Estimating Current Household Level Effective Disposable Income Using Macro Data

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What's EDI?

Assess the **ability to repay different payment amounts**

Verified via CATO/CAIS

All unsecured lending, CAIS

ONS FY20, ONS+, Expenditure+ (lookup/estimated for energy & council tax)

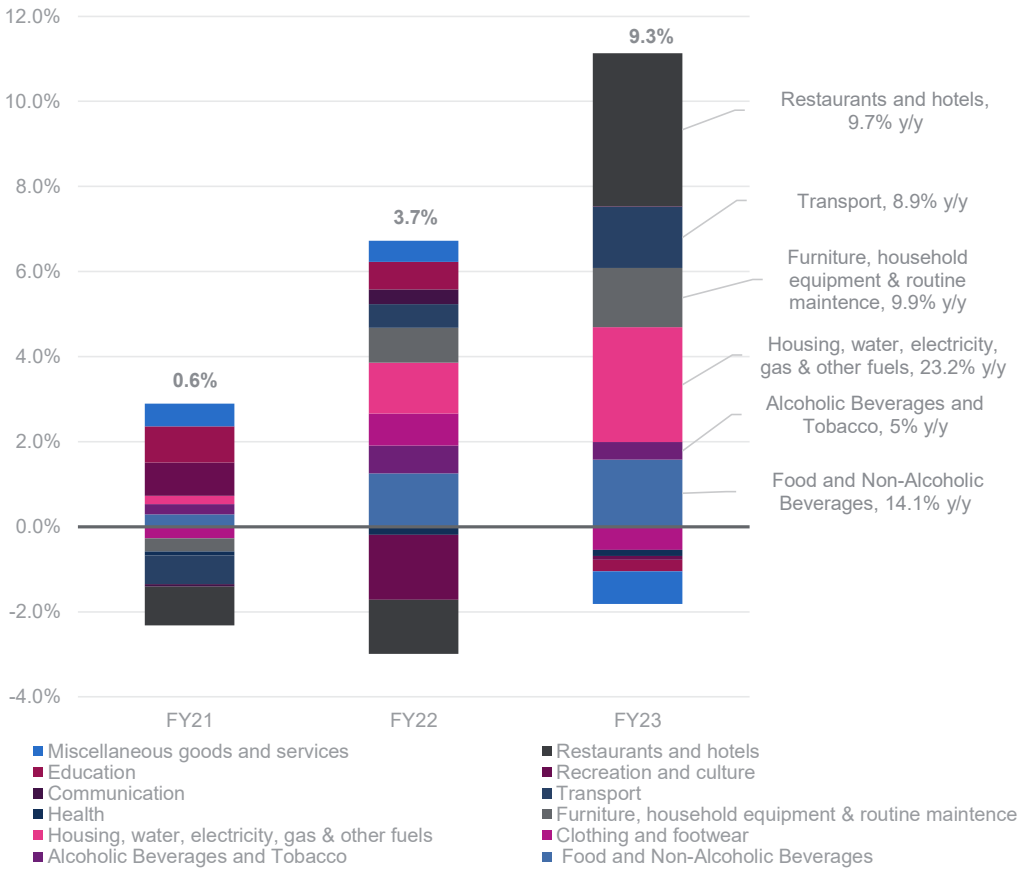
Mortgage CAIS Else Rental Exchange Else FSB

Family Spending Bulletin data (ONS):
- **Basic Other Expenditure (BOE):** Food, housing, health, transport…
- **Basic Quality of Living (BQL):** Clothing, Recreation…

