

Measuring household disposable income: Developing adjustments using tax data which improve the measurement of top incomes



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Please note that all results and figures in this presentation are provisional results from experimentally applying a new top income adjustment and are NOT official government statistics.

Background

The need for a top income adjustment

UK Household income statistics

Two main sources:

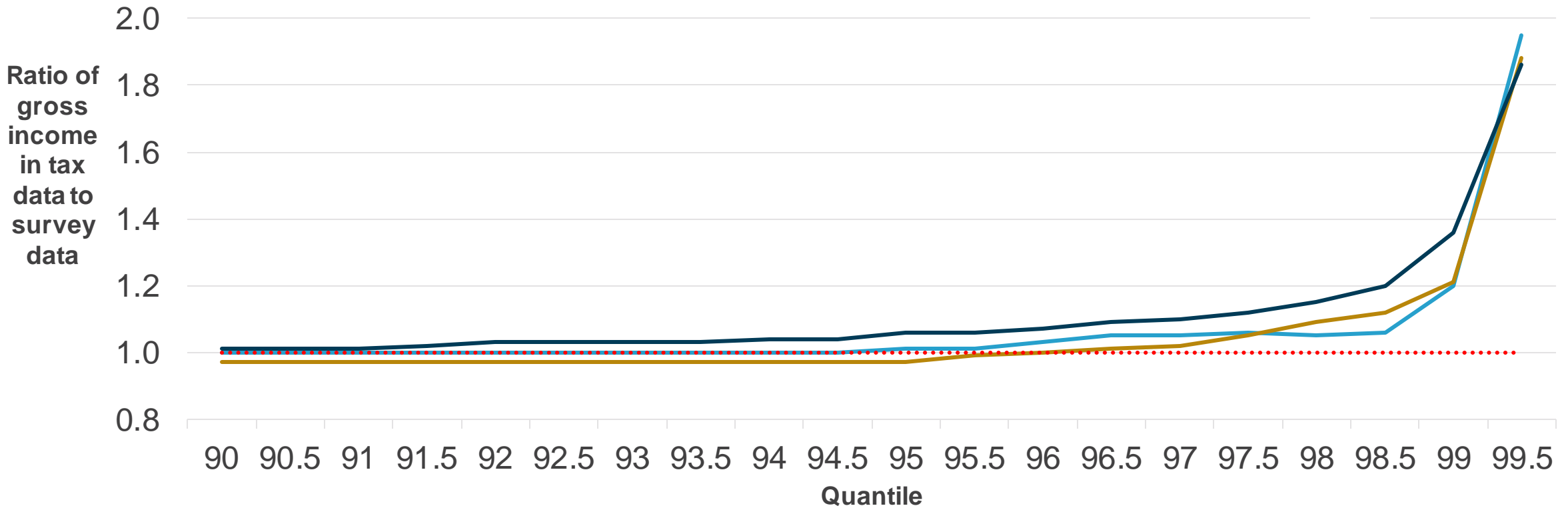
- 1) *Households Below Average Income* (HBAI) produced by Department for Work and Pensions based on the *Family Resources Survey*.
- 2) *Effects of Taxes and Benefits* (ETB) produces by Office for National Statistics based on the *Living Costs and Food Survey*.

Issues measuring incomes of top earners:

- Well reported issue that survey data under-reports and has under-coverage of individuals with top incomes
- This has consequent impacts that the income of highest income households and overall inequality are both higher than reported

Those with highest incomes under-report their income in surveys

— 2013/14 — 2014/15 — 2015/16



Current status of top income adjustments

- DWP already have a top income adjustment in place for HBAI
- ONS in process of introducing top income adjustment
- Both make use of HMRC's *Survey of Personal Incomes* (SPI), a stratified sample of tax records, hence top income adjustment known as "SPI adjustment"

The current HBAI top income adjustment

Current HBAI top income adjustment

Two steps:

