

Complementary Appendix to the paper:

IDENTIFYING THE INDEPENDENT SOURCES OF CONSUMPTION VARIATION

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A Data description

Disaggregation at 4-digits level of the 13 expenditure categories considered.

.01 HOUSING: ACCOMMODATION COSTS, REPAIRS AND IMPROVEMENTS
.01.01 Rent, mortgages, council tax, water, home insurance
.01.02 Purchase of main dwelling and caravan/mobile home
.01.03 Capital improvements and maintenance by contractor: Main and second dwelling
.01.04 D-I-Y improvements: Main and second dwelling
.01.05 Purchase of materials, fittings, tools-home maintenance
.01.06 Second dwelling purchase and running costs
.02 FUEL, LIGHT AND POWER
.02.01 Gas expenditure
.02.02 Electricity expenditure
.02.03 Coal and other fuel
.03 FOOD
.03.01 Cereals and cereal products
.03.02 Milk and milk products
.03.03 Eggs
.03.04 Fats and oils
.03.05 Meat and meat products
.03.06 Fish, shellfish and products
.03.07 Vegetables and pulses
.03.08 Fruit and nuts
.03.09 Sugar, preserves and confectionery
.03.10 Beverages (non-alcoholic)
.03.11 Miscellaneous foods
.03.12 Take away meals eaten at home + meals on wheels
.03.13 Food bought and consumed at work, school
.03.15 Food from other outlets not eaten at home
.03.16 Meals/snacks not eaten at home (child)
.03.17 Food stamps
.04 ALCOHOLIC DRINKS
.04.01 Alcohol Bought Off Licensed Premises
.04.02 Alcohol bought and consumed on licensed premises
.05 TOBACCO
.06 CLOTHING AND FOOTWEAR
.06.01 Outerwear
.06.02 Underwear and hosiery
.06.03 Clothing accessories
.06.04 Footwear
.06.05 Haberdashery and clothing materials
.07 HOUSEHOLD GOODS
.07.01 Furniture and furnishings
.07.02 Electrical and gas appliances and consumables
.07.03 Non-electrical kitchenware, hardware, decorative goods
.07.04 Cleaning materials
.07.05 Toilet paper
.07.06 Pet expenditure
.07.07 Garden expenditure
.07.08 Household goods miscellaneous
.08 DOMESTIC AND PAID SERVICES, POSTAGE, PHONE, SUBS (HOUSEHOLD SERVICES)
.08.01 Childcare, laundry, cleaning, repairs-personal goods
.08.02 Postage and telephones
.08.03 Subscriptions
.08.04 Legal, financial, professional fees and costs
.08.05 Other services contracted or hired
.09 PERSONAL GOODS AND SERVICES
.09.01 Cosmetics/toilet requisites
.09.02 Personal effects and travel goods
.09.03 Baby goods
.09.04 Medicines and medical goods
.09.05 Spectacles
.09.06 Hairdressing, beauty treatments and wigs etc.
.09.07 Other personal goods

.10 MOTORING EXPENDITURE
.10.01 Purchase of vehicles
.10.02 Accessories, parts, repairs, servicing
.10.03 Petrol and oil
.10.04 Insurance, driving lessons and other payments
.11 TRAVEL AND NON-MOTOR VEHICLES EXPENSES
.11.01 Purchase and maintenance of non-motor vehicles
.11.02 Fares
.11.03 Other travel and transport costs
.12 TELEVISION, AUDIO, BOOKS, STATIONERY, LEISURE GOODS
.12.01 TV, video and audio equipment
.12.02 Sports, camping and outdoor goods and equipment
.12.03 Newspapers, magazines, books, stationery
.12.04 Toys, hobbies, photography
.13 ENTERTAINMENT, EDUCATION, HOLIDAYS, BETTING (LEISURE SERVICES)
.13.01 Entertainments, social events, sport
.13.02 TV and video licence, rental, subscriptions
.13.03 Education and training
.13.04 Hotels and holiday expenses
.13.05 Betting stakes
.13.06 Betting winnings

B Additional results

Below we report the results for the datasets not considered in the main text. We consider here: the datasets built using data from the period 1997–2006 for households with 1, 2, and 2 or 3 members; the datasets built using data from the periods 1987–1996 and 1977–1986 for households with 1, 2, 2 or 3, and 2 to 4 members.

B.1 Time period 1997–2006

Table B-1: Factor loadings: 1 household member.

	Years									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Factor 1										
Housing	-0.09	-0.18	-0.21	-0.23	-0.21	-0.08	-0.21	-0.14	-0.14	-0.08
Fuel, light and power	0.50	0.53	0.50	0.47	0.53	0.43	0.46	0.41	0.36	0.31
Food	0.73	0.72	0.81	0.83	0.79	0.78	0.77	0.78	0.83	0.78
Alcoholic drinks	-0.07	-0.12	-0.03	-0.07	-0.07	-0.05	-0.05	-0.06	-0.02	-0.06
Tobacco	0.20	0.19	0.12	0.11	0.12	0.08	0.10	0.11	0.10	0.09
Clothing and footwear	-0.10	-0.11	-0.13	-0.12	-0.08	-0.10	-0.09	-0.12	-0.09	-0.12
Household goods	-0.17	-0.11	-0.09	-0.15	-0.13	-0.11	-0.13	-0.17	-0.17	-0.12
Household services	0.08	0.11	0.10	0.10	0.05	0.10	0.11	0.11	0.08	0.11
Personal goods and services	-0.07	-0.05	-0.03	-0.01	-0.06	-0.03	-0.04	-0.02	-0.04	-0.04
Motoring	-0.55	-0.59	-0.55	-0.55	-0.55	-0.59	-0.55	-0.53	-0.56	-0.54
Travel	-0.04	-0.01	-0.05	-0.03	-0.03	-0.02	0.02	0.00	-0.02	-0.01
Leisure goods	-0.05	-0.05	-0.05	-0.04	-0.05	-0.06	-0.04	-0.01	0.00	-0.05
Leisure services	-0.28	-0.22	-0.32	-0.19	-0.24	-0.26	-0.30	-0.29	-0.31	-0.35
Factor 2										
Housing	-1.24	-1.15	-0.90	-0.96	-1.12	-1.23	-1.17	-0.62	-0.73	-0.82
Fuel, light and power	0.22	0.27	0.21	0.14	0.17	0.18	0.22	0.12	0.05	0.13
Food	0.26	0.29	0.31	0.34	0.33	0.19	0.13	0.07	0.11	0.17
Alcoholic drinks	-0.11	-0.08	-0.09	-0.01	-0.06	-0.08	-0.04	-0.07	-0.06	-0.10
Tobacco	0.12	-0.01	-0.10	-0.06	-0.03	-0.10	0.00	-0.07	-0.07	0.02
Clothing and footwear	-0.08	-0.03	0.06	0.00	0.04	0.04	0.02	-0.09	-0.11	-0.05
Household goods	0.29	0.10	-0.15	0.01	-0.01	0.22	0.09	0.20	0.12	0.13
Household services	-0.21	-0.03	0.11	-0.03	0.00	0.09	0.11	0.02	0.21	0.05
Personal goods and services	0.00	-0.11	0.00	-0.03	0.04	0.03	-0.09	-0.14	-0.05	0.03
Motoring	0.22	0.34	0.03	0.16	0.21	0.05	0.25	0.37	0.17	0.01
Travel	0.00	0.03	0.03	0.01	-0.02	0.02	-0.01	0.04	0.00	0.08
Leisure goods	0.02	0.05	0.02	0.04	0.05	0.09	0.12	0.02	-0.08	0.06
Leisure services	0.21	0.12	0.29	0.24	0.25	0.30	0.26	0.14	0.43	0.27
Factor 3										
Housing	1.95	-0.40	-1.16	-0.10	1.24	-0.68	-0.82	0.00	0.32	0.52
Fuel, light and power	-0.31	-0.25	-0.17	-0.20	-0.29	-0.18	-0.30	-0.19	-0.30	-0.13
Food	-0.51	-0.22	-0.21	-0.41	-0.42	-0.03	-0.18	-0.21	-0.36	-0.44
Alcoholic drinks	-0.07	0.08	0.18	0.05	-0.20	0.09	0.03	0.02	0.07	-0.15
Tobacco	-0.11	0.16	0.02	0.11	-0.14	-0.03	-0.06	-0.04	-0.12	-0.15
Clothing and footwear	-0.01	0.05	0.36	0.15	0.02	-0.04	0.17	-0.01	-0.06	0.07
Household goods	-0.01	0.08	0.27	-0.01	-0.04	0.24	0.38	0.05	0.16	0.08
Household services	-0.17	0.03	-0.08	-0.15	0.02	0.02	-0.06	-0.25	-0.07	-0.06
Personal goods and services	-0.12	0.04	0.06	0.04	0.08	-0.13	0.04	-0.01	0.09	-0.04
Motoring	0.06	0.11	0.06	0.09	-0.03	0.03	0.31	0.27	0.86	0.13
Travel	0.05	-0.04	-0.15	-0.04	-0.03	0.00	0.00	0.04	-0.05	0.09
Leisure goods	-0.05	0.12	0.00	-0.02	-0.05	0.15	-0.01	0.16	-0.20	0.02
Leisure services	-0.26	0.09	0.41	0.49	0.07	0.46	0.35	0.13	-0.31	0.08

Loadings of the identified factors $\tilde{\mathbf{f}}$, the scale being fixed such that $\tilde{\mathbf{A}}'\tilde{\mathbf{A}}/J = \mathbf{I}_r$.

Table B-2: Factor loadings: 2 household members.