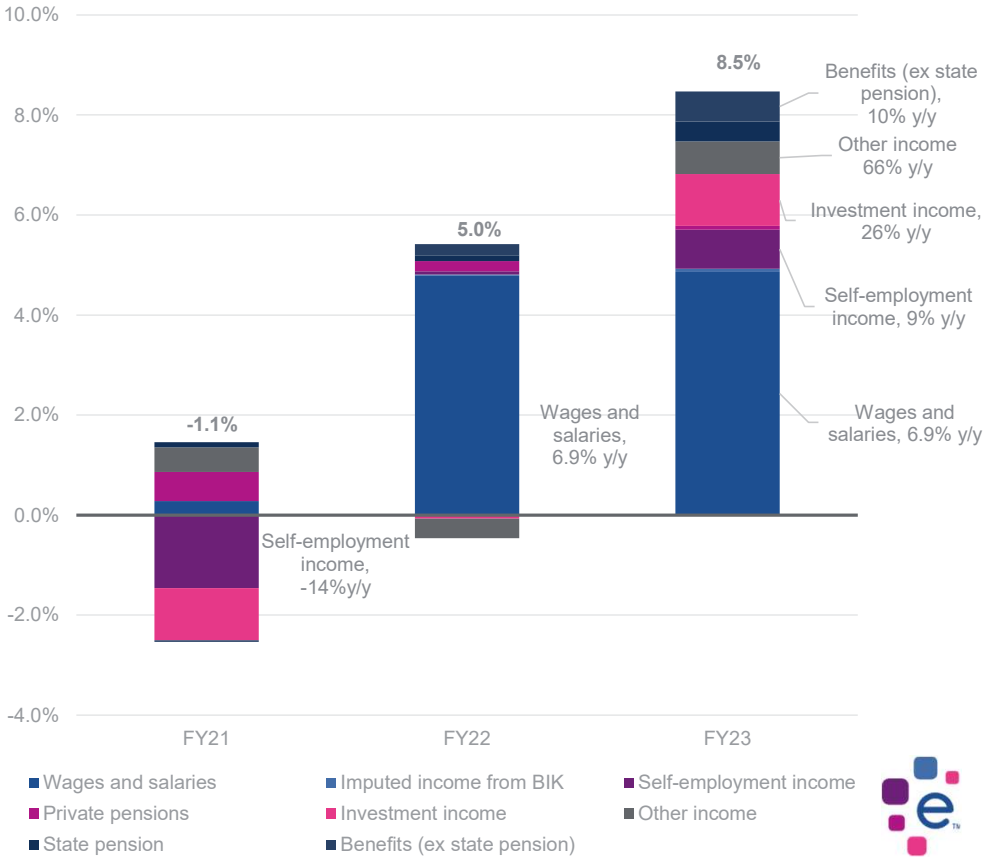
Support across Customer Lifecycle:
- **New Business:** Suitability/ affordability/loan amt
- **Customer Management:** consumer duty, pre-delinquency action, upsell/cross-sell
- **Collections/debt recovery:** affordability

Has the expenditure-income relationship changed?

CPI: “inflation felt by 66th percentile”



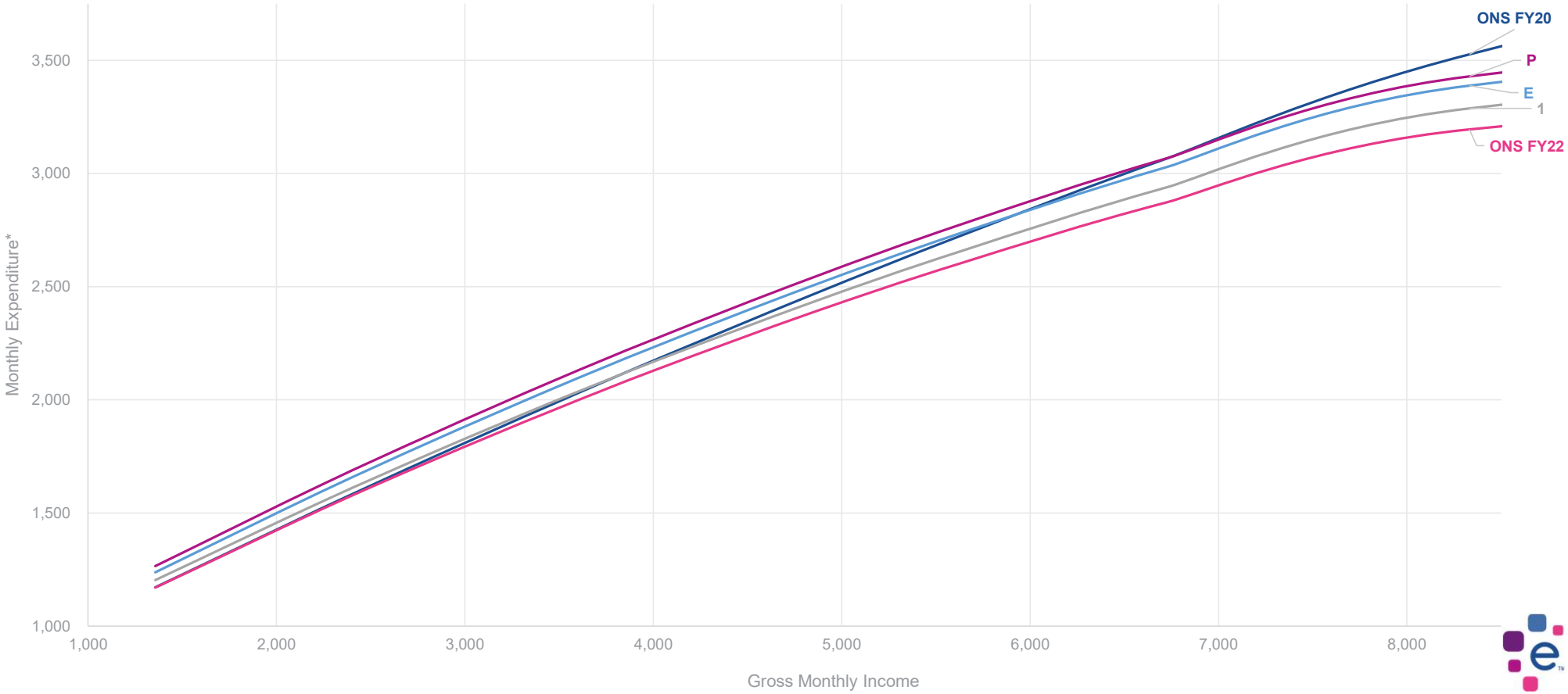
UK Average Gross Income ann. growth (~7th decile)



