Yes	Yes	Yes	Yes
N observations	4459	4459	4459	4459
N couples	847	847	847	847
R-squared	0.03	0.03	0.34	0.34

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Robustness

Results are robust to

- including medical expenditures in private consumption. [details](#)
- excluding 10% couples with largest mismatch on reported public expenditures. [details](#)
- using data only up to 2019 – the year in which we asked the information questions.

[details](#)

How are Private-Info Couples Different from Others?

	Fully-informed couples				P-val. diff.
	No		Yes		
	Mean	Obs.	Mean	Obs.	
Female age	51.8	209	62.1	371	0.00
Male age	54.3	209	64.3	371	0.00
No. years living together	24.3	205	36.8	369	0.00
% married	77.5	209	93.8	371	0.00
% only joint bank account	38.3	209	62.8	371	0.00
% of females with college degree	37.8	209	29.6	371	0.04
% of males with college degree	42.6	209	40.4	371	0.61
Household income	3914.9	209	3474.5	371	0.00

- younger

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- younger
- fewer # of years living together, less likely to be married

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- younger
- fewer # of years living together, less likely to be married
- more likely to have separate bank accounts

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- younger
- fewer # of years living together, less likely to be married
- more likely to have separate bank accounts
- more educated, especially female partner

Private Information or Limited Commitment?

- Is it really private information or is the underlying friction limited commitment?
(Less committed couples may simply share less information.)
- To address this, we add proxies for commitment to our analysis:
Has a child, # of children, # years living together.
- We find that information remains highly relevant when we control for commitment.

Private Information vs. Limited Commitment

<i>Proxy for commitment</i>	Female consumption share					
	Has a child (2019)		# of children (2019)		# of years together	
	(1)	(2)	(3)	(4)	(5)	(6)
Female income share	0.089*** (0.029)	0.159*** (0.055)	0.096*** (0.028)	0.167*** (0.055)	0.110*** (0.040)	0.216** (0.090)
Informed couples	0.033*** (0.011)	- -	0.034*** (0.011)	- -	0.034*** (0.011)	- -
(Female income share) (Informed couples)	-0.072** (0.031)	-0.187*** (0.064)	-0.075** (0.031)	-0.192*** (0.065)	-0.070** (0.032)	-0.183*** (0.069)
Committed couples	-0.006 (0.012)	- -	-0.001 (0.005)	- -	0.001 (0.001)	- -
(Female income share) (Committed couples)	0.000 (0.032)	0.077 (0.075)	-0.008 (0.015)	0.027 (0.032)	-0.001 (0.001)	-0.001 (0.002)
Couple fixed effect	No	Yes	No	Yes	No	Yes
N observations	4459	4459	4459	4459	4374	4374
N couples	847	847	847	847	821	821

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Couple fixed effect	No	Yes	No	Yes	No	Yes
N observations	4459	4459	4459	4459	4374	4374
N couples	847	847	847	847	821	821

Conclusion

(Some) Dutch couples have secrets.

Consumption shares correlated with income shares only among couples with private information.

Pattern lines up with constrained-efficient model of private information in the family.

Private information is an important friction even in high-income countries.

APPENDIX

Private Information in Dutch Couples

	Couples		Individuals				
	Some private information		Fully informed	Some private information			
			Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Not sure
Income	40.3	I know	78.2	14.0	3.0	2.8	2
		Partner knows	79.9	13.7	2.5	2.3	1.6
Large expenses	22.8	I know	89.2	7.6	1.3	1.5	0.5
		Partner knows	88.8	8.1	1.4	1.2	0.5
Debt	21.8	I know	88.3	4.9	1.3	4.0	1.3
		Partner knows	88.6	4.7	1.5	4.0	1.2

Measuring Private Information in the Family

- Which of the following statements best describes your household's financial accounts (bank checking or saving accounts)?
- How often do you NOT inform your partner (what you bought and/or how much you paid) about larger expenses for discretionary items such as apparel, accessories, electronics, and entertainment?
- How often do you discuss financial goals and values with your partner/spouse?
- I have a secret credit card or bank account that my partner does not know about.

Financial Disagreement in the Family

	Couples	Individuals				
	Some financial disagreement	Some financial disagreement	Strongly agree	Somewhat agree	Neither	No disagreement
					Somewhat disagree	Strongly disagree
My partner spends too much money	25.8	0.7	4.2	9.7	10.7	74.6
Finance most stressful facet of spousal relationship	25.5	1.9	5.8	8.8	9.9	73.6
My partner is not competent at dealing with money	28.7	3.3	4.2	9.1	19.4	64.0
Frequency of money arguments*	16.9	0.3	2.0	8.9	22.7	66.2

Views on the Income-Consumption Relationship

	Couples		Individuals				
	Some views		Some views of increasing income-consumption relationship			Flat Income-Consumption Relationship	
			Strongly agree	Somewhat agree	Neither	Somewhat disagree	Strongly disagree
Regular	35.7	If I	3.8	4.8	12.5	6.3	72.6
		If partner	3.8	5.3	12.7	7.0	71.3
Unexpected	41.2	If I	5.0	8.4	12.6	7.3	66.6
		If partner	5.4	8.4	13.3	7.8	65.1

How correlated is private information on large expenses between partners?

		Husband	
I do not know		1	0
Wife	1	3.7	6.3
	0	8.1	82.0

		Husband	
My partner does not know		1	0
Wife	1	3.7	8.1
	0	7.0	81.3

How correlated is private information on debt between partners?

		Husband	
I do not know		1	0
Wife	1	3.9	9.7
	0	5.9	80.6

		Husband	
My partner does not know		1	0
Wife	1	3.8	8.6
	0	6.7	81.0

Including medical expenditures in private consumption

	Female consumption share			
	(1)	(2)	(3)	(4)
Female income share	0.053*** (0.015)	0.083*** (0.025)	0.055* (0.030)	0.161*** (0.055)
Informed couples		0.023** (0.011)		- -
(Female income share).(Informed couples)		-0.047 (0.030)		-0.152** (0.065)
Couple fixed effect	No	No	Yes	Yes
Controls	Yes	Yes	Yes	Yes
N observations	4459	4459	4459	4459
N couples	847	847	847	847
R-squared	0.03	0.03	0.34	0.34

Excluding 10% couples with largest mismatch on public expenditures

	Female consumption share			
	(1)	(2)	(3)	(4)
Female income share	0.037** (0.015)	0.070*** (0.026)	0.052* (0.031)	0.193*** (0.057)
Informed couples		0.027** (0.011)		- -
(Female income share).(Informed couples)		-0.053* (0.031)		-0.199*** (0.067)
Couple fixed effect	No	No	Yes	Yes
Controls	Yes	Yes	Yes	Yes
N observations	4159	4159	4159	4159
N couples	847	847	847	847
R-squared	0.03	0.03	0.34	0.34

Using data only up to 2019

	Female consumption share			
	(1)	(2)	(3)	(4)
Female income share	0.055*** (0.019)	0.113**** (0.031)	0.070 (0.045)	0.295*** (0.072)
Informed couples		0.036*** (0.013)		- -
(Female income share).(Informed couples)		-0.091** (0.038)		-0.332**** (0.090)
Couple fixed effect	No	No	Yes	Yes
Controls	Yes	Yes	Yes	Yes
N observations	2971	2971	2971	2971
N couples	819	819	819	819
R-squared	0.02	0.03	0.42	0.42