	Years									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Factor 1										
Housing	-0.40	-0.39	-0.09	-0.17	-0.23	-0.11	0.01	-0.14	-0.22	-0.21
Fuel, light and power	0.46	0.48	0.43	0.39	0.36	0.37	0.36	0.28	0.34	0.26
Food	0.69	0.75	0.78	0.79	0.80	0.79	0.81	0.85	0.89	0.85
Alcoholic drinks	-0.11	-0.07	-0.08	-0.12	-0.10	-0.09	-0.10	-0.11	-0.07	-0.01
Tobacco	0.28	0.28	0.16	0.18	0.17	0.14	0.10	0.11	0.08	0.15
Clothing and footwear	-0.04	-0.08	-0.16	-0.09	-0.07	-0.05	-0.07	-0.08	-0.05	-0.09
Household goods	-0.08	-0.07	-0.11	-0.12	-0.14	-0.14	-0.11	-0.03	-0.21	-0.05
Household services	0.03	0.05	0.07	0.07	0.05	0.09	0.07	0.08	0.04	0.06
Personal goods and services	0.00	-0.02	-0.04	-0.01	-0.02	-0.03	-0.08	-0.06	0.00	-0.08
Motoring	-0.64	-0.64	-0.50	-0.53	-0.55	-0.48	-0.52	-0.49	-0.49	-0.56
Travel	0.01	0.04	-0.02	0.02	0.01	-0.01	-0.02	-0.02	0.00	-0.03
Leisure goods	-0.01	-0.05	-0.04	-0.02	-0.01	-0.02	-0.02	0.00	-0.02	-0.01
Leisure services	-0.24	-0.23	-0.33	-0.33	-0.23	-0.40	-0.37	-0.37	-0.29	-0.31
Factor 2										
Housing	-0.32	-0.22	-0.14	-0.26	-0.36	-0.36	-0.41	-0.36	-0.34	-0.14
Fuel, light and power	-0.29	-0.31	-0.32	-0.29	-0.29	-0.27	-0.26	-0.24	-0.24	-0.18
Food	-0.71	-0.69	-0.82	-0.72	-0.74	-0.65	-0.79	-0.74	-0.78	-0.83
Alcoholic drinks	-0.01	0.00	-0.03	-0.04	-0.03	-0.01	-0.07	0.00	-0.02	-0.01
Tobacco	-0.19	-0.18	-0.14	-0.15	-0.09	-0.11	-0.15	-0.13	-0.08	-0.10
Clothing and footwear	0.14	0.11	0.09	0.07	0.07	0.12	0.11	0.09	0.08	0.07
Household goods	0.23	0.26	0.18	0.14	0.23	0.26	0.27	0.15	0.19	0.16
Household services	0.06	-0.05	-0.06	0.00	0.05	-0.02	-0.04	0.04	-0.08	0.02
Personal goods and services	0.05	0.01	0.00	0.01	0.04	0.08	0.02	0.06	0.03	0.02
Motoring	0.41	0.44	0.58	0.28	0.44	0.40	0.75	0.29	0.63	0.39
Travel	0.12	0.13	0.06	0.07	0.07	0.08	0.02	0.08	0.05	0.07
Leisure goods	0.01	0.00	0.04	0.05	-0.01	0.02	0.06	0.13	0.07	0.02
Leisure services	0.39	0.37	0.46	0.77	0.55	0.34	0.37	0.57	0.47	0.56
Factor 3										
Housing	0.56	0.45	-0.04	0.32	-0.10	0.32	0.10	0.40	0.18	0.38
Fuel, light and power	0.27	0.25	0.25	0.25	0.27	0.23	0.21	0.22	0.22	0.16
Food	0.73	0.71	0.69	0.71	0.72	0.75	0.73	0.71	0.76	0.67
Alcoholic drinks	0.05	0.07	0.02	0.05	-0.01	0.03	-0.04	0.08	0.03	0.01
Tobacco	0.25	0.18	0.14	0.12	0.19	0.17	0.07	0.07	0.13	0.05
Clothing and footwear	-0.10	-0.10	-0.14	-0.13	0.03	-0.08	-0.04	-0.14	-0.03	-0.05
Household goods	-0.20	-0.25	-0.18	-0.20	-0.14	-0.03	0.00	-0.24	-0.10	-0.35
Household services	0.00	-0.08	0.02	0.03	-0.04	-0.01	-0.07	0.05	-0.02	-0.02
Personal goods and services	0.05	0.02	-0.03	-0.04	-0.09	0.00	0.03	-0.06	-0.11	-0.05
Motoring	-0.55	-0.35	0.06	-0.58	-0.46	-0.63	-0.22	-0.58	-0.23	-0.30
Travel	-0.13	0.00	-0.10	-0.05	-0.01	-0.10	-0.12	-0.05	-0.05	-0.04
Leisure goods	-0.06	-0.02	0.00	-0.03	0.02	-0.01	-0.02	-0.03	-0.06	-0.05
Leisure services	-0.71	-0.82	-0.74	-0.29	-0.39	-0.54	-0.58	-0.36	-0.70	-0.47

Loadings of the identified factors $\tilde{\mathbf{f}}$, the scale being fixed such that $\tilde{\mathbf{A}}'\tilde{\mathbf{A}}/J = \mathbf{I}_r$.

Table B-3: Factor loadings: 2-3 household members.

	Years									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Factor 1										
Housing	-0.44	-0.41	-0.23	-0.23	-0.30	-0.19	-0.12	-0.22	-0.26	-0.27
Fuel, light and power	0.48	0.48	0.43	0.43	0.39	0.36	0.35	0.32	0.32	0.25
Food	0.68	0.74	0.78	0.75	0.77	0.78	0.83	0.87	0.84	0.88
Alcoholic drinks	-0.13	-0.10	-0.09	-0.12	-0.10	-0.10	-0.09	-0.11	-0.08	-0.03
Tobacco	0.29	0.28	0.18	0.21	0.20	0.13	0.10	0.10	0.09	0.13
Clothing and footwear	-0.06	-0.08	-0.12	-0.08	-0.09	-0.04	-0.06	-0.08	-0.05	-0.07
Household goods	-0.07	-0.06	-0.06	-0.09	-0.10	-0.09	-0.08	-0.04	-0.12	-0.06
Household services	0.03	0.04	0.07	0.07	0.03	0.06	0.08	0.06	0.05	0.07
Personal goods and services	0.01	-0.01	-0.02	-0.01	-0.01	-0.03	-0.06	-0.05	-0.02	-0.07
Motoring	-0.61	-0.64	-0.53	-0.55	-0.56	-0.48	-0.53	-0.52	-0.51	-0.57
Travel	0.00	0.03	0.00	0.01	0.02	-0.01	-0.01	0.01	0.02	0.00
Leisure goods	-0.01	-0.04	-0.04	-0.03	-0.01	-0.02	-0.03	-0.02	-0.02	-0.03
Leisure services	-0.23	-0.19	-0.32	-0.29	-0.21	-0.35	-0.33	-0.28	-0.25	-0.26
Factor 2										
Housing	-0.42	-0.28	-0.18	-0.24	-0.27	-0.26	-0.30	-0.41	-0.27	-0.22
Fuel, light and power	-0.30	-0.29	-0.33	-0.30	-0.31	-0.29	-0.26	-0.25	-0.24	-0.18
Food	-0.69	-0.72	-0.86	-0.73	-0.74	-0.74	-0.76	-0.77	-0.79	-0.77
Alcoholic drinks	0.02	0.01	0.00	-0.02	0.01	0.01	0.00	-0.02	0.00	0.00
Tobacco	-0.22	-0.19	-0.17	-0.15	-0.13	-0.12	-0.13	-0.15	-0.14	-0.14
Clothing and footwear	0.10	0.11	0.10	0.09	0.06	0.10	0.13	0.11	0.06	0.09
Household goods	0.18	0.21	0.15	0.11	0.15	0.19	0.23	0.19	0.17	0.13
Household services	0.03	-0.01	-0.02	-0.01	0.04	0.01	-0.01	0.03	-0.03	0.06
Personal goods and services	0.06	0.04	0.02	0.02	0.05	0.06	0.00	0.06	0.04	0.05
Motoring	0.55	0.46	0.67	0.40	0.53	0.48	0.54	0.41	0.53	0.37
Travel	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.04	0.04	0.08
Leisure goods	0.07	0.04	0.04	0.05	0.00	0.05	0.06	0.06	0.06	0.02
Leisure services	0.41	0.43	0.38	0.62	0.47	0.33	0.34	0.63	0.57	0.56
Factor 3										
Housing	-0.27	-0.59	0.13	-0.45	-0.13	-0.41	-0.30	-0.31	-0.11	-0.40
Fuel, light and power	-0.26	-0.25	-0.22	-0.26	-0.25	-0.19	-0.25	-0.20	-0.21	-0.16
Food	-0.71	-0.67	-0.64	-0.68	-0.63	-0.63	-0.71	-0.68	-0.83	-0.72
Alcoholic drinks	-0.16	-0.06	-0.07	-0.05	-0.01	-0.07	0.00	-0.03	-0.05	-0.04
Tobacco	-0.28	-0.27	-0.16	-0.18	-0.16	-0.14	-0.13	-0.07	-0.10	-0.05
Clothing and footwear	0.15	0.14	0.07	0.10	0.01	0.02	0.04	0.15	0.07	0.01
Household goods	0.22	0.14	0.21	0.23	0.24	0.09	-0.03	0.19	0.16	0.37
Household services	0.21	-0.01	0.00	0.04	0.05	0.06	0.08	0.01	0.05	0.08
Personal goods and services	-0.06	-0.09	0.06	0.01	0.06	0.02	-0.03	0.06	0.08	-0.01
Motoring	0.24	0.46	-0.25	0.44	0.24	0.46	0.41	0.36	0.33	0.24
Travel	0.13	-0.01	0.10	0.04	0.06	0.07	0.08	0.11	0.03	0.08
Leisure goods	0.06	0.02	0.10	0.02	-0.04	0.04	0.08	0.10	0.09	0.03
Leisure services	0.66	1.07	0.72	0.60	0.52	0.59	0.67	0.26	0.48	0.60

Loadings of the identified factors $\tilde{\mathbf{f}}$, the scale being fixed such that $\tilde{\mathbf{A}}'\tilde{\mathbf{A}}/J = \mathbf{I}_r$.

Table B-4: Factor loadings: 2-4 household members.

