

# The Dynamics of Deprivation

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# Topics

1. Research aims and sources
2. Some findings, and some puzzles
3. Defining and measuring 'deprivation'
4. Measuring income
5. 'Cross-sectional' relationships
6. 'Underlying' and 'longitudinal' relationships
7. Discussion and implications

# **Topic 1. Research aims and sources**

## Nine items in PSI/FACS hardship scale

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<b>Indicator</b>	Prevalence in Wave 4
Problems with accommodation	9.2%
Over-crowded	13.3%
Cannot afford to keep home warm	2.1%
Worries about/runs out of money	5.9%
Problem debts	4.4%
Lacks food items	6.0%
Lacks clothing items	6.5%
Lacks consumer durables	5.9%
Lacks social/leisure activities	5.6%

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# Household deprivation indicators and poverty

- ▶ Townsend (1979): calibrate poverty line
- ▶ Berthoud and co. (1990s): compare needs
- ▶ Marsh and co (1993-2002): demonstrate that poor families have high risk of hardship
  
- ▶ Ringen (1988) argues for 'direct' measures of poverty
- ▶ Mack and Lansley (1985), Gordon and co. (2000): measure exclusion from 'necessities'
  
- ▶ Nolan and Whelan (1996): look at overlap between income poor and deprived poor in Ireland
- ▶ Whelan and co. (1999-2003) ditto in Europe

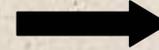
## **The EU definition of poverty**

The poor shall be taken to mean persons . . . whose resources . . . are so limited as to exclude them from the minimum way of life of the member states in which they live

# Two interpretations of the essence of poverty

**Agreed process**

**Lack of  
resources**



**Exclusion from a  
minimum way of life**

**Interpretation 1**

**'Poverty'**

**Outcome of poverty**

**Interpretation 2**

**Cause of poverty**

**'Poverty'**

## The role of a deprivation index

- ? Weak assumptions: just an **indicator** of living standards, which can be used to calibrate income-poverty lines
- ? Strong assumptions: an actual **measure** of living standards, which can replace income in defining poverty

# **'Strong' assumptions don't hold up**

- ▶ Income is a fact; deprivation is a concept
- ▶ A 'measure' of living standards would have to cover (a sample of) all areas of human activity.
- ▶ Variations in efficiency
- ▶ Government can intervene to set minimum levels of income; it should not intervene to affect deprivation scores (directly).
- ▶ In practice, deprivation indicators are not robust

# Poverty and Social Exclusion Survey

## Gordon plus 10 (2000)

- ▶ Use survey to define 'agreed' necessities
- ▶ Identify households who a) do not have necessities; b) say it is because they cannot afford them
- ▶ Those lacking two or more are 'poor'

# Poverty and Social Exclusion Survey

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## McKay (2004)

- ▶ People disagree about what the necessities are
- ▶ Opinions on whether items are affordable vary by (eg age) rather than by income.
- ▶ Those lacking necessities nevertheless possess 'luxuries'

# Specific research aims

- ▶ Government has pledged to end child poverty.
- ▶ Development of 'official' measures of child poverty
  - New deprivation questions in FRS from this year (repeated cross-section)
  - Families defined as poor if they have both low income and high deprivation score
- ▶ 'Cross-sectional': Are the poor in hardship?
- ▶ 'Longitudinal': Do people leave hardship when they exit poverty?

# Two panel surveys

## **Families and Children Survey waves 1-4 (1999-2002)**

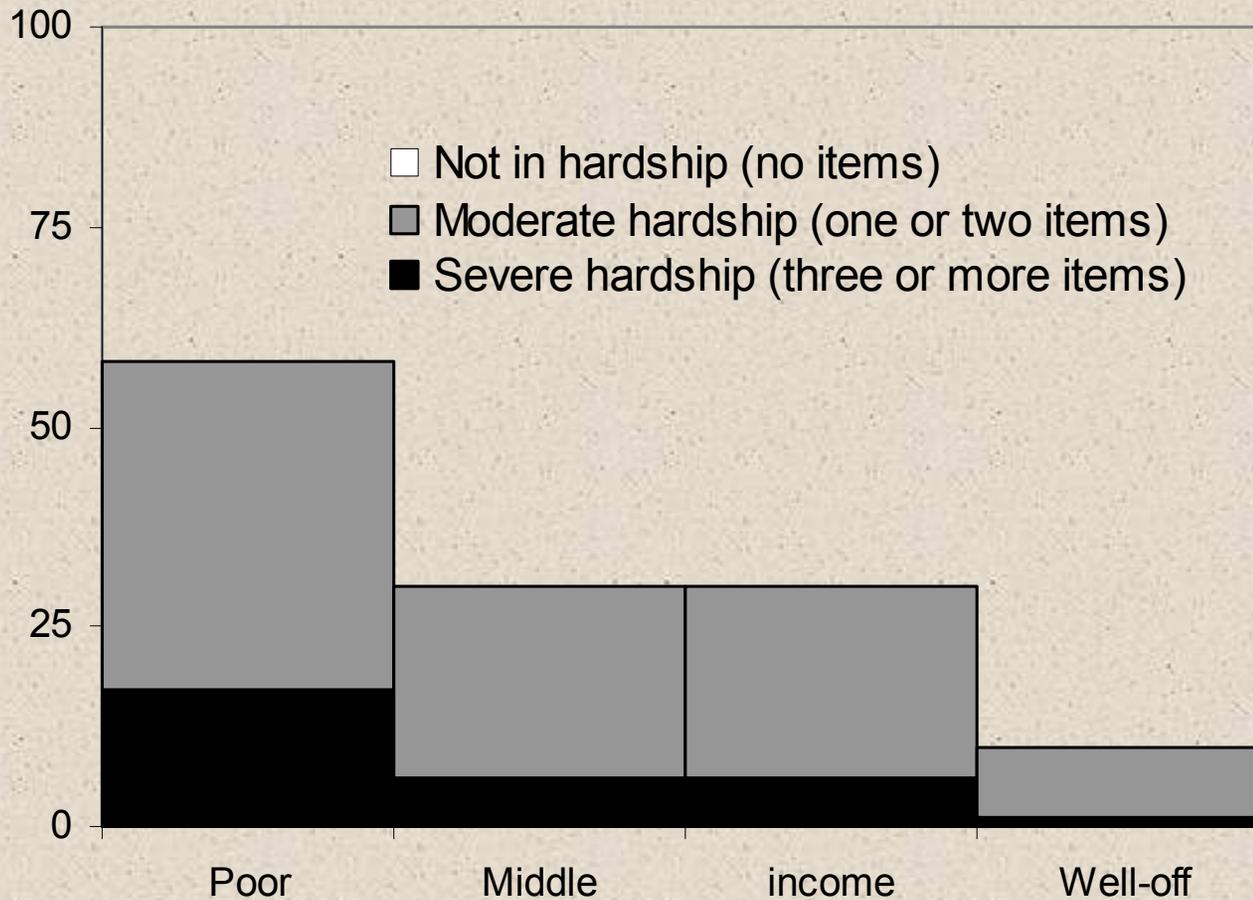
- 8,000 families with dependent children
- Working couples with adequate+ incomes screened out at W1 and W2