How could we adjust our approach to keep up-to-date?

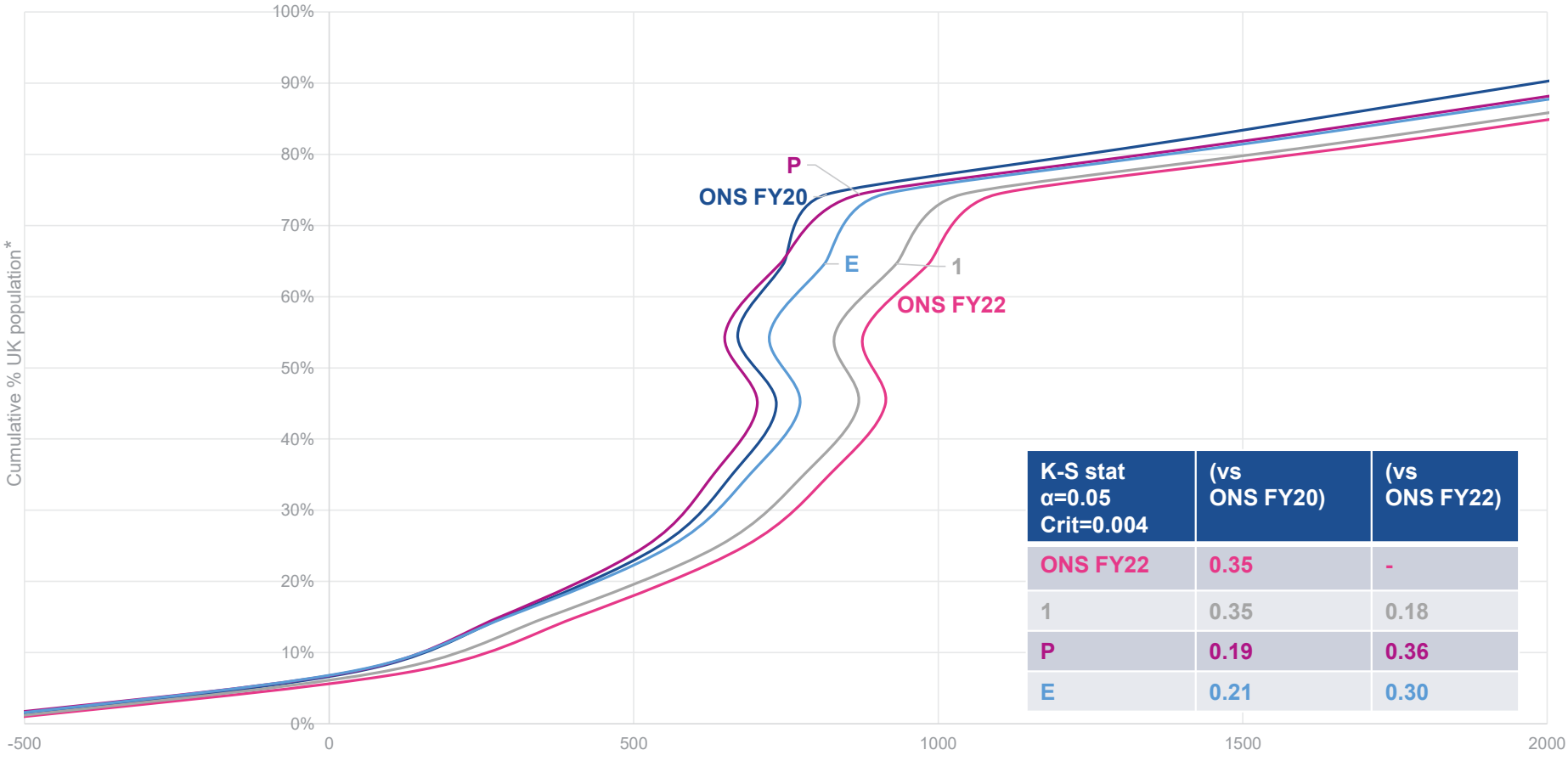
Acronym	Approach	Expenditure	Income
"FY20", "FY22"	**"Nothing's changed"**	$E_{h,t} = E_{h,0}$	$I_{h,t} = I_{h,0}$
"1"	**"1-4-all"** Apply UK inflation and income growth to everyone's total expenditure and income.	$E_{h,t} = E_{h,0}\pi_{UK,t}$	$I_{h,t} = I_{h,0}\tilde{v}_{UK,0}\tilde{a}_t$
"P"	**"Price-updating"** Apply item level inflation and income component growth according to the household composition.	$E_{h,t} = \tilde{e}_{h,0}\tilde{\pi}_t$	$I_{h,t} = I_{h,0}\tilde{v}_{h,0}\tilde{a}_t$
"E"	**"Expenditure-updating"** Apply item level nominal expenditure growth and income component growth according to the household composition.	$E_{h,t} = \tilde{e}_{h,0}\tilde{c}_t$	$I_{h,t} = I_{h,0}\tilde{v}_{h,0}\tilde{a}_t$