	Years									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Factor 1										
Housing	-0.35	-0.37	-0.21	-0.23	-0.30	-0.16	-0.11	-0.15	-0.25	-0.26
Fuel, light and power	0.47	0.47	0.44	0.42	0.39	0.37	0.35	0.32	0.31	0.26
Food	0.68	0.74	0.79	0.77	0.76	0.78	0.82	0.84	0.85	0.90
Alcoholic drinks	-0.11	-0.08	-0.08	-0.10	-0.09	-0.09	-0.08	-0.10	-0.05	-0.03
Tobacco	0.31	0.30	0.20	0.21	0.20	0.15	0.14	0.12	0.11	0.13
Clothing and footwear	-0.08	-0.09	-0.13	-0.08	-0.08	-0.06	-0.07	-0.10	-0.07	-0.07
Household goods	-0.05	-0.06	-0.07	-0.06	-0.08	-0.09	-0.09	-0.04	-0.10	-0.06
Household services	0.02	0.04	0.06	0.08	0.02	0.04	0.06	0.04	0.05	0.05
Personal goods and services	0.00	-0.01	-0.02	0.00	0.00	-0.03	-0.05	-0.05	-0.03	-0.06
Motoring	-0.63	-0.63	-0.57	-0.56	-0.56	-0.50	-0.54	-0.51	-0.53	-0.57
Travel	0.00	0.02	0.00	0.00	0.02	-0.01	-0.01	0.01	0.02	0.00
Leisure goods	-0.03	-0.05	-0.04	-0.04	-0.02	-0.03	-0.05	-0.05	-0.04	-0.05
Leisure services	-0.24	-0.21	-0.29	-0.34	-0.23	-0.32	-0.31	-0.29	-0.26	-0.28
Factor 2										
Housing	-0.35	-0.43	0.08	-0.36	-0.30	-0.40	-0.40	-0.44	-0.16	-0.35
Fuel, light and power	-0.28	-0.28	-0.28	-0.28	-0.29	-0.25	-0.27	-0.23	-0.22	-0.17
Food	-0.73	-0.71	-0.77	-0.71	-0.71	-0.68	-0.72	-0.78	-0.78	-0.72
Alcoholic drinks	-0.02	-0.01	-0.01	-0.03	0.00	-0.02	0.01	-0.05	-0.02	-0.02
Tobacco	-0.27	-0.24	-0.20	-0.17	-0.16	-0.15	-0.14	-0.13	-0.14	-0.08
Clothing and footwear	0.14	0.13	0.08	0.13	0.09	0.06	0.12	0.13	0.06	0.07
Household goods	0.16	0.10	0.12	0.15	0.18	0.06	0.15	0.16	0.22	0.20
Household services	0.11	0.03	-0.02	0.02	0.04	0.05	0.06	0.03	0.04	0.07
Personal goods and services	0.04	0.02	0.02	0.02	0.04	0.04	0.01	0.04	0.06	0.02
Motoring	0.32	0.38	0.27	0.47	0.42	0.52	0.33	0.47	0.35	0.16
Travel	0.10	0.04	0.05	0.06	0.06	0.03	0.10	0.07	0.05	0.11
Leisure goods	0.08	0.05	0.09	0.06	0.02	0.05	0.09	0.07	0.09	0.06
Leisure services	0.57	0.80	0.56	0.49	0.52	0.58	0.54	0.61	0.44	0.72
Factor 3										
Housing	1.95	-0.40	-1.16	-0.10	1.24	-0.68	-0.82	0.00	0.32	0.52
Fuel, light and power	-0.31	-0.25	-0.17	-0.20	-0.29	-0.18	-0.30	-0.19	-0.30	-0.13
Food	-0.51	-0.22	-0.21	-0.41	-0.42	-0.03	-0.18	-0.21	-0.36	-0.44
Alcoholic drinks	-0.07	0.08	0.18	0.05	-0.20	0.09	0.03	0.02	0.07	-0.15
Tobacco	-0.11	0.16	0.02	0.11	-0.14	-0.03	-0.06	-0.04	-0.12	-0.15
Clothing and footwear	-0.01	0.05	0.36	0.15	0.02	-0.04	0.17	-0.01	-0.06	0.07
Household goods	-0.01	0.08	0.27	-0.01	-0.04	0.24	0.38	0.05	0.16	0.08
Household services	-0.17	0.03	-0.08	-0.15	0.02	0.02	-0.06	-0.25	-0.07	-0.06
Personal goods and services	-0.12	0.04	0.06	0.04	0.08	-0.13	0.04	-0.01	0.09	-0.04
Motoring	0.06	0.11	0.06	0.09	-0.03	0.03	0.31	0.27	0.86	0.13
Travel	0.05	-0.04	-0.15	-0.04	-0.03	0.00	0.00	0.04	-0.05	0.09
Leisure goods	-0.05	0.12	0.00	-0.02	-0.05	0.15	-0.01	0.16	-0.20	0.02
Leisure services	-0.26	0.09	0.41	0.49	0.07	0.46	0.35	0.13	-0.31	0.08

Loadings of the identified factors $\tilde{\mathbf{f}}$, the scale being fixed such that $\tilde{\mathbf{A}}'\tilde{\mathbf{A}}/J = \mathbf{I}_r$.

Table B-5: Average factor loadings: 1 household member.

	Average Loading		
	Factor 1	Factor 2	Factor 3
Housing	-0.14	-0.91	0.18
Fuel, light and power	0.40	0.16	-0.48
Food	0.69	0.20	-0.61
Alcoholic drinks	-0.05	-0.06	0.02
Tobacco	0.11	-0.03	-0.08
Clothing and footwear	-0.09	-0.02	0.14
Household goods	-0.12	0.09	0.24
Household services	0.08	0.03	-0.16
Personal goods and services	-0.03	-0.03	0.01
Motoring	-0.49	0.17	0.39
Travels	-0.02	0.02	-0.03
Leisure goods	-0.03	0.04	0.03
Leisure services	-0.24	0.23	0.31

Average loadings of the identified factors $\tilde{\mathbf{f}}$ are computed over the 10 years period 1997-2006, the scale being fixed such that $\tilde{\mathbf{A}}'\tilde{\mathbf{A}}/J = \mathbf{I}_r$.

Table B-6: Parametric estimates of basic Engel curves, goodness-of-fit: 1 household member.

Functional form	adj.R ²								
	all			poor			rich		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
$\alpha_r + \beta_r x_h$	0.86	0.08	0.00	0.95	0.67	0.07	0.89	0.79	0.00
$\alpha_r + \beta_r x_h^2$	0.63	0.21	0.00	0.92	0.68	0.05	0.79	0.76	0.00
$\alpha_r + \beta_r x_h^{-1}$	0.72	0.02	0.01	0.65	0.30	0.06	0.93	0.71	0.00
$\alpha_r + \beta_r x_h^{-2}$	0.32	0.03	0.01	0.37	0.10	0.02	0.88	0.63	0.00
$\alpha_r + \beta_r \log x_h$	0.97	0.00	0.00	0.88	0.54	0.08	0.94	0.78	0.00
$\alpha_r + \beta_r \log^2 x_h$	0.97	0.00	0.00	0.91	0.59	0.08	0.93	0.78	0.00
$\alpha_r + \beta_r x_h \log x_h$	0.82	0.10	0.00	0.95	0.68	0.06	0.88	0.79	0.00

Adjusted R^2 coefficient for the least squares regressions of the identified factors \tilde{f}_{rh} on selected functions of total expenditure; **poor**: households with total expenditure below median; **rich**: households with total expenditure above median. Period: 1997–2006.

Table B-7: Parametric estimates of basic Engel curves, coefficients: 1 household member.

Functional form	all		poor		rich	
	$\tilde{\beta}_r^*$	adj.R ²	$\tilde{\beta}_r^*$	adj.R ²	$\tilde{\beta}_r^*$	adj.R ²
$\tilde{f}_{1h} = \alpha_1 + \beta_1 \log x_h$	-1.50*** (0.25)	0.97	-1.30** (0.89)	0.88	-1.35* (0.57)	0.94
$\tilde{f}_{1h} = \alpha_1 + \beta_1 x_h^{-1}$	1.14*** (0.18)	0.72	2.10** (0.99)	0.65	3.45* (2.16)	0.93
$\tilde{f}_{2h} = \alpha_2 + \beta_2 x_h^2$	0.11* (0.07)	0.21	-0.14** (0.08)	0.68	0.14*** (0.06)	0.76
$\tilde{f}_{2h} = \alpha_2 + \beta_2 x_h \log x_h$	0.26* (0.19)	0.10	-0.41** (0.25)	0.68	0.44*** (0.18)	0.79

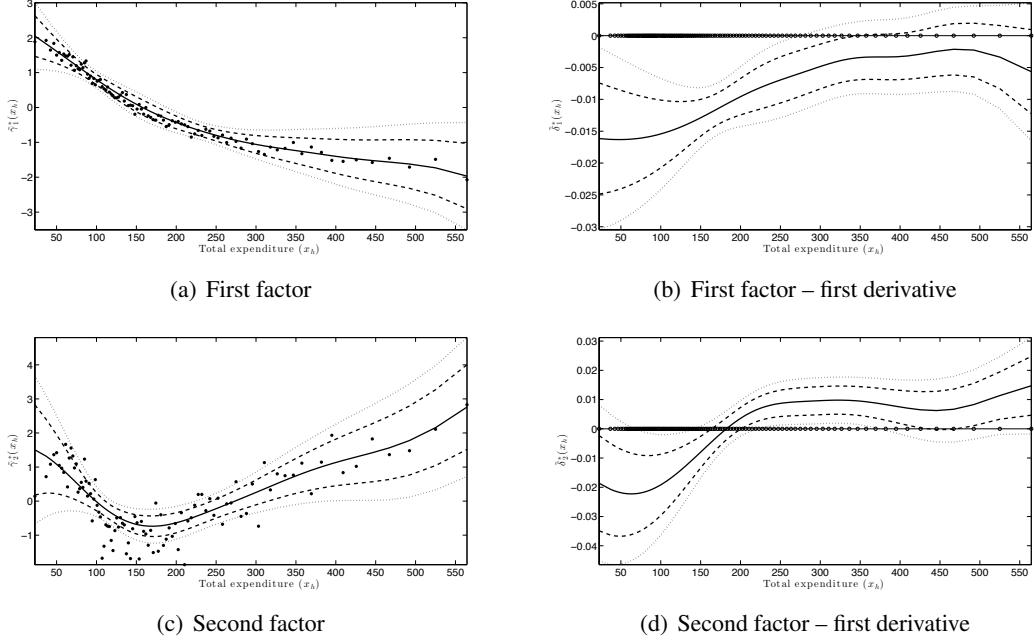
Estimates of the slope coefficient for the regression of the identified factors \tilde{f}_{rh} on selected functions of total expenditure; standard errors in parenthesis are computed by re-estimating the factors and the Engel curves using 1000 bootstrapped samples of budget share: * significant at 10%; ** significant at 5%; *** significant at 1%; **poor**: households with total expenditure below median; **rich**: households with total expenditure above median. Estimates for the intercept α_r are available upon request. Period: 1997–2006.