## **BHPS waves 6-12 (1996-2002)**

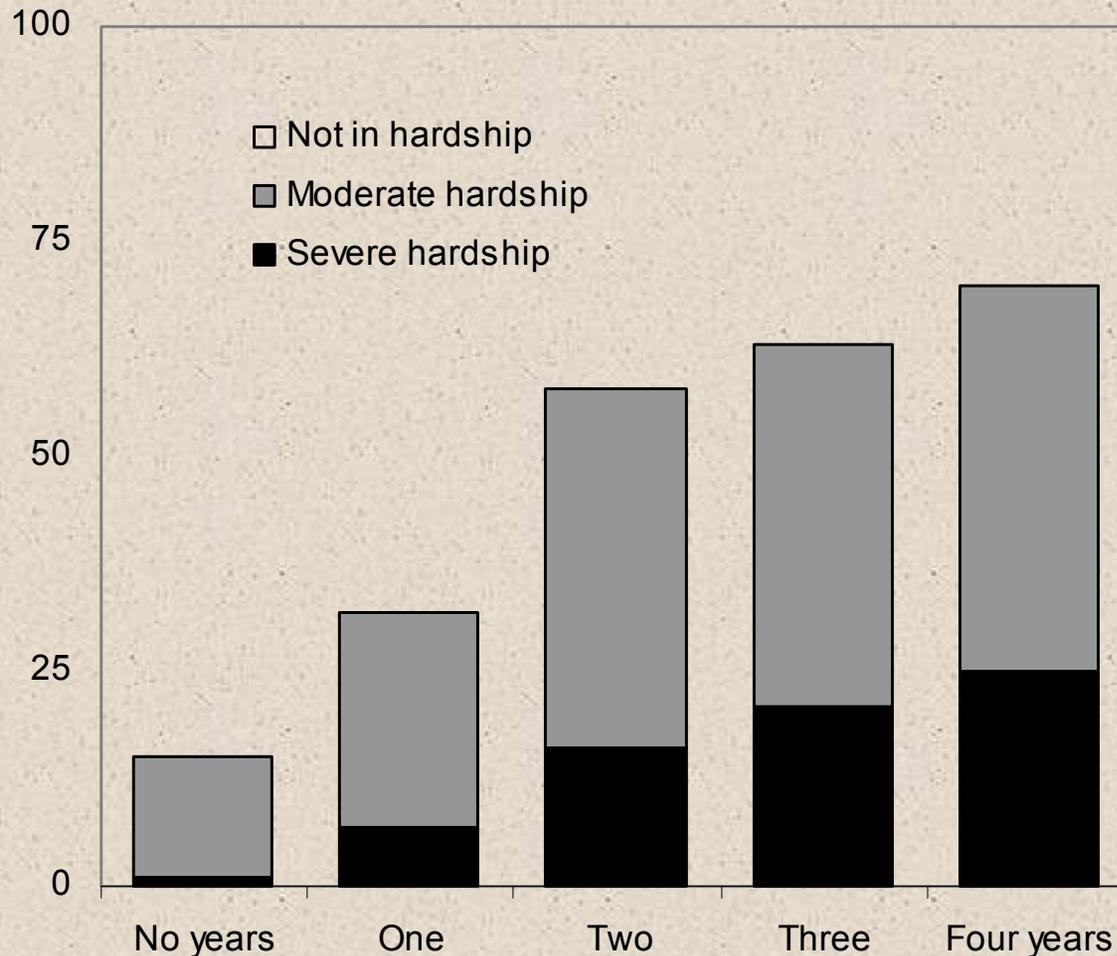
- Including adults with and without children, but excluding pensioners
- Household level variables, following individuals

## **Topic 2. Some findings, and some puzzles**

# Proportion of poor, middle income and well-off families in hardship: FACS 2002



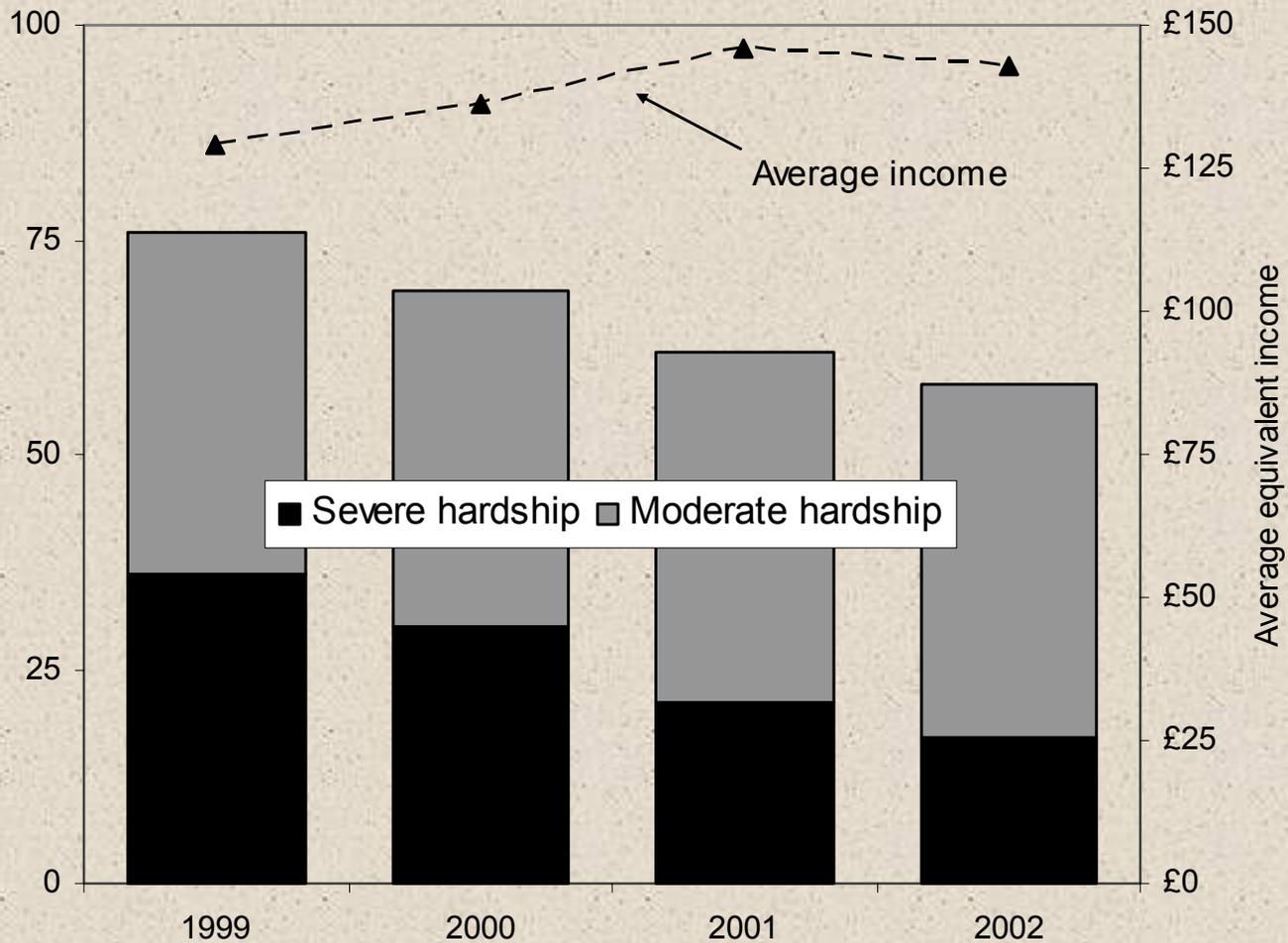
# Hardship in wave 4, by number of waves in poverty over waves 1-4



## Movements into and out of hardship between FACS Waves 3 and 4, in relation to movements into and out of poverty (column percentages)

	Remained in poverty	Moved into poverty	Moved out of poverty	Remained out of poverty
Remained in hardship	55	39	40	14
Moved into hardship	10	<b>14</b>	10	7
Moved out of hardship	11	13	<b>15</b>	8
Remained out of hardship	23	34	35	72

# Trend in FACS hardship among *poor* families



## **Topic 3. Defining and measuring 'deprivation'**

# Principles for constructing an index

- ▶ Many component indicators
- ▶ Components associated with each other (an underlying dimension?)
- ▶ Components, and index, associated with income (especially low income)
- ▶ Analysable as a continuous variable
- ▶ Meaningful when compared across years, as well as in any year
- ▶ Simple and easy to understand?