What does this imply for the expenditure-income relationship?



*Not including credit commitments which are not estimated using ONS data.

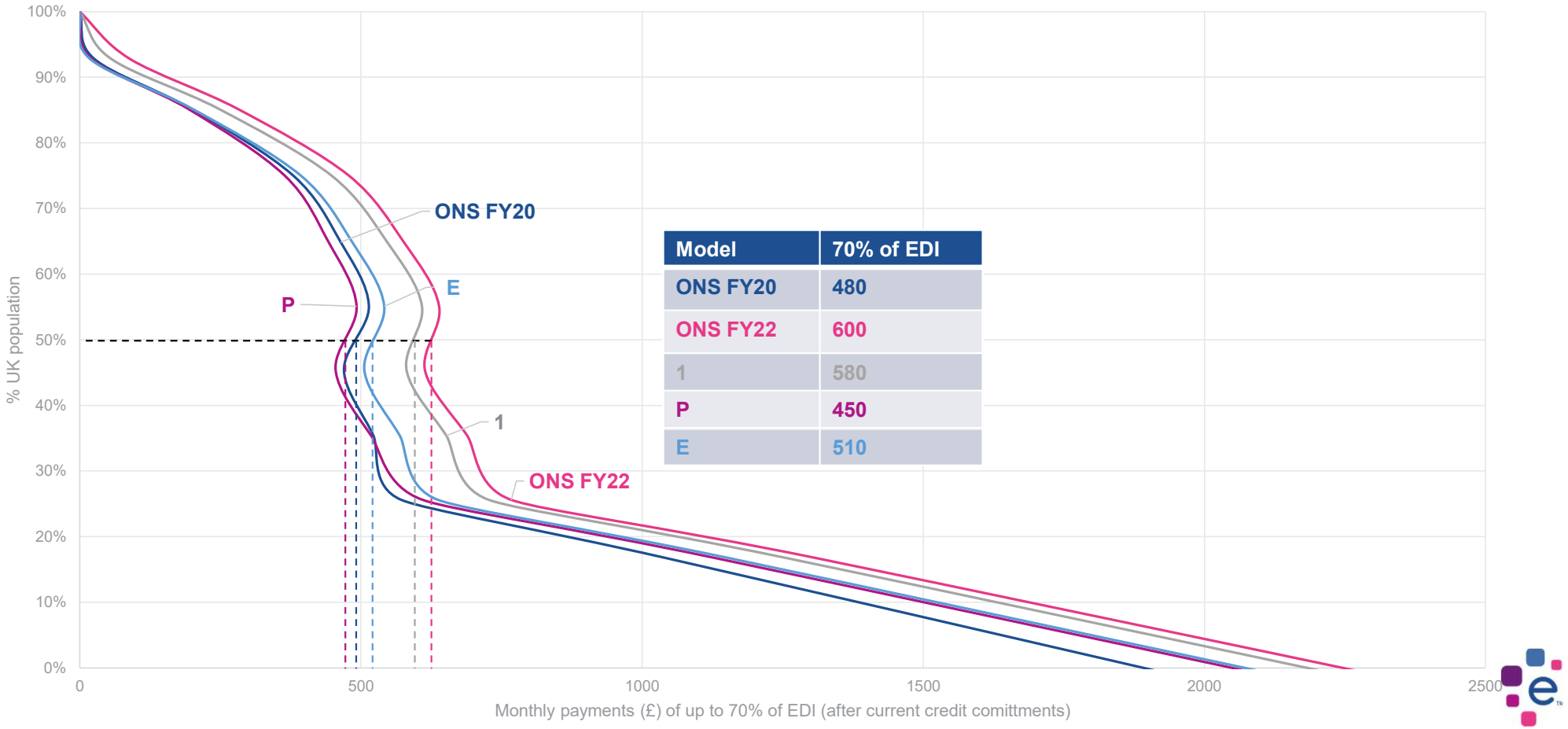
What does this mean for the UK distribution of EDI?