Table B-8: Average derivatives: 1 household member.

	all			poor			rich		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
Derivative	-0.44	0.00	0.04	-0.26	-0.35	0.20	-0.21	0.41	0.11
Wald statistic	117.9 (0.00)	0.00 (0.98)	0.23 (0.63)	85.61 (0.00)	26.33 (0.00)	3.85 (0.05)	65.95 (0.00)	21.26 (0.00)	1.27 (0.26)

Derivatives averaged across total expenditure estimated using Härdle and Stoker (1989) method; Wald statistics under the null hypothesis of zero average derivative and computed with standard errors obtained with 1000 bootstrap replications (*p*-values in parenthesis); **poor**: households with total expenditure below median; **rich**: households with total expenditure above median. Period: 1997–2006.

Figure B-1: Estimated basic Engel curves and their first derivatives: 1 household member.



Solid line: local linear nonparametric estimates of basic Engel curves $\tilde{\gamma}_r^*(x_h)$ (left column) and their first derivatives $\tilde{\delta}_r^*(x_h)$ (right column); dashed line: 68% confidence intervals; dotted line: 90% confidence intervals; circles: values taken by the factors \tilde{f}_{rh} (left column). Confidence intervals are obtained with 1000 bootstrap replications. In this graph factors are re-scaled to have zero mean. Period: 1997–2006.

Table B-9: Average factor loadings: 2 household members.

	Average Loading		
	Factor 1	Factor 2	Factor 3
Housing	-0.17	-0.26	0.24
Fuel, light and power	0.33	-0.24	0.22
Food	0.71	-0.67	0.67
Alcoholic drinks	-0.08	-0.02	0.03
Tobacco	0.15	-0.12	0.13
Clothing and footwear	-0.07	0.09	-0.07
Household goods	-0.09	0.19	-0.16
Household services	0.06	-0.01	-0.01
Personal goods and services	-0.03	0.03	-0.03
Motoring	-0.48	0.42	-0.36
Travels	0.00	0.07	-0.06
Leisure goods	-0.02	0.03	-0.02
Leisure services	-0.28	0.43	-0.52

Average loadings of the identified factors $\tilde{\mathbf{f}}$ are computed over the 10 years period 1997–2006, the scale being fixed such that $\tilde{\mathbf{A}}'\tilde{\mathbf{A}}/J = \mathbf{I}_r$.

Table B-10: Parametric estimates of basic Engel curves, goodness-of-fit: 2 household members.

Functional form	adj.R ²								
	all			poor			rich		
Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3	
$\alpha_r + \beta_r x_h$	0.18	0.49	0.26	0.75	0.00	0.00	0.60	0.51	0.28
$\alpha_r + \beta_r x_h^2$	0.04	0.53	0.26	0.61	0.00	0.00	0.60	0.51	0.22
$\alpha_r + \beta_r x_h^{-1}$	0.75	0.12	0.05	0.89	0.01	0.02	0.48	0.44	0.31
$\alpha_r + \beta_r x_h^{-2}$	0.72	0.01	0.00	0.76	0.04	0.04	0.39	0.38	0.29
$\alpha_r + \beta_r \log x_h$	0.47	0.33	0.16	0.87	0.00	0.00	0.55	0.48	0.31
$\alpha_r + \beta_r \log^2 x_h$	0.41	0.37	0.19	0.85	0.00	0.00	0.56	0.48	0.31
$\alpha_r + \beta_r x_h \log x_h$	0.15	0.51	0.27	0.72	0.00	0.00	0.60	0.51	0.27

Adjusted R^2 coefficient for the least squares regressions of the identified factors \tilde{f}_{rh} on selected functions of total expenditure; **poor**: households with total expenditure below median; **rich**: households with total expenditure above median. Period: 1997–2006.

Table B-11: Parametric estimates of basic Engel curves, coefficients: 2 household members.

Functional form	all		poor		rich	
	$\tilde{\beta}_r^*$	adj.R ²	$\tilde{\beta}_r^*$	adj.R ²	$\tilde{\beta}_r^*$	adj.R ²
$\tilde{f}_{1h} = \alpha_1 + \beta_1 \log x_h$	-1.17 (0.94)	0.47	-2.73*** (1.17)	0.87	1.00 (1.00)	0.55
$\tilde{f}_{1h} = \alpha_1 + \beta_1 x_h^{-1}$	1.57** (0.94)	0.75	5.84*** (2.35)	0.89	-2.69 (2.88)	0.48
$\tilde{f}_{2h} = \alpha_2 + \beta_2 x_h^2$	0.15** (0.09)	0.53	0.02 (0.07)	0.00	0.11** (0.05)	0.51
$\tilde{f}_{2h} = \alpha_2 + \beta_2 x_h \log x_h$	0.42** (0.26)	0.51	0.04 (0.21)	0.00	0.35** (0.17)	0.51

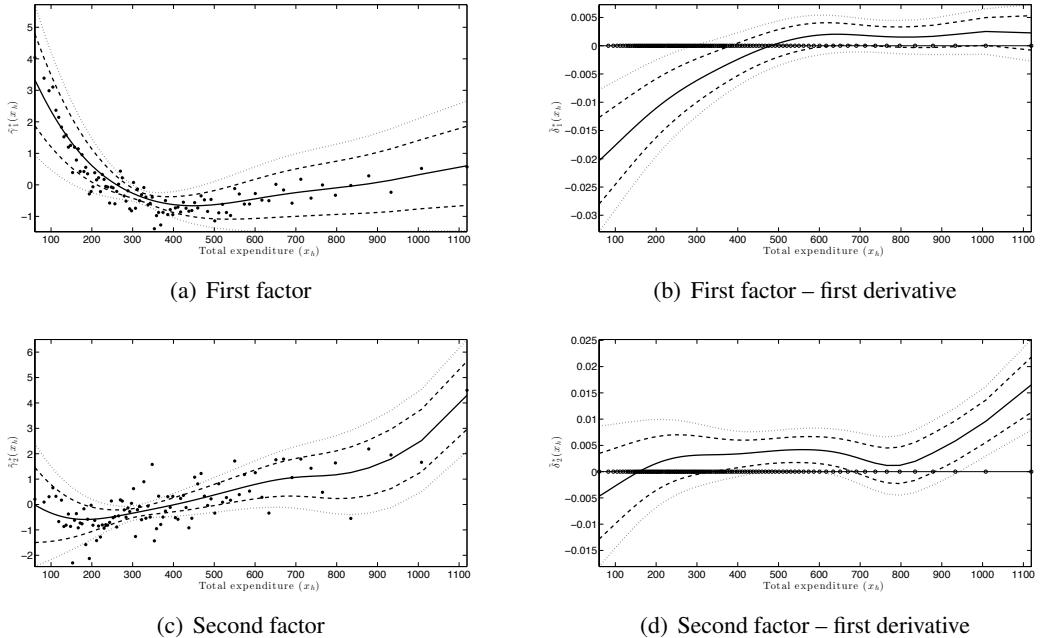
Estimates of the slope coefficient for the regression of the identified factors \tilde{f}_{rh} on selected functions of total expenditure; standard errors in parenthesis are computed by re-estimating the factors and the Engel curves using 1000 bootstrapped samples of budget share: * significant at 10%; ** significant at 5%; *** significant at 1%; **poor**: households with total expenditure below median; **rich**: households with total expenditure above median. Estimates for the intercept α_r are available upon request. Period: 1997–2006.

Table B-12: Average derivatives: 2 household members.

	all	Factor 1	Factor 2	Factor 3	poor	Factor 1	Factor 2	Factor 3	rich	Factor 1	Factor 2	Factor 3
Derivative	-0.26	0.26	-0.27	-0.45	-0.02	-0.01	0.13	0.26	-0.40			
Wald statistic	2.53 (0.11)	4.45 (0.03)	6.28 (0.01)	11.28 (0.00)	0.03 (0.86)	0.01 (0.94)	6.54 (0.01)	4.72 (0.03)	7.03 (0.00)			

Derivatives averaged across total expenditure estimated using Härdle and Stoker (1989) method; Wald statistics under the null hypothesis of zero average derivative and computed with standard errors obtained with 1000 bootstrap replications (p -values in parenthesis); **poor**: households with total expenditure below median; **rich**: households with total expenditure above median. Period: 1997–2006.

Figure B-2: Estimated basic Engel curves and their first derivatives: 2 household members.



Solid line: local linear nonparametric estimates of basic Engel curves $\tilde{\gamma}_r^*(x_h)$ (left column) and their first derivatives $\tilde{\delta}_r^*(x_h)$ (right column); dashed line: 68% confidence intervals; dotted line: 90% confidence intervals; circles: values taken by the factors f_{rh} (left column). Confidence intervals are obtained with 1000 bootstrap replications. In this graph factors are re-scaled to have zero mean. Period: 1997–2006.

Table B-13: Average factor loadings: 2-3 household members.

	Average Loading		
	Factor 1	Factor 2	Factor 3
Housing	-0.24	-0.25	-0.26
Fuel, light and power	0.34	-0.25	-0.21
Food	0.70	-0.67	-0.64
Alcoholic drinks	-0.08	0.00	-0.05
Tobacco	0.15	-0.14	-0.14
Clothing and footwear	-0.06	0.08	0.07
Household goods	-0.07	0.15	0.17
Household services	0.05	0.01	0.05
Personal goods and services	-0.02	0.04	0.01
Motoring	-0.49	0.44	0.27
Travels	0.01	0.05	0.07
Leisure goods	-0.02	0.04	0.05
Leisure services	-0.24	0.42	0.58

Average loadings of the identified factors \tilde{f} are computed over the 10 years period 1997-2006, the scale being fixed such that $\tilde{\mathbf{A}}'\tilde{\mathbf{A}}/J = \mathbf{I}_r$.

Table B-14: Parametric estimates of basic Engel curves, goodness-of-fit: 2-3 household members.

Functional form	adj.R ²								
	all			poor			rich		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
$\alpha_r + \beta_r x_h$	0.13	0.59	0.23	0.81	0.00	0.00	0.67	0.49	0.36
$\alpha_r + \beta_r x_h^2$	0.02	0.57	0.28	0.68	0.00	0.00	0.65	0.46	0.33
$\alpha_r + \beta_r x_h^{-1}$	0.72	0.18	0.02	0.89	0.03	0.02	0.60	0.50	0.35
$\alpha_r + \beta_r x_h^{-2}$	0.69	0.04	0.00	0.70	0.03	0.05	0.54	0.47	0.32
$\alpha_r + \beta_r \log x_h$	0.42	0.44	0.11	0.92	0.00	0.01	0.65	0.51	0.37
$\alpha_r + \beta_r \log^2 x_h$	0.36	0.48	0.13	0.91	0.00	0.00	0.65	0.51	0.37
$\alpha_r + \beta_r x_h \log x_h$	0.11	0.60	0.24	0.79	0.00	0.00	0.67	0.49	0.36

Adjusted R^2 coefficient for the least squares regressions of the identified factors \tilde{f}_{rh} on selected functions of total expenditure; **poor**: households with total expenditure below median; **rich**: households with total expenditure above median. Period: 1997–2006.