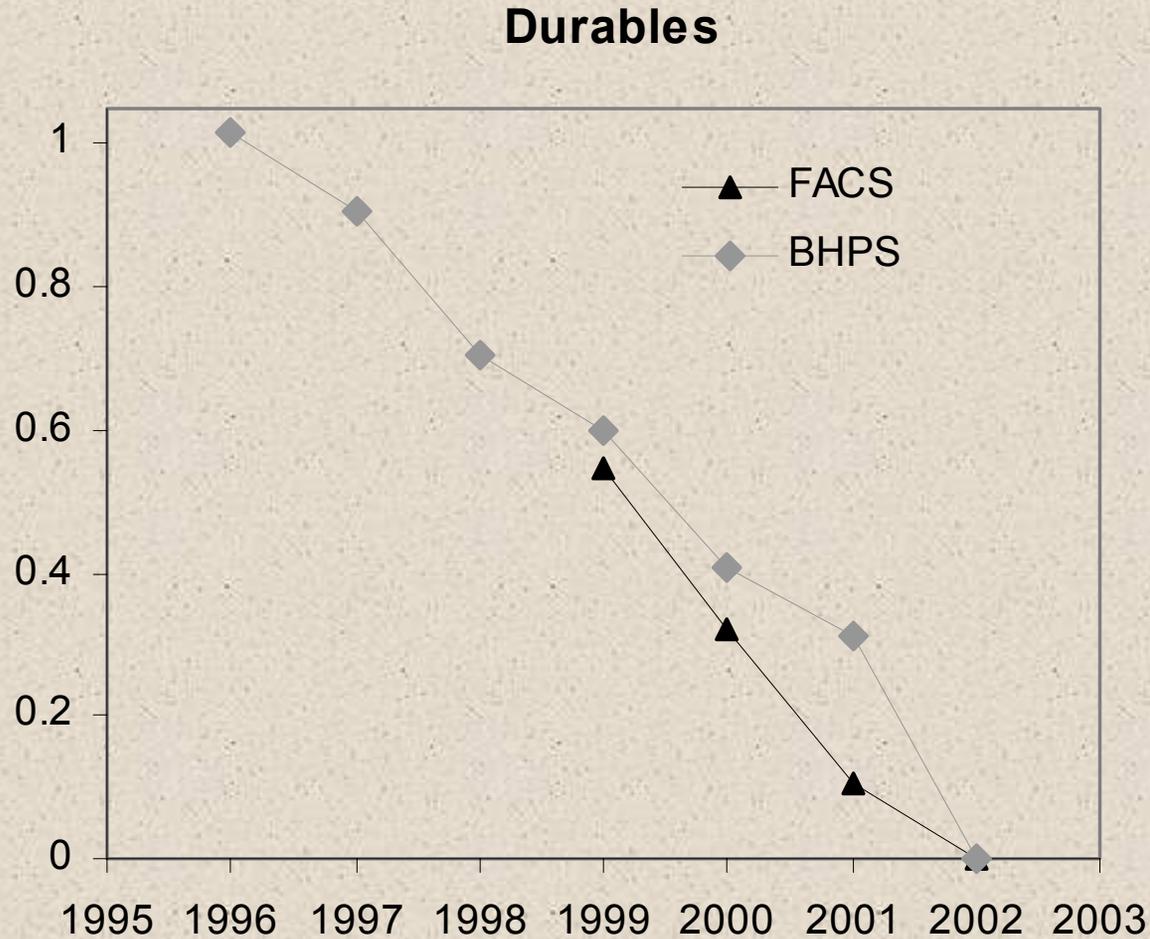
## Sub-groups of the BHPS index

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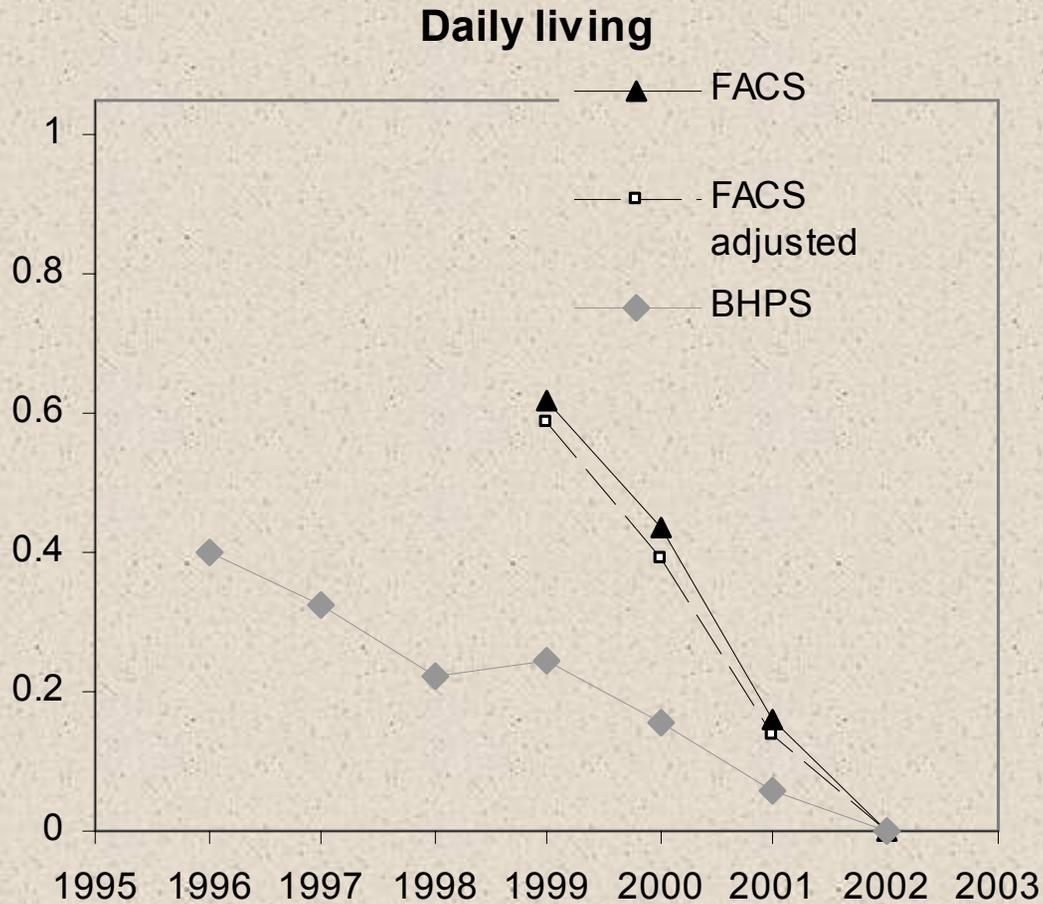
	Compo- nents	Consistency (alpha)	Corr. with income	Change with £10 income
Daily living	5	0.64	-0.26	-0.57
<i>eg can't afford meat, new clothes, have friends round</i>				
Financial strain	4	0.53	-0.32	-0.70
<i>eg difficulty managing on money</i>				
Durables	10	0.65	-0.20	-0.66
<i>eg no washing machine, computer</i>				
Housing	12	0.63	-0.14	-0.03
<i>eg damp, noisy neighbours, pollution</i>				

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# Trend in durables index among non-working families: FACS and BHPS