K-S stat α=0.05 Crit=0.004	(vs ONS FY20)	(vs ONS FY22)
ONS FY22	0.35	-
1	0.35	0.18
P	0.19	0.36
E	0.21	0.30

*Decile incomes updated using previously specified technique to reflect FY23

What does this mean for affordability?



Model	70% of EDI
ONS FY20	480
ONS FY22	600
1	580
P	450
E	510

Where to next?

Limitations to address/future developments:

- Which model is ‘best’?
- Use more public information to improve methodology:
  - Create pseudo panel to observe elasticities at a granular level (state dependent weights)
  - Use sector and occupation information to improve income growth estimate
- Use more private information to improve the methodology:
  - Use transaction data where consented
  - Use CATO income and expenditure
- Future developments: Forward looking EDI using forecasted BOE, BQL, mortgage payments etc that are reasonably foreseeable changes over the lifetime of the credit agreement.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Appendix

$E_{h,t} = \sum_i e_{i,h,t}$: is the total expenditure for year t (FY23).

$I_{h,t}$: is the average income per decile h in year t.

$\tilde{e}_{h,0}$: is a vector of nominal expenditure in the base year 0 (FY22). (Data: Family Spending Bulletin).

$\tilde{\pi}_t$: is a vector of inflation rates per item, where $\pi_{it} = \frac{\sum_t p_{i,t}}{\sum_0 p_{i,t}}$ is the growth of the price index for item i over t, 0 is the base year (Data: CPI). Forecasts are used for the most recent month. If i=UK it refers to the CPI.

$\tilde{v}_{h,0}$: is a vector of gross income shares for decile h in the base year, where $v_{h,t,g} = \frac{w_{h,t,g}}{\sum_g w_{h,t,g}}$ is the proportion of the income component g in total gross income. (Data: Effect of Tax and Benefits tables). If h=UK it refers to the UK average.

$\tilde{a}_t$: is a vector of growth factors for each aggregate gross income component g, where $a_t = \frac{\sum_t g_t}{\sum_0 g_t}$ is the growth of the gross income components g over t, 0 is the base year. (Data: GDP Household sector account). Forecasts are used for the most recent qs.

$\tilde{c}_t$: is a vector of growth factors in nominal expenditure items, where $c_{it} = \frac{\sum_t n_{i,t}}{\sum_0 n_{i,t}}$: is the growth in UK wide nominal expenditure on item i over t, 0 is the base year. (Data: Consumer Trends). Forecasts are used for two most recent qs.