Table B-15: Parametric estimates of basic Engel curves, coefficients: 2-3 household members.

Functional form	all		poor		rich	
	$\tilde{\beta}_r^*$	adj.R ²	$\tilde{\beta}_r^*$	adj.R ²	$\tilde{\beta}_r^*$	adj.R ²
$\tilde{f}_{1h} = \alpha_1 + \beta_1 \log x_h$	-1.09 (0.94)	0.42	-2.92*** (1.25)	0.92	1.02 (0.96)	0.65
$\tilde{f}_{1h} = \alpha_1 + \beta_1 x_h^{-1}$	1.47* (0.92)	0.72	5.61*** (2.32)	0.89	-2.97 (2.89)	0.60
$\tilde{f}_{2h} = \alpha_2 + \beta_2 x_h^2$	0.16** (0.10)	0.57	0.00 (0.08)	0.00	0.08** (0.05)	0.46
$\tilde{f}_{2h} = \alpha_2 + \beta_2 x_h \log x_h$	0.45* (0.28)	0.60	0.00 (0.25)	0.00	0.28** (0.17)	0.49

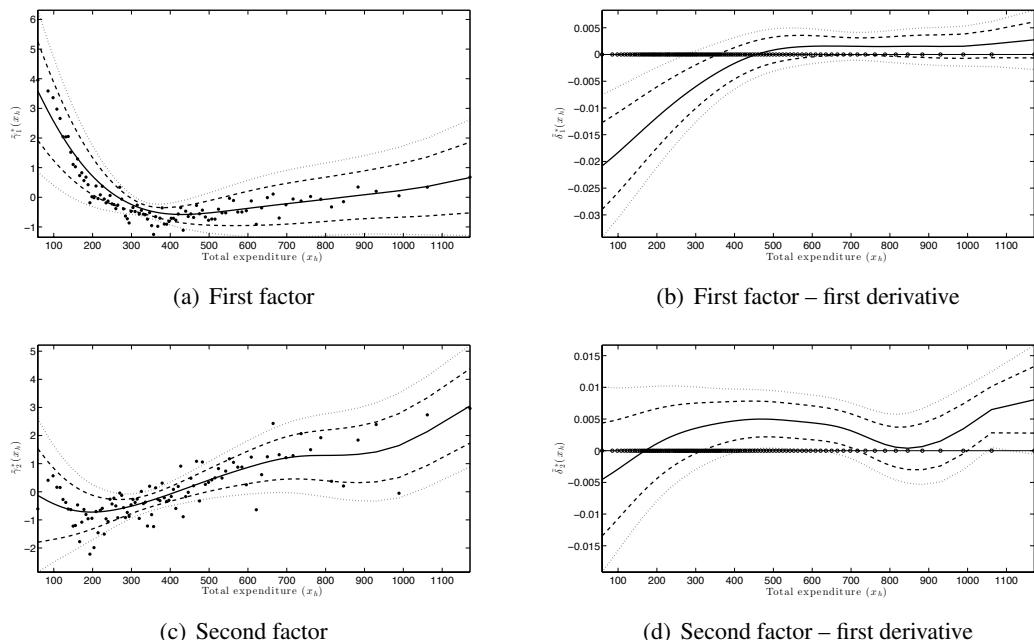
Estimates of the slope coefficient for the regression of the identified factors \tilde{f}_{rh} on selected functions of total expenditure; standard errors in parenthesis are computed by re-estimating the factors and the Engel curves using 1000 bootstrapped samples of budget share: * significant at 10%; ** significant at 5%; *** significant at 1%; **poor**: households with total expenditure below median; **rich**: households with total expenditure above median. Estimates for the intercept α_r are available upon request. Period: 1997–2006.

Table B-16: Average derivatives: 2-3 household members.

	all			poor			rich		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
Derivative	-0.24	0.30	0.25	-0.52	-0.06	0.03	0.14	0.28	0.36
Wald statistic	1.79 (0.18)	7.40 (0.00)	4.34 (0.04)	15.33 (0.00)	0.37 (0.54)	0.10 (0.76)	15.29 (0.00)	11.20 (0.00)	9.24 (0.00)

Derivatives averaged across total expenditure estimated using Härdle and Stoker (1989) method; Wald statistics under the null hypothesis of zero average derivative and computed with standard errors obtained with 1000 bootstrap replications (*p*-values in parenthesis); **poor**: households with total expenditure below median; **rich**: households with total expenditure above median. Period: 1997–2006.

Figure B-3: Estimated basic Engel curves and their first derivatives: 2-3 household members.



Solid line: local linear nonparametric estimates of basic Engel curves $\tilde{\gamma}_r^*(x_h)$ (left column) and their first derivatives $\tilde{\delta}_r^*(x_h)$ (right column); dashed line: 68% confidence intervals; dotted line: 90% confidence intervals; circles: values taken by the factors \tilde{f}_{r_h} (left column). Confidence intervals are obtained with 1000 bootstrap replications. In this graph factors are re-scaled to have zero mean. Period: 1997–2006.

B.2 Time period 1987–1996

Table B-17: Average budget shares over all household income classes.

	household members			
	1	2	2-3	2-4
Housing	0.28	0.22	0.21	0.21
Fuel, light and power	0.09	0.06	0.06	0.05
Food	0.20	0.19	0.19	0.19
Alcoholic drinks	0.04	0.05	0.05	0.05
Tobacco	0.05	0.05	0.05	0.05
Clothing and footwear	0.02	0.03	0.03	0.03
Household goods	0.05	0.06	0.06	0.06
Household services	0.06	0.05	0.05	0.05
Personal goods and services	0.04	0.04	0.04	0.04
Motoring	0.05	0.10	0.11	0.11
Travels	0.02	0.02	0.02	0.02
Leisure goods	0.02	0.03	0.03	0.03
Leisure services	0.09	0.10	0.10	0.10

Averages are computed over the 10 years period 1987–1996.

Table B-18: Average budget shares for different household income classes.

	household members					
	1		2		2-3	
	poor	rich	poor	rich	poor	rich
Housing	0.25	0.30	0.22	0.22	0.22	0.21
Fuel, light and power	0.12	0.06	0.08	0.04	0.08	0.04
Food	0.25	0.14	0.23	0.15	0.23	0.15
Alcoholic drinks	0.03	0.05	0.04	0.05	0.04	0.05
Tobacco	0.06	0.03	0.06	0.03	0.06	0.03
Clothing and footwear	0.02	0.03	0.02	0.04	0.03	0.04
Household goods	0.04	0.06	0.05	0.07	0.05	0.07
Household services	0.07	0.06	0.05	0.05	0.05	0.05
Personal goods and services	0.03	0.04	0.04	0.05	0.04	0.05
Motoring	0.02	0.09	0.07	0.13	0.07	0.14
Travels	0.02	0.03	0.02	0.02	0.02	0.03
Leisure goods	0.02	0.03	0.02	0.03	0.02	0.03
Leisure services	0.07	0.11	0.07	0.12	0.07	0.12

Averages are computed over the 10 years period 1987–1996; **poor**: households with total expenditure below median; **rich**: households with total expenditure above median.

Table B-19: Determining the number of factors in single years.

years	household members							
	1		2		2-3		2-4	
	LDU	CC	LDU	CC	LDU	CC	LDU	CC
1987	1	3	4	3	4	3	4	3
1988	4	3	1	2	1	3	1	3
1989	4	3	4	2	1	2	4	3
1990	1	3	1	3	1	2	1	5
1991	1	3	1	3	1	4	1	3
1992	1	3	1	2	1	3	1	3
1993	1	4	1	4	1	3	1	4
1994	1	4	1	4	1	3	1	3
1995	1	4	1	3	1	4	1	4
1996	4	3	1	3	1	3	1	3
average	1.9	3.3	1.6	2.9	1.3	3	1.6	3.4

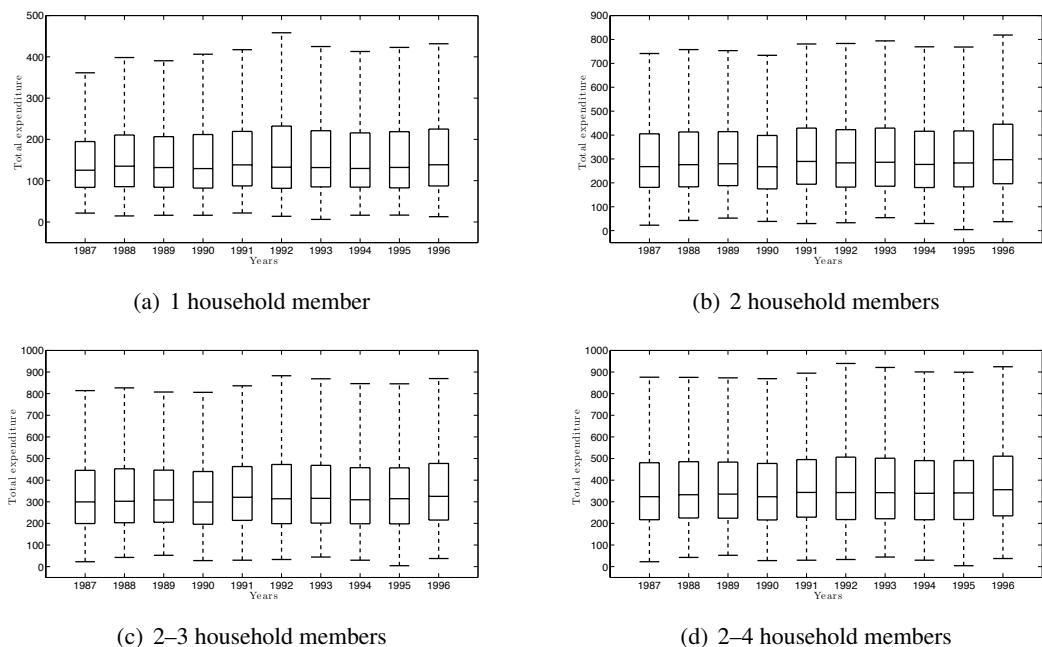
LDU: number of factors based on the LDU decomposition (see Lewbel, 1991) obtained at 10% significance level under the null-distribution which is $\chi^2_{(13-R_t)}$; **CC:** number of factors based on the canonical correlations (see section 4) obtained at 10% significance level under the null-distribution which is $\chi^2_{(7-R_t)(6-R_t)}$.