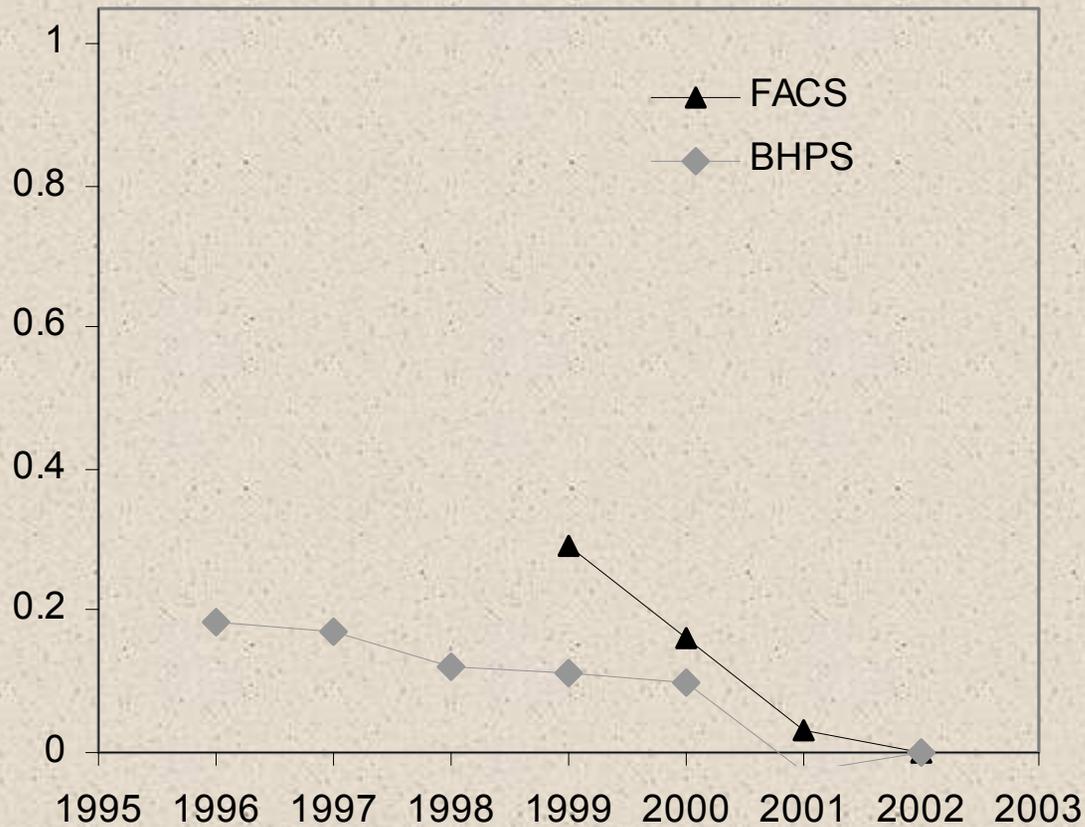


# Trend in daily living index among non-working families: FACS and BHPS

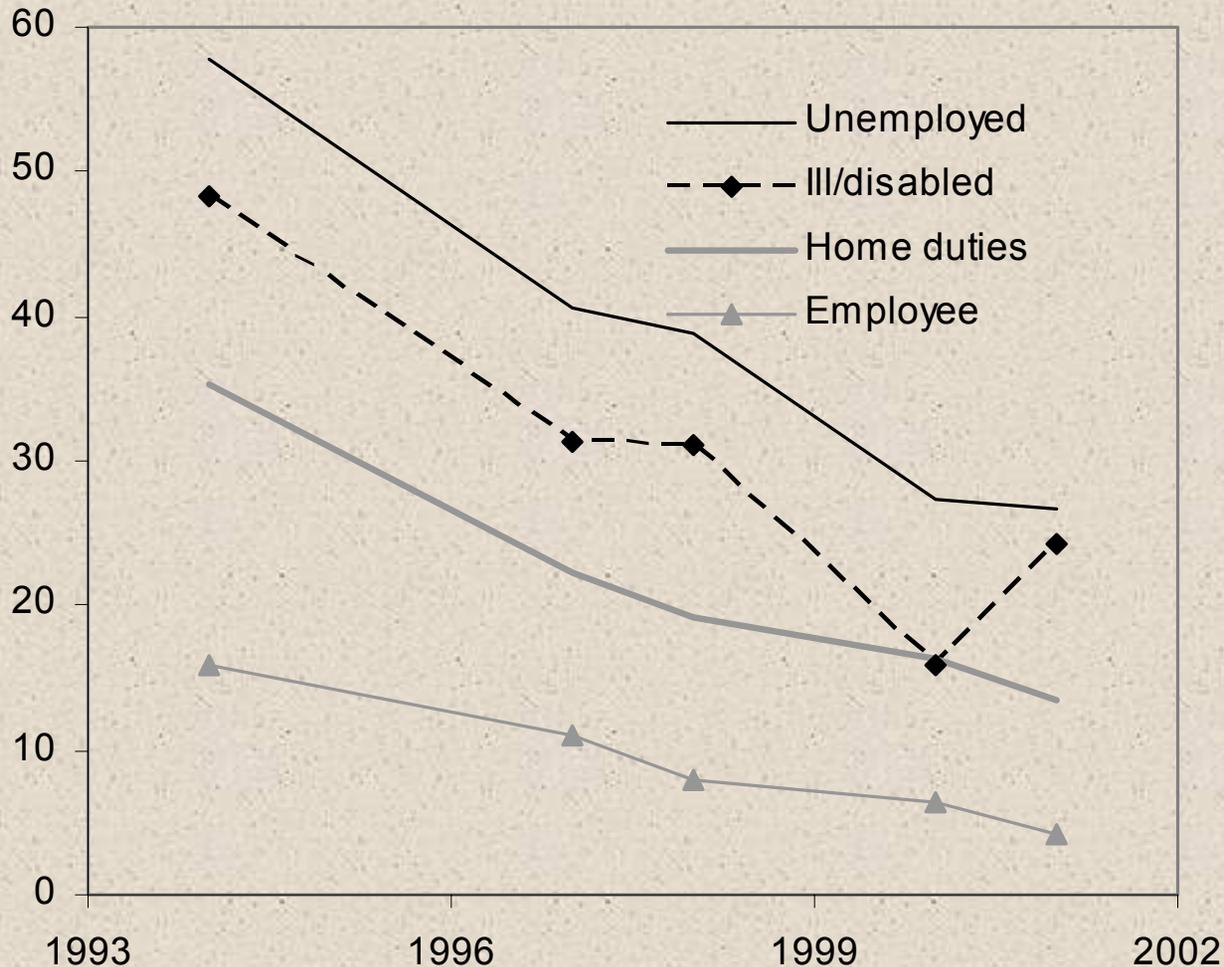


# Trend in financial stress index among non-working families: FACS and BHPS

Financial stress



# Proportion of households scoring one or more on the Irish basic deprivation index, 1992-2001



# Formulating the index

1. Calculate the family's score on **each component** indicator, **standardised by year**:

$$\frac{\text{Family's raw score} - \text{Average score for year}}{\text{Standard deviation for year}}$$

So average = 0 every year

2. Sum and average **within** each group (daily living, financial stress, durables)
3. Sum and average **across** three groups
4. Multiply by 100 (simply to make numbers easier to read)

NB Distribution of overall scores is NOT standardised

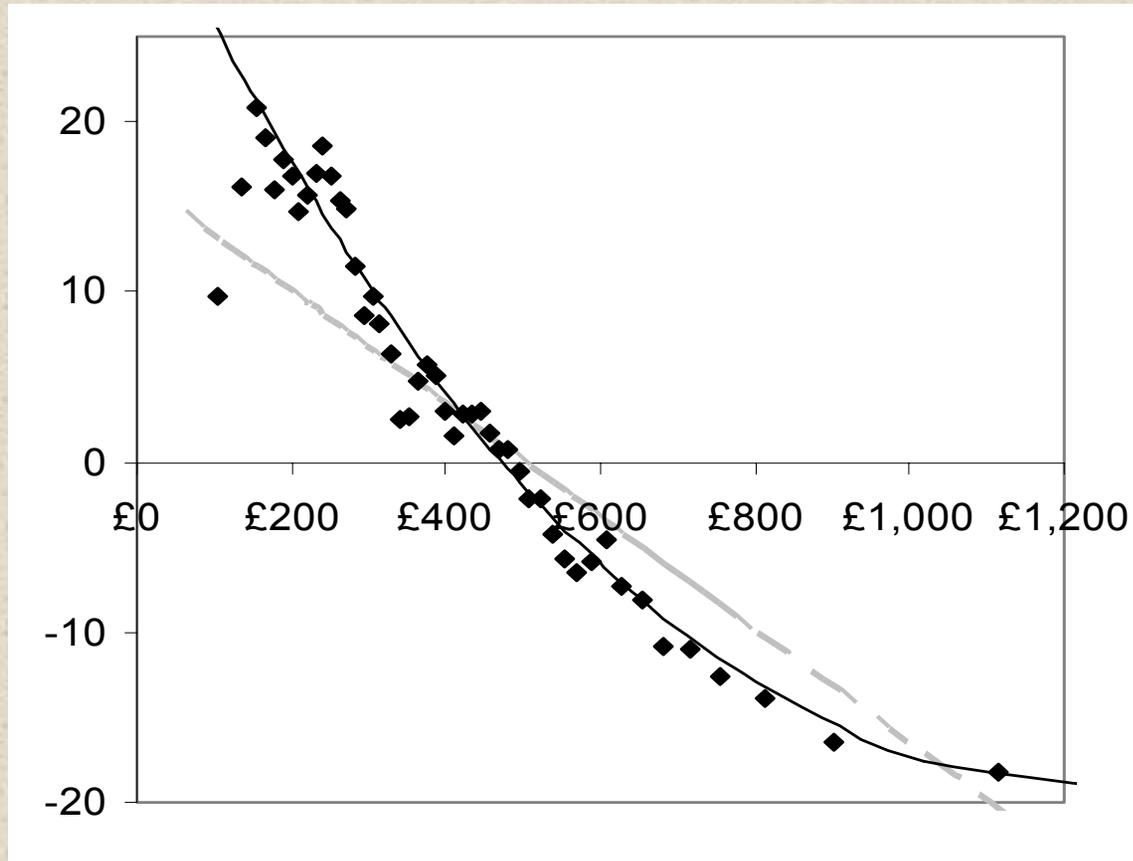
## Topic 4: Measuring income

- ▶ Standard HBAI rules applied as closely as possible to FACS and BHPS
- ▶ Total weekly net household/family income before housing costs
- ▶ No equivalence scale
- ▶ Beware measurement error, especially at low incomes

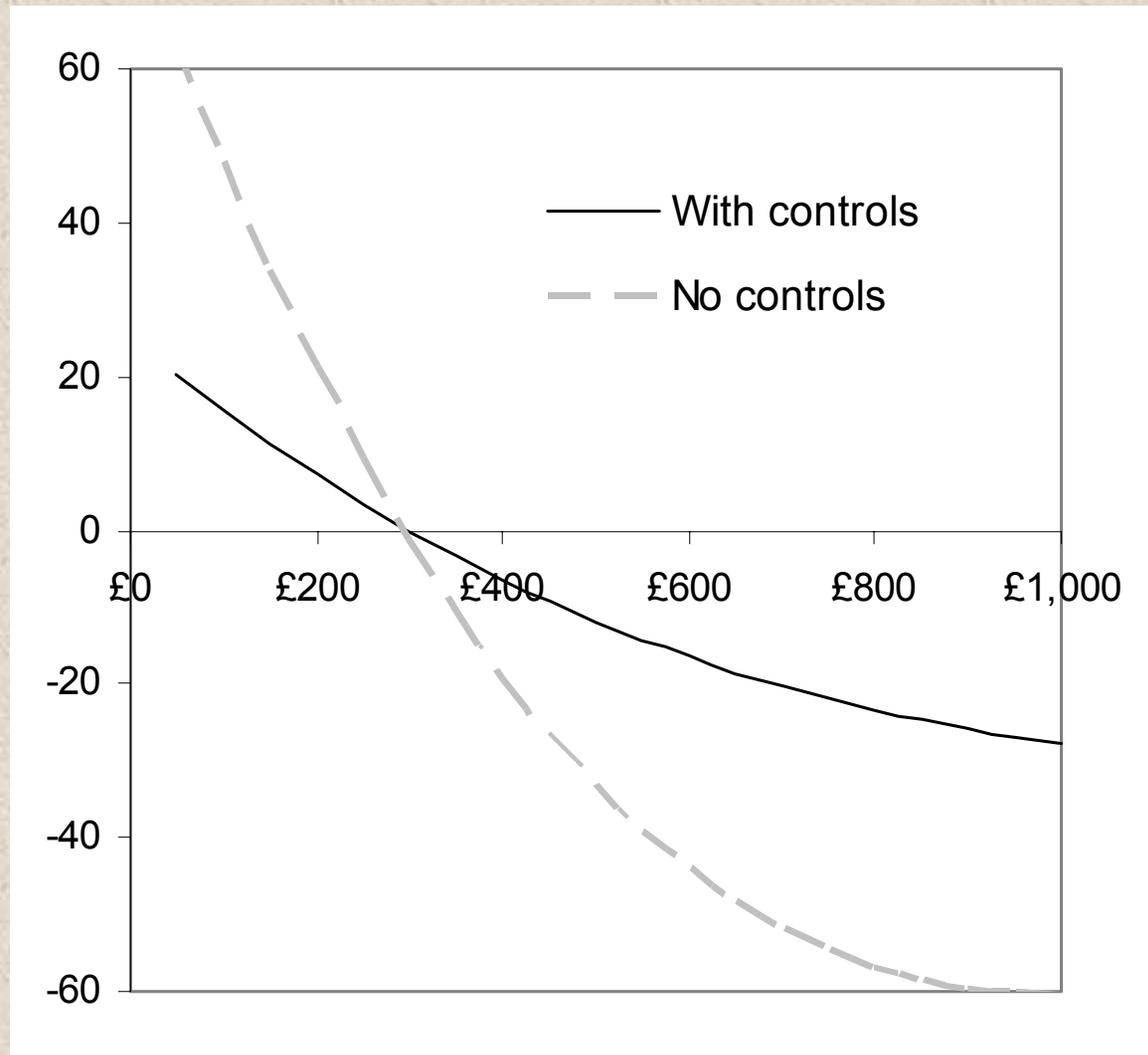
## Topic 5: 'Cross-sectional' relationships

- ▶ FACS wave 4, BHPS wave 12 (2002)
- ▶ As benchmark for analysis of other snapshot surveys (FRS)
- ▶ To estimate relative importance of income itself, and other characteristics, as correlates of deprivation
- ▶ OLS regression

# Shape of income-deprivation profile (FACS)



# Effect of controls on income-deprivation relationship (FACS)



# Family structure (FACS)

Children by age		Children by number		Children squared	
Two parent family	-2.3	Two parent family	-1.6 <sup>ns</sup>	Two parent family	-1.9
No. of kids:		No. of kids:		No. of kids:	
aged 0-1	+7.7	second	+0.0 <sup>ns</sup>	squared	+1.5
aged 2-4	+7.9	third	+5.5		
aged 5-10	+3.6	fourth	+6.4		
aged 11-15	+5.4	fifth	+20.5		
aged 16-17	+1.5				

## Other factors (FACS)

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<b>Age (spline)</b>	Per year: up to 40	-0.77
	40 onwards	+0.34
<b>Skill level</b>	GCSE/O level	-5.8
	Further qualifications	-7.4
<b>Income sources</b>	Employment	-13.1
	Working families tax credit	+15.7
	Income support	+30.0
<b>Housing tenure</b>	Outright owner	-7.5
	Tenant	+18.8
<b>Region</b>	London	+10.6
	North East	-7.9

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# Proportion of variance explained by groups of variables

	FACS	BHPS
Current income	10.3%	13.3%
Household composition	2.4%	3.9%
Age	2.1%	ns
Qualifications	2.2%	1.1%
Income sources	18.8%	4.2%
Housing tenure	9.3%	10.4%
Region	0.4%	ns
Total	45.5%	33.0%

## Topic 6: ‘Underlying’ and ‘longitudinal’ relationships

- ▶ Use a 7 year run of data (BHPS waves 6-12) to measure:
  - “*underlying*” relationship. Uses individuals’ averages of income, deprivation etc over period. “Between cases” analysis.
  - “*longitudinal*” relationship. Uses variations in income, deprivation etc experienced by individuals over time, either side of their period average. “Within cases” analysis.
- ▶ Use individuals with 5 or more observations.

# Between analysis

		Cross section	Between cases	
		Coeff	Coeff	t
<b>Income</b>	Income (in £100s)	-12.3	-16.9	8.0
	Income (in £100s) squared	+0.8	+1.2	4.6
	Income (in £100s) cubed	-0.02	-0.029	3.2
<i>Effect of a £10 difference in income:</i>				
	<i>at £200</i>	-0.91	-1.24	
	<i>at £800</i>	-0.27	-0.33	
	<i>Sample size (households)</i>	2846	3092	
	<i>R<sup>2</sup></i>	33.0%	49.0%	

# Comparison of differences equations and within-cases equations using various combinations of waves

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	Differences equations		Within-cases equations	
	Income effect at £200	R <sup>2</sup>	Income effect at £200	R <sup>2</sup>
All seven waves	-0.40	4.4%	-0.56	8.2%

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## ***Comparison of differences equations and within-cases equations using various combinations of waves***

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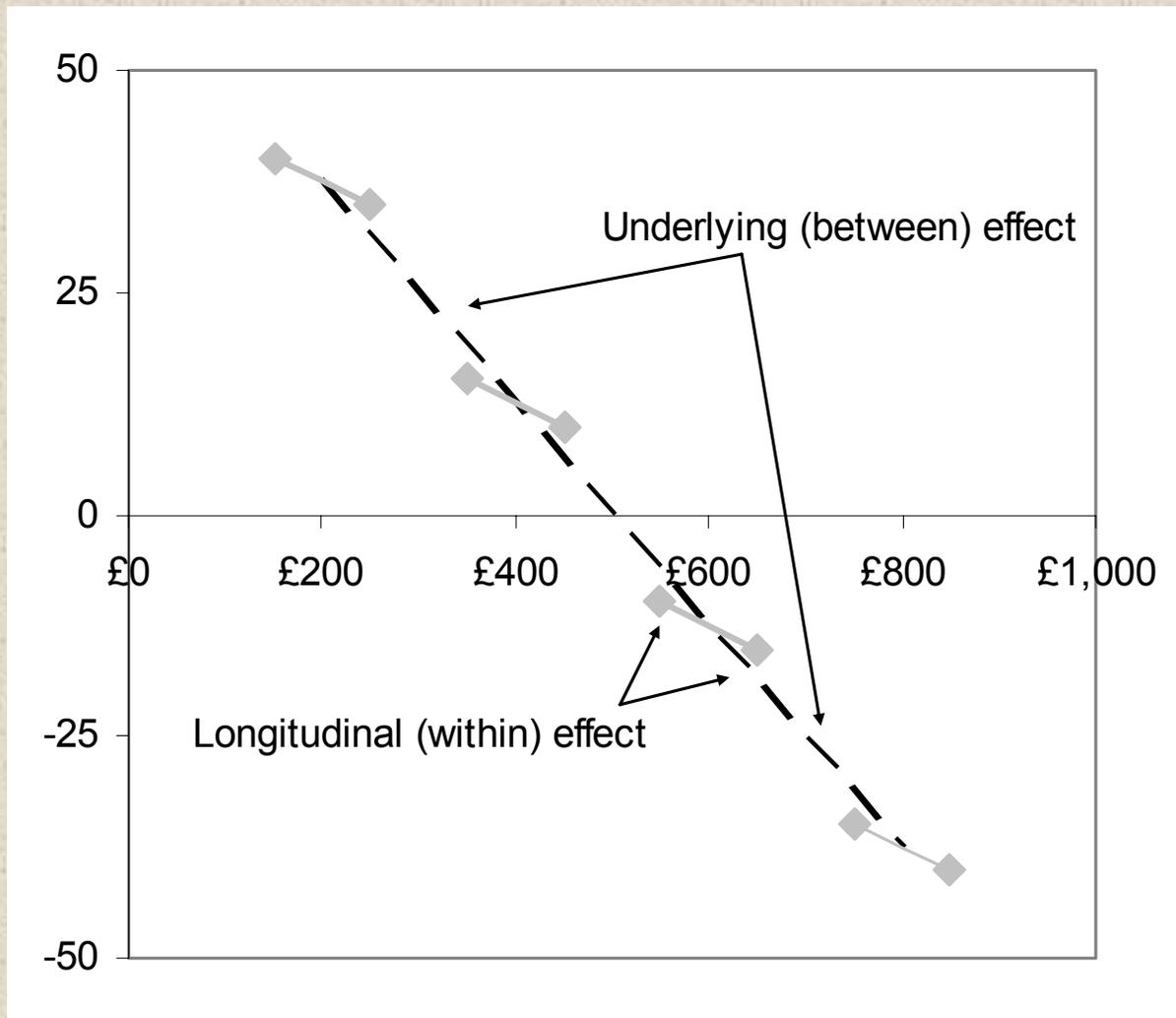
	Differences equations		Within-cases equations	
	Income effect at £200	R <sup>2</sup>	Income effect at £200	R <sup>2</sup>
All seven waves	-0.40	4.4%	-0.56	8.2%
W10 compared with W9	-0.30	3.1%	-0.30	3.1%
W12 compared with W6	-0.65	12.1%	-0.65	12.1%