Table B-20: Comparison of factor estimates.

years	household members											
	1				2				2-3			
	num. factors				num. factors				num. factors			
1	2	3	4	1	2	3	4	1	2	3	4	1
1987	0.65	0.93	0.90	0.88	0.93	0.93	0.90	0.88	0.94	0.93	0.91	0.89
1988	0.69	0.87	0.84	0.82	0.90	0.92	0.89	0.88	0.92	0.93	0.91	0.89
1989	0.81	0.89	0.86	0.84	0.96	0.93	0.90	0.88	0.97	0.95	0.92	0.91
1990	0.90	0.87	0.84	0.82	0.95	0.92	0.89	0.88	0.97	0.94	0.91	0.90
1991	0.76	0.82	0.79	0.77	0.94	0.91	0.88	0.86	0.96	0.89	0.87	0.86
1992	0.89	0.73	0.72	0.71	0.94	0.84	0.82	0.80	0.93	0.92	0.89	0.88
1993	0.90	0.71	0.69	0.68	0.94	0.81	0.79	0.78	0.95	0.85	0.83	0.82
1994	0.91	0.73	0.71	0.70	0.89	0.77	0.76	0.74	0.95	0.85	0.83	0.82
1995	0.91	0.74	0.72	0.71	0.94	0.78	0.78	0.76	0.94	0.85	0.83	0.82
1996	0.94	0.72	0.69	0.68	0.94	0.81	0.78	0.77	0.94	0.86	0.83	0.82
average	0.84	0.80	0.78	0.76	0.93	0.86	0.84	0.82	0.95	0.90	0.87	0.86

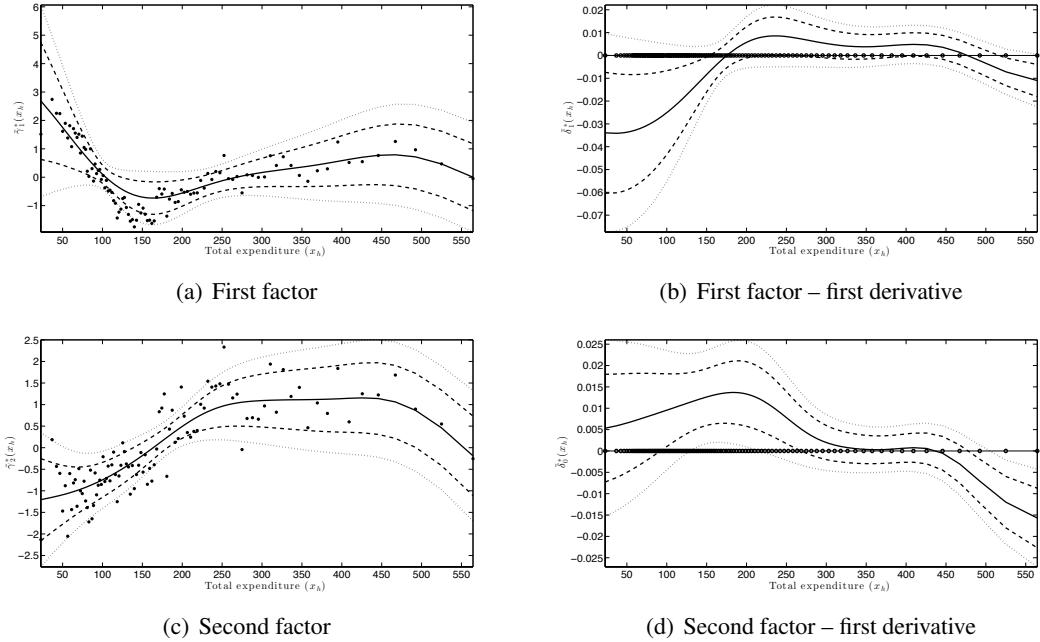
Trace statistics τ_t when regressing the factors estimated on the pooled dataset on the factors estimated on single blocks indicated by the years.

Figure B-4: Distribution of total expenditure: 1987–1996.



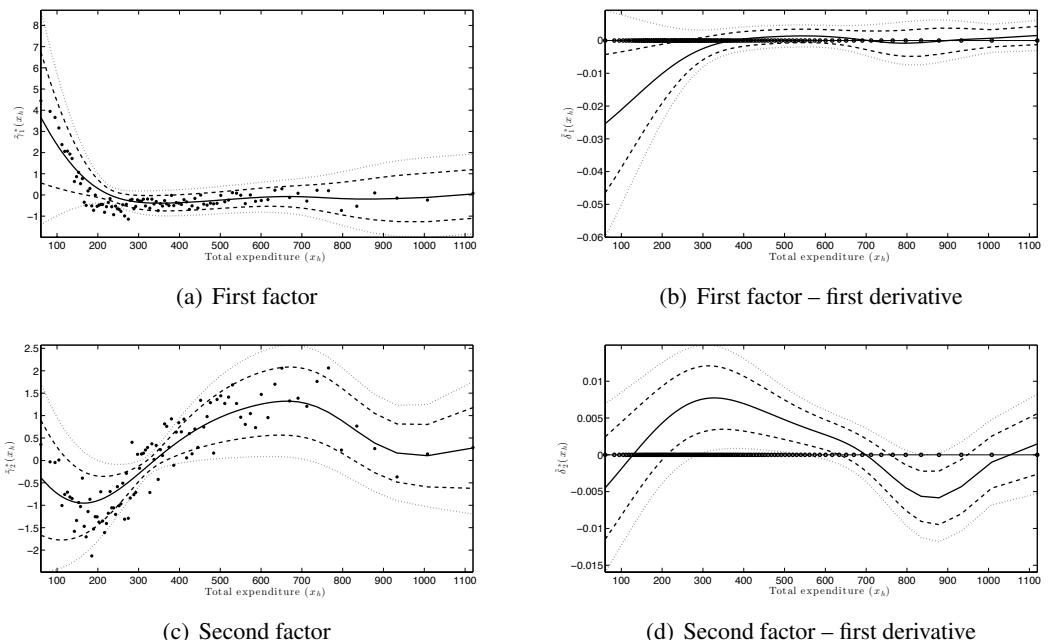
Box-plots for total expenditure, showing median, 25th, 75th percentiles, minimum and maximum of the distribution.

Figure B-5: Estimated basic Engel curves and their first derivatives: 1 household member.



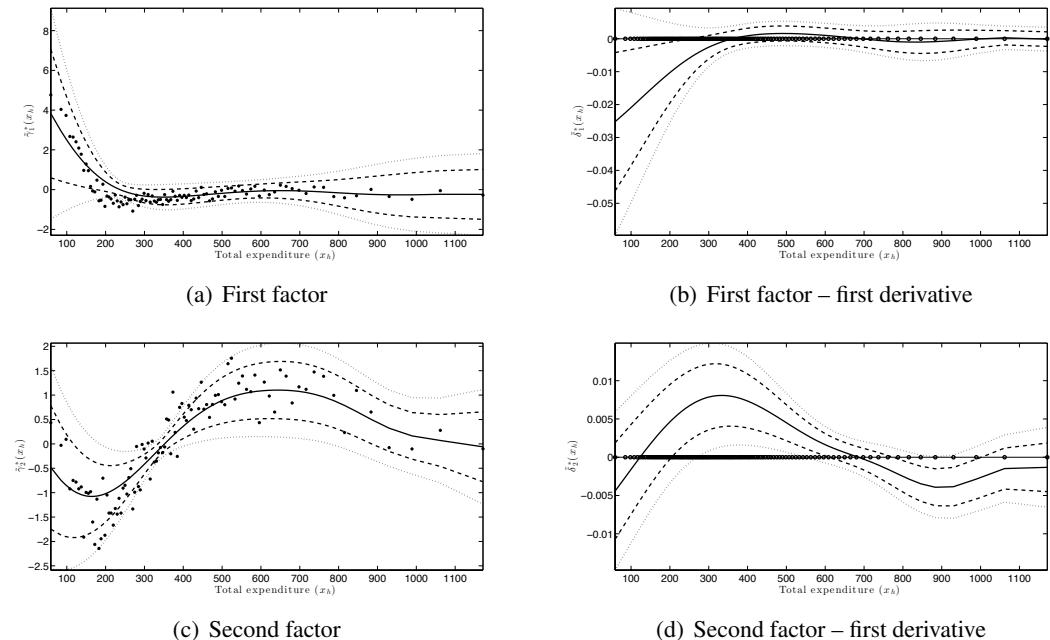
Solid line: local linear nonparametric estimates of basic Engel curves $\tilde{\gamma}_r^*(x_h)$ (left column) and their first derivatives $\tilde{\delta}_r^*(x_h)$ (right column); dashed line: 68% confidence intervals; dotted line: 90% confidence intervals; circles: values taken by the factors \tilde{f}_{rh} (left column). Confidence intervals are obtained with 1000 bootstrap replications. In this graph factors are re-scaled to have zero mean. Period: 1987–1996.

Figure B-6: Estimated basic Engel curves and their first derivatives: 2 household members.