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# Within analysis: income

		Between cases	Within cases	
		Coeff	Coeff	t
<b>This year's Income</b>	Income (in £100s)	-16.9	-7.8	8.0
	Income (in £100s) squared	+1.2	+0.7	5.8
	Income (in £100s) cubed	-0.029	-0.018	4.9
<b>Last year's income</b>	Income (in £100s)		-1.3 <sup>ns</sup>	1.5
	Income (in £100s) squared		+0.1 <sup>ns</sup>	0.7
	Income (in £100s) cubed		-0.001 <sup>ns</sup>	0.2
<i>Effect of a £10 difference in income at £200</i>		<i>-1.24</i>		
<i>This year only</i>			<i>-0.54</i>	
<i>This year and last year together</i>			<i>-0.64</i>	
<i>Sample size (households)</i>		<i>3092</i>	<i>3092</i>	
<i>R<sup>2</sup></i>		<i>49.0%</i>	<i>7.9%</i>	

Increasing a family's income will reduce its deprivation, but it will still be worse off than a family which had the higher income all along



# Between-within comparison: other factors



## **Topic 7. Discussion and implications**

# Policy conclusions

- ▶ Increasing a family's income will reduce its deprivation, but it will still be worse off than a family which had the higher income all along
- ▶ So permanent improvements in poor people's underlying economic positions are required, not short term fixes.
- ▶ 'Work is the best route out of poverty'
- ▶ But 'security for those who cannot work' is equally important
- ▶ Single people/lone parents may be disadvantaged in tax/benefit rules in comparison with couples
- ▶ Young children/large families require attention
- ▶ Tenants are doubly disadvantaged

# Measurement conclusions

## Downward trends in deprivation indices

- ▶ create a misleadingly over-optimistic impression of progress;
- ▶ encourage weak, rather than strong, assumptions about the roles of indices in measuring poverty;
- ▶ suggest that a relative, rather than an absolute, measure of deprivation is required;
- ▶ but it will not be easy to propose a measure which is simple and understandable



**Spare slides follow  
(not used in main talk)**

# **A household's deprivation score will depend on**

Economic resources (including, but not only, current income)

Variations in prices (eg of housing, transport)

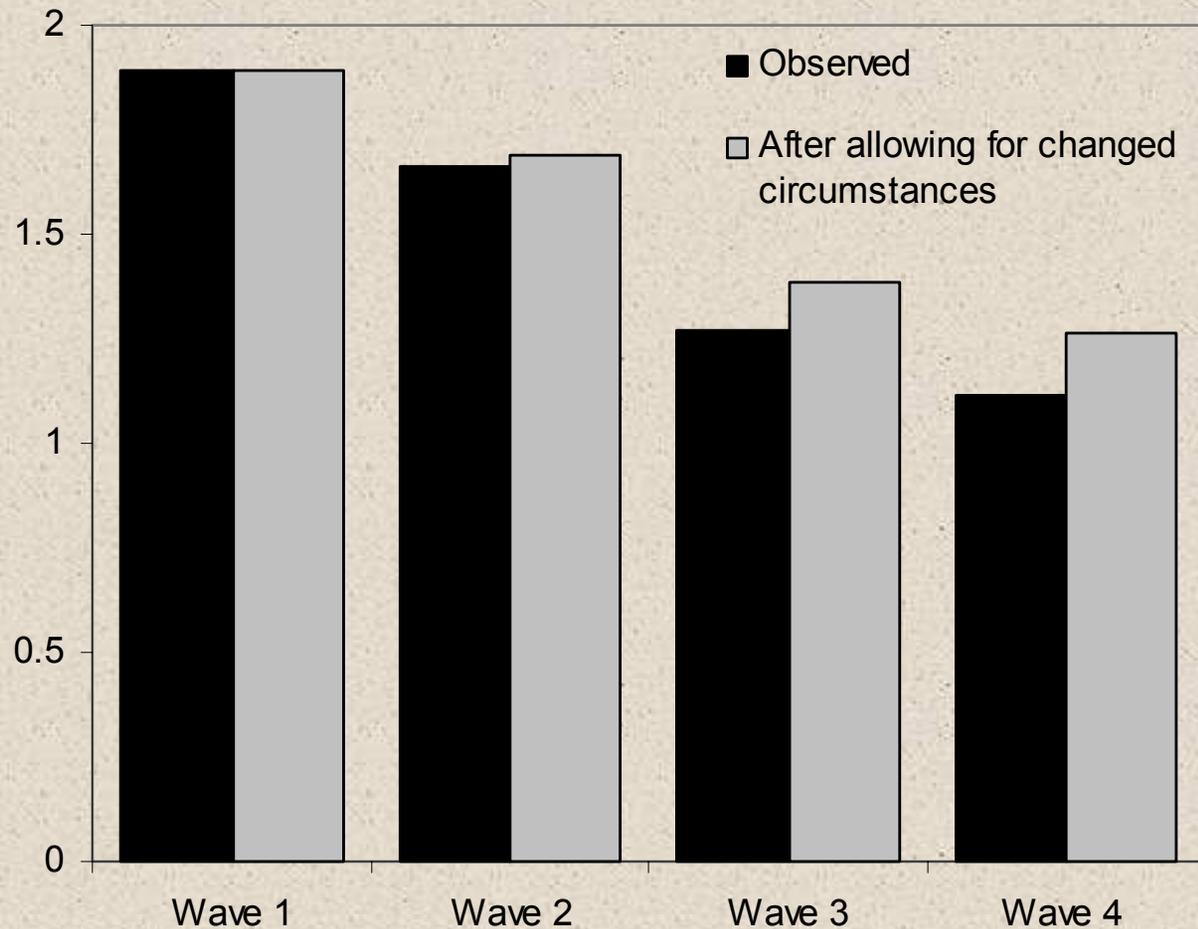
Household needs (eg by size of household, disability)

Hypothecated expenditure (eg rent rebate)

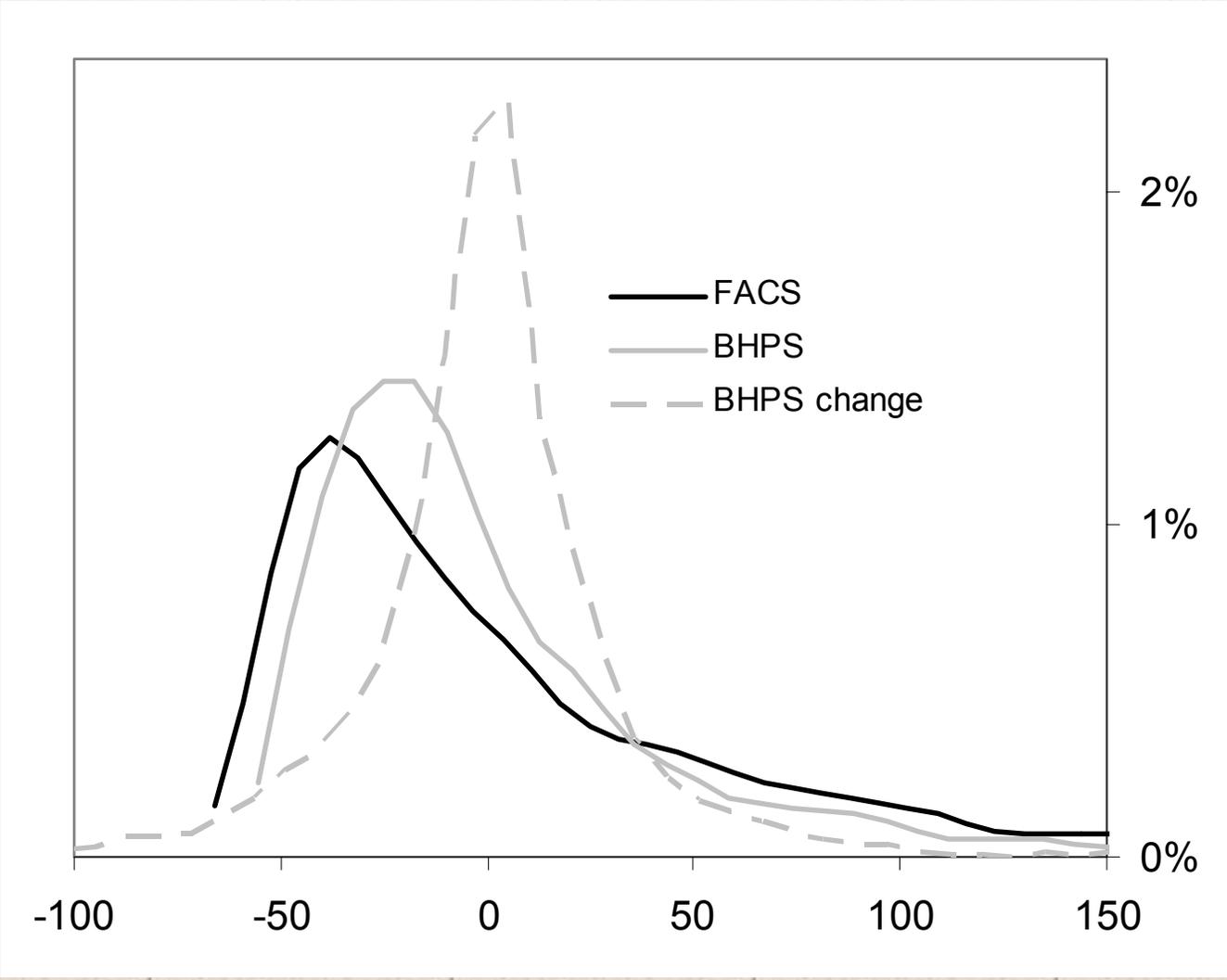
Efficiency (of converting resources into utility)