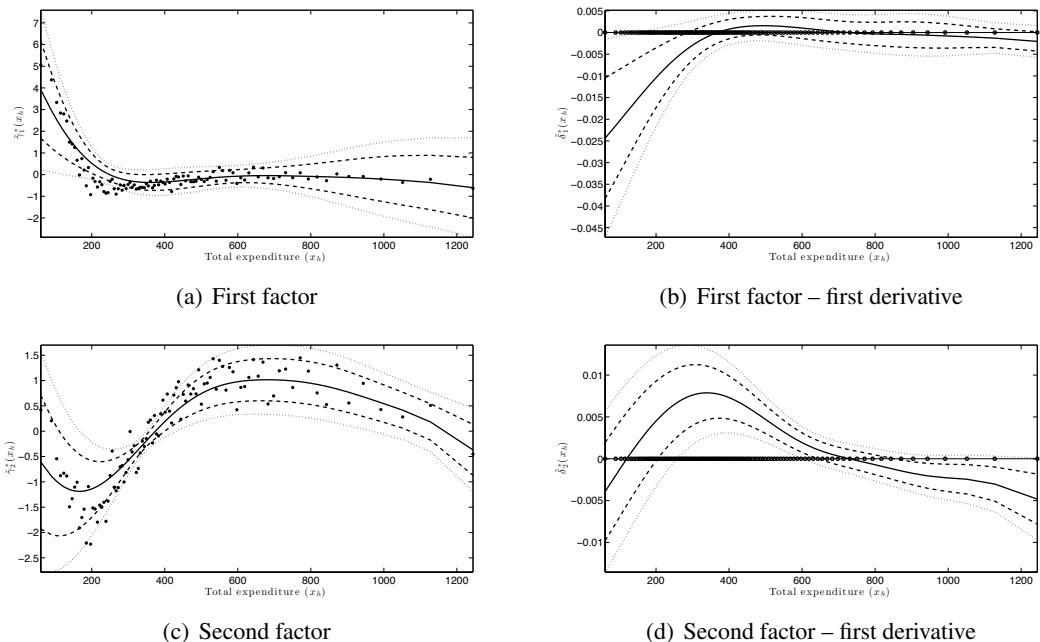
Solid line: local linear nonparametric estimates of basic Engel curves $\tilde{\gamma}_r^*(x_h)$ (left column) and their first derivatives $\tilde{\delta}_r^*(x_h)$ (right column); dashed line: 68% confidence intervals; dotted line: 90% confidence intervals; circles: values taken by the factors \tilde{f}_{rh} (left column). Confidence intervals are obtained with 1000 bootstrap replications. In this graph factors are re-scaled to have zero mean. Period: 1987–1996.

Figure B-7: Estimated basic Engel curves and their first derivatives: 2–3 household members.



Solid line: local linear nonparametric estimates of basic Engel curves $\tilde{\gamma}_r^*(x_h)$ (left column) and their first derivatives $\tilde{\delta}_r^*(x_h)$ (right column); dashed line: 68% confidence intervals; dotted line: 90% confidence intervals; circles: values taken by the factors \tilde{f}_r^* (left column). Confidence intervals are obtained with 1000 bootstrap replications. In this graph factors are re-scaled to have zero mean. Period: 1987–1996.

Figure B-8: Estimated basic Engel curves and their first derivatives: 2–4 household members.



Solid line: local linear nonparametric estimates of basic Engel curves $\tilde{\gamma}_r^*(x_h)$ (left column) and their first derivatives $\tilde{\delta}_r^*(x_h)$ (right column); dashed line: 68% confidence intervals; dotted line: 90% confidence intervals; circles: values taken by the factors $\tilde{f}_r(x_h)$ (left column). Confidence intervals are obtained with 1000 bootstrap replications. In this graph factors are re-scaled to have zero mean. Period: 1987–1996.

B.3 Time period 1977–1986

Table B-21: Average budget shares over all household income classes.

	household members			
	1	2	2-3	2-4
Housing	0.46	0.33	0.31	0.30
Fuel, light and power	0.09	0.06	0.06	0.06
Food	0.19	0.19	0.19	0.19
Alcoholic drinks	0.04	0.05	0.06	0.06
Tobacco	0.06	0.08	0.08	0.08
Clothing and footwear	0.02	0.03	0.03	0.03
Household goods	0.03	0.04	0.04	0.04
Household services	0.04	0.03	0.03	0.03
Personal goods and services	0.03	0.03	0.03	0.03
Motoring	0.03	0.07	0.07	0.08
Travel	0.02	0.02	0.02	0.02
Leisure goods	0.02	0.02	0.02	0.02
Leisure services	0.04	0.05	0.05	0.05

Averages are computed over the 10 years period 1977–1986.

Table B-22: Average budget shares for different household income classes.

	household members					
	1		2		2-3	
	poor	rich	poor	rich	poor	rich
Housing	0.47	0.44	0.36	0.29	0.34	0.27
Fuel, light and power	0.12	0.07	0.08	0.05	0.08	0.04
Food	0.23	0.15	0.23	0.15	0.22	0.15
Alcoholic drinks	0.03	0.05	0.05	0.06	0.05	0.06
Tobacco	0.06	0.06	0.09	0.06	0.09	0.06
Clothing and footwear	0.01	0.03	0.02	0.03	0.02	0.03
Household goods	0.02	0.03	0.03	0.05	0.03	0.05
Household services	0.04	0.04	0.03	0.03	0.03	0.03
Personal goods and services	0.03	0.03	0.03	0.03	0.03	0.03
Motoring	0.01	0.06	0.05	0.10	0.05	0.10
Travel	0.02	0.03	0.02	0.02	0.02	0.02
Leisure goods	0.01	0.02	0.02	0.02	0.02	0.02
Leisure services	0.02	0.05	0.04	0.06	0.04	0.06

Averages are computed over the 10 years period 1977–1986; **poor**: households with total expenditure below median; **rich**: households with total expenditure above median.

Table B-23: Determining the number of factors in single years.

years	household members							
	1		2		2-3		2-4	
	LDU	CC	LDU	CC	LDU	CC	LDU	CC
1977	6	2	6	4	6	3	6	3
1978	6	3	6	3	6	3	6	3
1979	6	3	6	2	8	4	6	4
1980	10	2	6	2	6	3	6	3
1981	6	3	6	2	6	4	6	5
1982	6	4	7	3	2	2	3	3
1983	6	6	6	2	6	3	6	3
1984	6	2	9	2	9	2	9	2
1985	6	2	4	2	6	2	6	3
1986	8	4	7	4	6	4	7	3
average	6.6	3.1	6.3	2.6	6.1	3	6.1	3.2

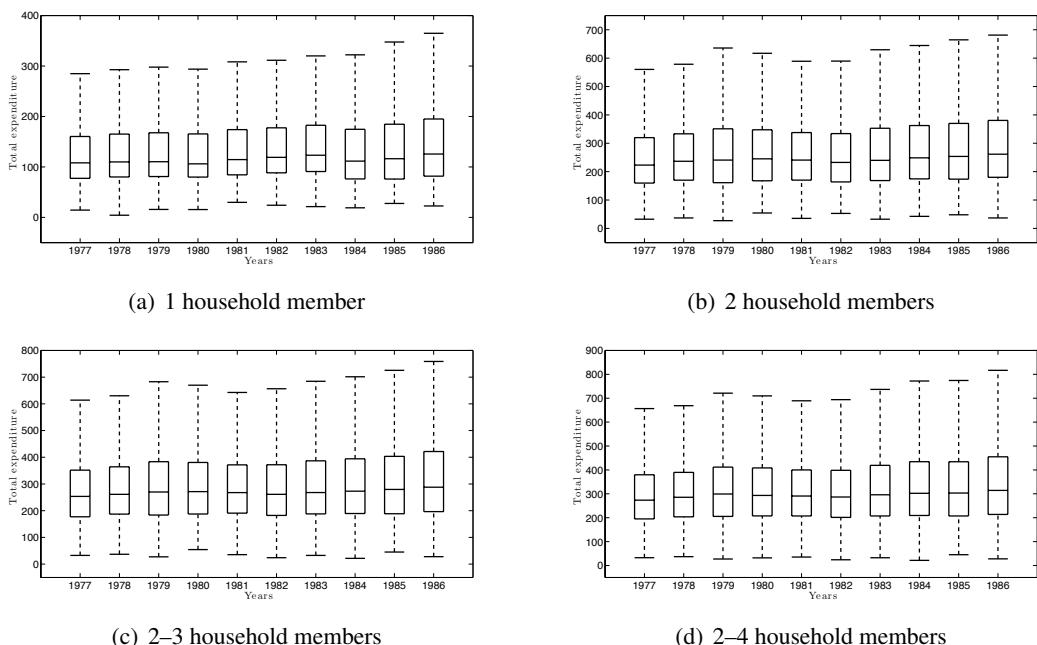
LDU: number of factors based on the LDU decomposition (see Lewbel, 1991) obtained at 10% significance level under the null-distribution which is $\chi^2_{(13-R_t)}$; **CC:** number of factors based on the canonical correlations (see section 4) obtained at 10% significance level under the null-distribution which is $\chi^2_{(7-R_t)(6-R_t)}$.

Table B-24: Comparison of factor estimates.

years	household members											
	1				2				2-3			
	num. factors				num. factors				num. factors			
1	2	3	4	1	2	3	4	1	2	3	4	1
1977	0.72	0.65	0.64	0.60	0.93	0.89	0.85	0.82	0.95	0.93	0.90	0.87
1978	0.48	0.64	0.59	0.56	0.90	0.88	0.84	0.81	0.93	0.92	0.90	0.87
1979	0.62	0.59	0.55	0.53	0.92	0.90	0.86	0.82	0.92	0.93	0.90	0.87
1980	0.40	0.77	0.71	0.67	0.82	0.76	0.76	0.73	0.91	0.81	0.81	0.79
1981	0.67	0.57	0.53	0.50	0.91	0.79	0.75	0.75	0.88	0.78	0.76	0.75
1982	0.19	0.31	0.29	0.27	0.93	0.85	0.82	0.79	0.95	0.88	0.86	0.83
1983	0.57	0.57	0.53	0.52	0.86	0.86	0.82	0.79	0.94	0.84	0.81	0.80
1984	0.58	0.63	0.59	0.55	0.88	0.84	0.80	0.78	0.93	0.84	0.81	0.79
1985	0.33	0.36	0.38	0.38	0.90	0.79	0.75	0.72	0.92	0.86	0.83	0.81
1986	0.66	0.62	0.58	0.55	0.68	0.62	0.59	0.58	0.81	0.74	0.72	0.70
average	0.52	0.57	0.54	0.51	0.87	0.82	0.78	0.76	0.91	0.85	0.83	0.81
									0.94	0.88	0.86	0.84

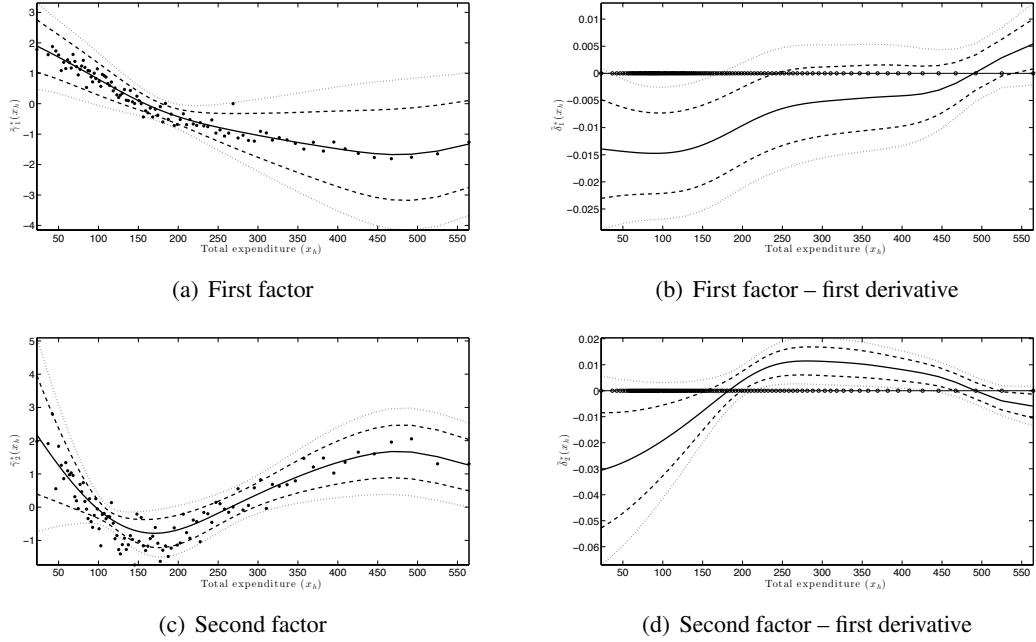
Trace statistics τ_t when regressing the factors estimated on the pooled dataset on the factors estimated on single blocks indicated by the years.