Measurement error

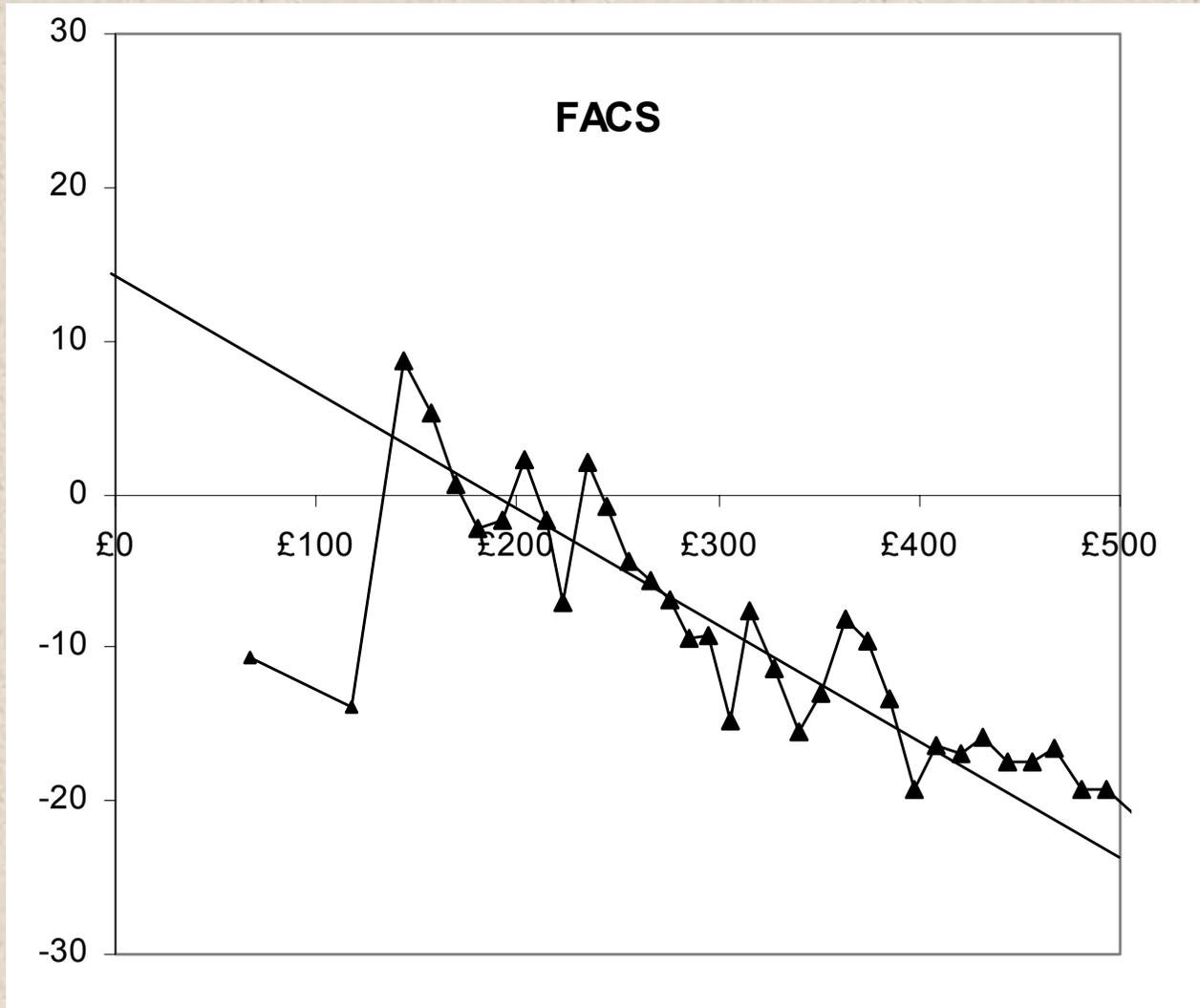
# Trend in average number of PSI/FACS hardship items: lone parents at wave 1 who were also interviewed at waves 2-4



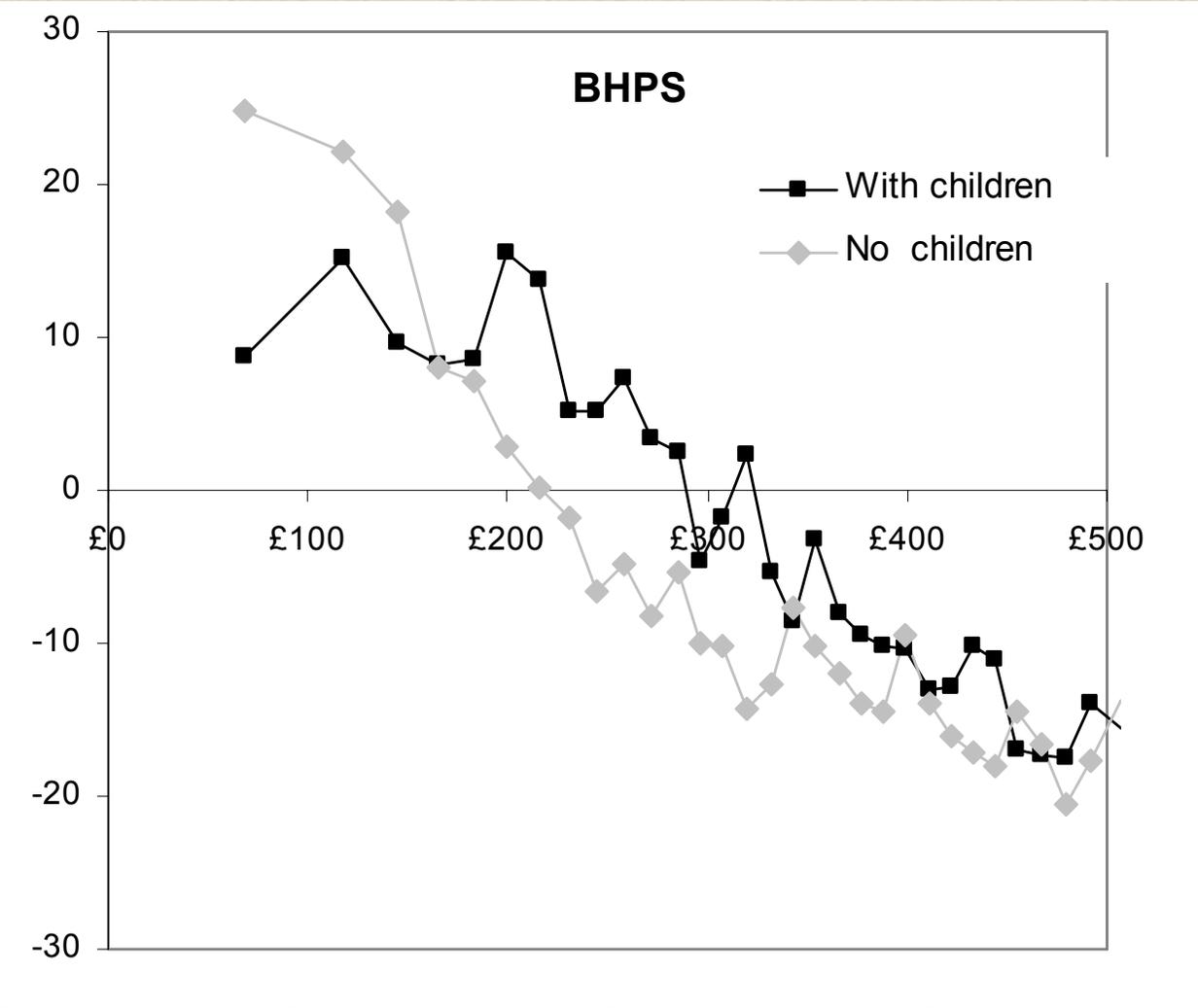
# Distribution of the FACS and BHPS deprivation indices, 2002