Figure B-9: Distribution of total expenditure: 1977–1986.



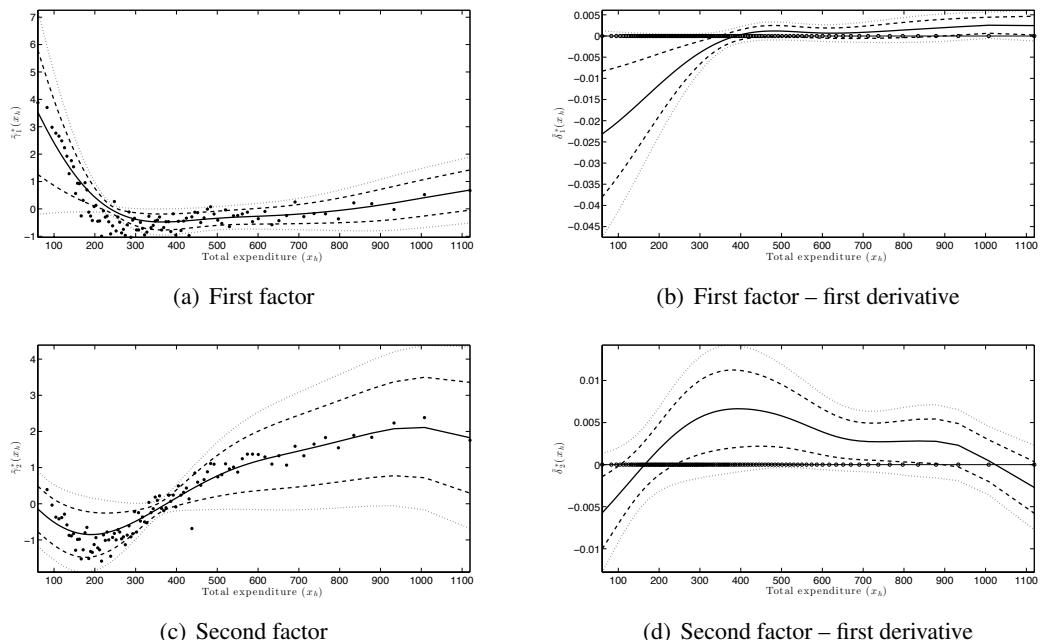
Box-plots for total expenditure, showing median, 25th, 75th percentiles, minimum and maximum of the distribution.

Figure B-10: Estimated basic Engel curves and their first derivatives: 1 household member.



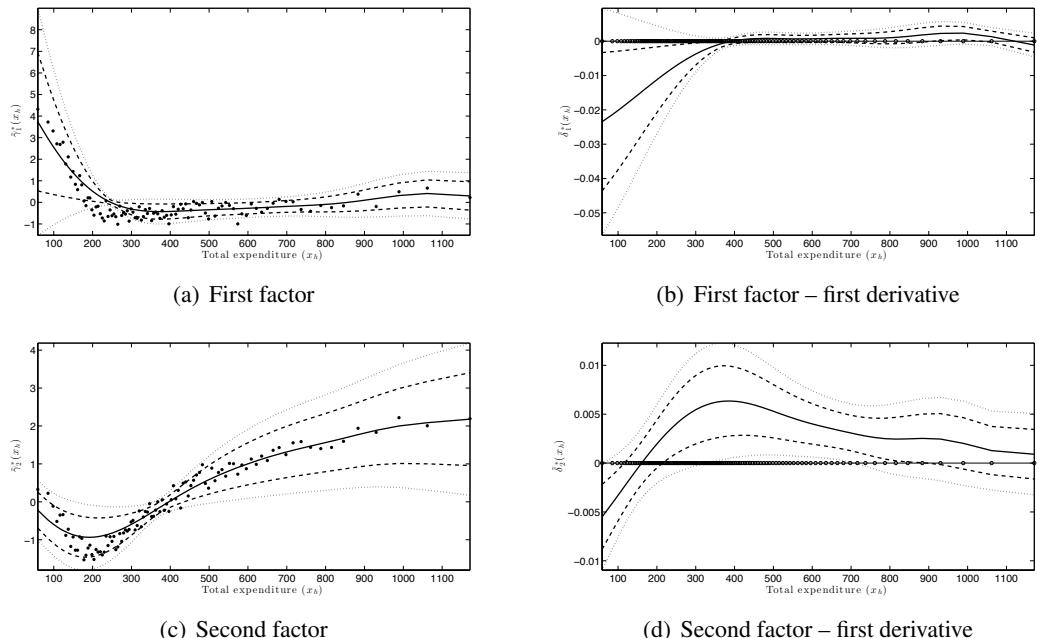
Solid line: local linear nonparametric estimates of basic Engel curves $\tilde{\gamma}_r^*(x_h)$ (left column) and their first derivatives $\tilde{\delta}_r^*(x_h)$ (right column); dashed line: 68% confidence intervals; dotted line: 90% confidence intervals; circles: values taken by the factors \tilde{f}_{rh} (left column). Confidence intervals are obtained with 1000 bootstrap replications. In this graph factors are re-scaled to have zero mean. Period: 1977–1986.

Figure B-11: Estimated basic Engel curves and their first derivatives: 2 household members.



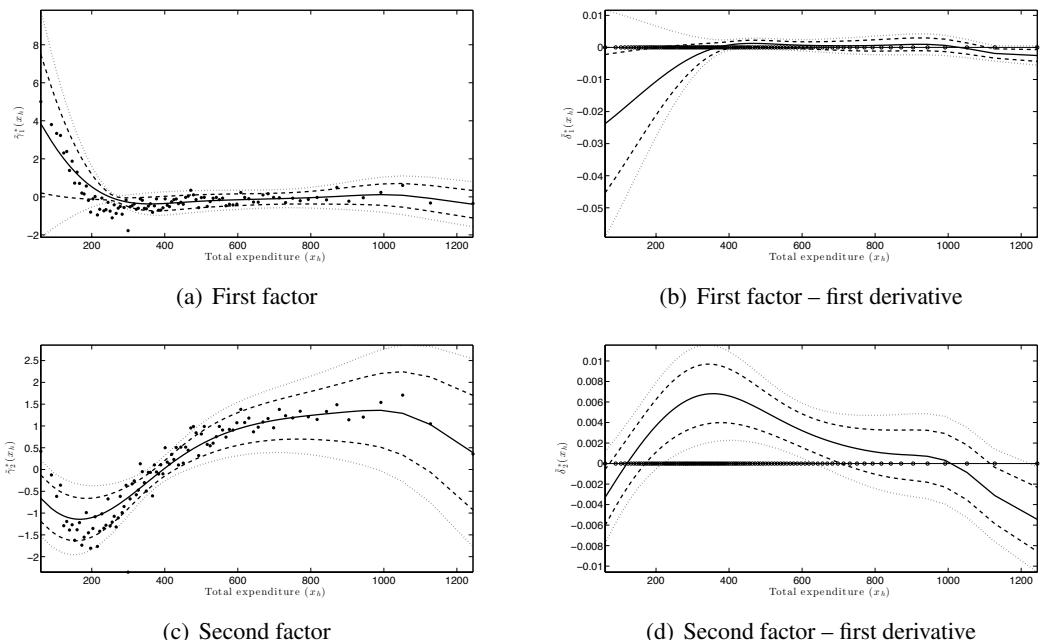
Solid line: local linear nonparametric estimates of basic Engel curves $\tilde{\gamma}_r^*(x_h)$ (left column) and their first derivatives $\tilde{\delta}_r^*(x_h)$ (right column); dashed line: 68% confidence intervals; dotted line: 90% confidence intervals; circles: values taken by the factors \tilde{f}_{rh} (left column). Confidence intervals are obtained with 1000 bootstrap replications. In this graph factors are re-scaled to have zero mean. Period: 1977–1986.

Figure B-12: Estimated basic Engel curves and their first derivatives: 2–3 household members.



Solid line: local linear nonparametric estimates of basic Engel curves $\tilde{\gamma}_r^*(x_h)$ (left column) and their first derivatives $\tilde{\delta}_r^*(x_h)$ (right column); dashed line: 68% confidence intervals; dotted line: 90% confidence intervals; circles: values taken by the factors $\tilde{f}_r h$ (left column). Confidence intervals are obtained with 1000 bootstrap replications. In this graph factors are re-scaled to have zero mean. Period: 1977–1986.

Figure B-13: Estimated basic Engel curves and their first derivatives: 2–4 household members.



Solid line: local linear nonparametric estimates of basic Engel curves $\tilde{\gamma}_r^*(x_h)$ (left column) and their first derivatives $\tilde{\delta}_r^*(x_h)$ (right column); dashed line: 68% confidence intervals; dotted line: 90% confidence intervals; circles: values taken by the factors $\tilde{f}_r(x_h)$ (left column). Confidence intervals are obtained with 1000 bootstrap replications. In this graph factors are re-scaled to have zero mean. Period: 1977–1986.

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- Härdle, W. and T. Stoker (1989). Investigating smooth multiple regression by the method of average derivatives. *Journal of the American Statistical Association* 84, 986–995.
- Lewbel, A. (1991). The rank of demand systems: Theory and non-parametric estimation. *Econometrica* 59, 711–730.