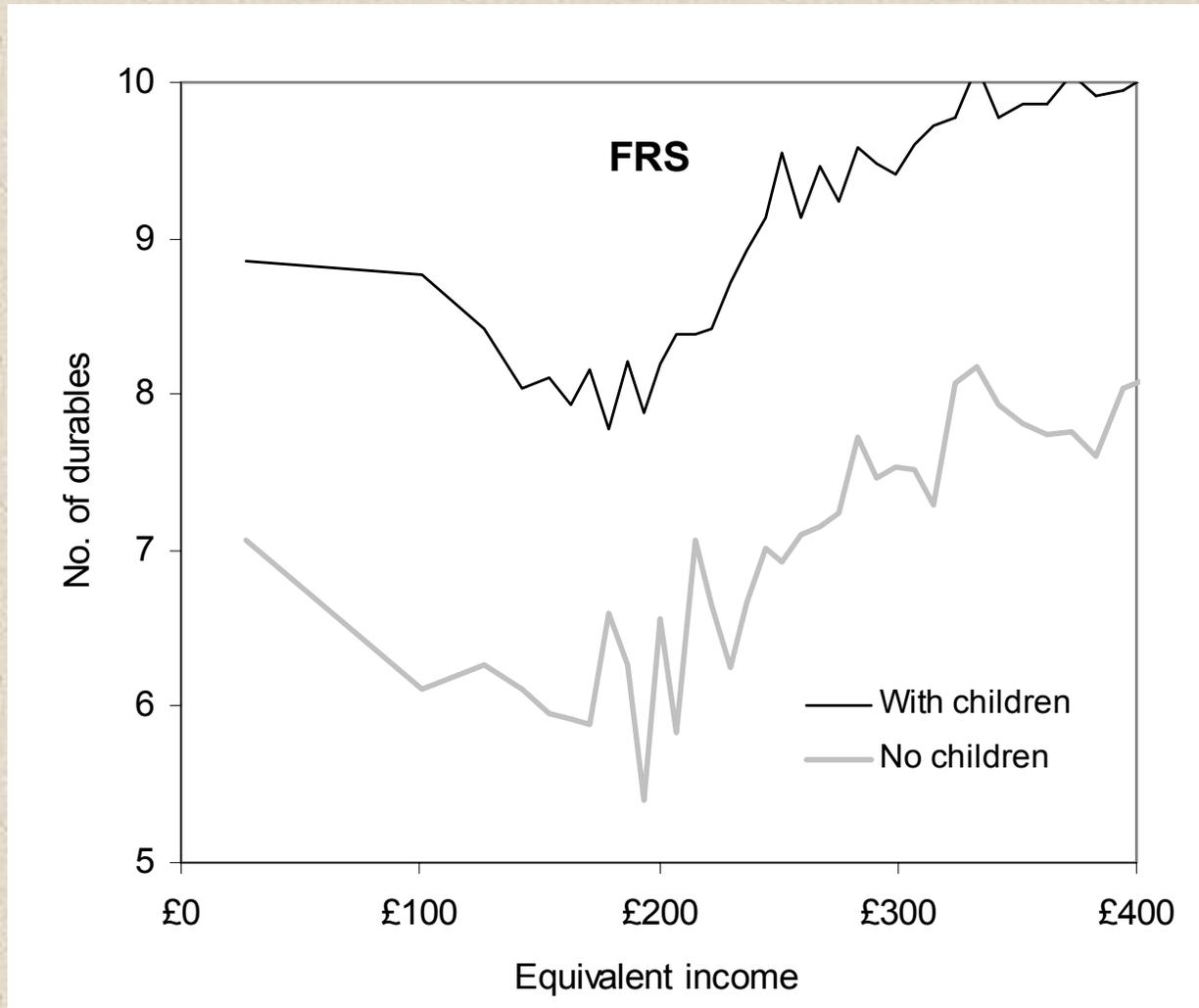
# Estimated average deprivation scores for families in each 2% range of the income distribution



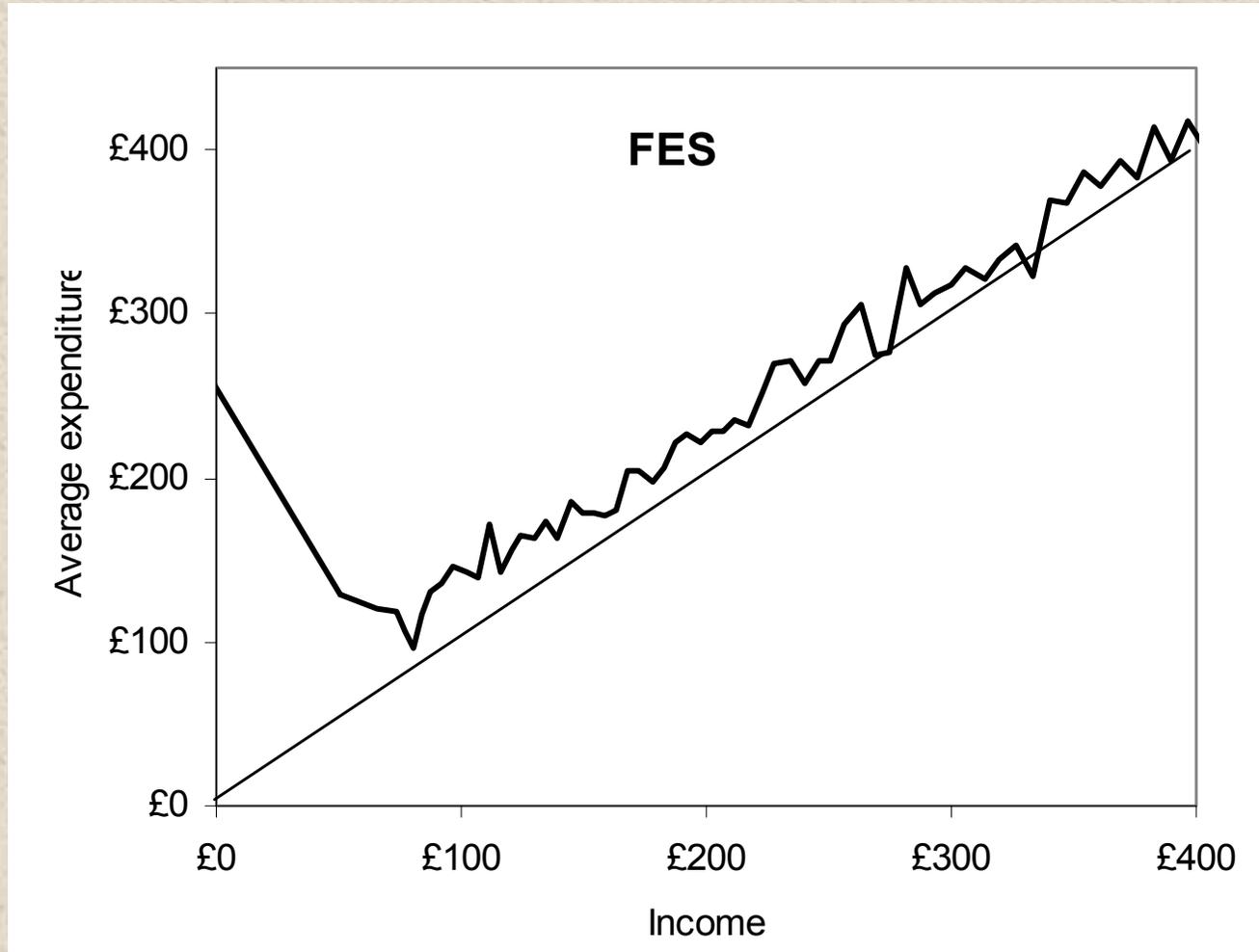
# Estimated average deprivation scores for households in each 2% range of the income distribution



# Average number of consumer durables for households in each 2% range of the income distribution



# Average weekly expenditure for households in each 1% range of the income distribution



## Proportion of cross-sectional variance in BHPS deprivation index explained by each group of variables

	Independ- ent effect	Central estimate	Maximum estimate
Current income (amount)	8.7%	<b>13.3%</b>	17.9%
Household composition	2.1%	<b>3.9%</b>	5.7%
Qualifications	0.4%	<b>1.1%</b>	1.9%
Income <i>sources</i>	1.4%	<b>4.2%</b>	7.1%
Housing tenure	6.2%	<b>10.4%</b>	14.7%
Total		<b>33.0%</b>	

‘Independent effect’ single variance only. Central estimate is single variance plus one covariance. Note that total variance explained is sum of central estimates

# Sequence of estimates of income effect (£10 at £200)