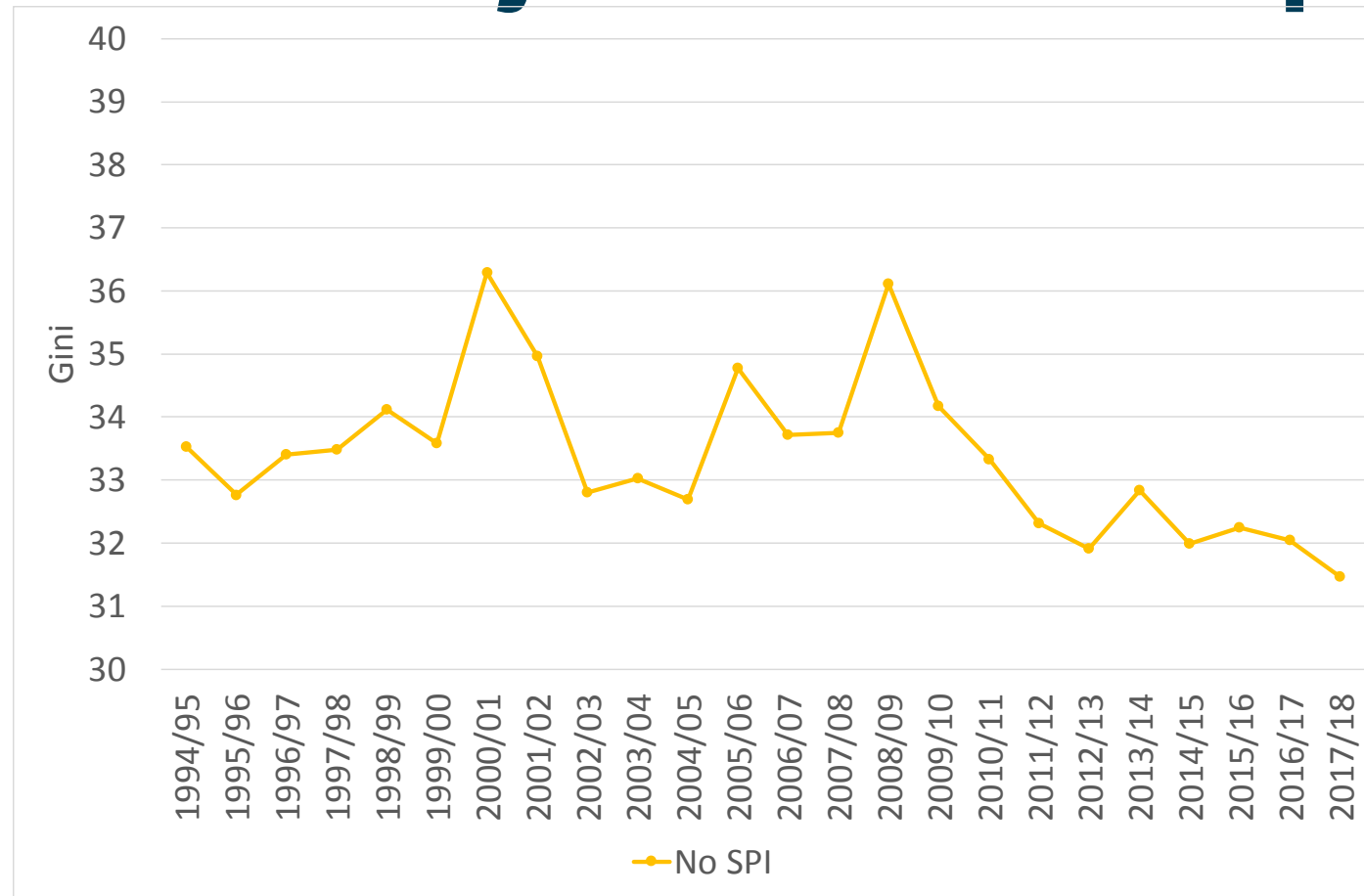
- Replace a fixed top proportion of the survey data with averages from the SPI
 - This tackles under-reporting of incomes by individuals, as well as volatility
- Regresses so number of 'rich' households agrees with SPI
 - This tackles under-coverage of 'rich' households

Details of current adjustment

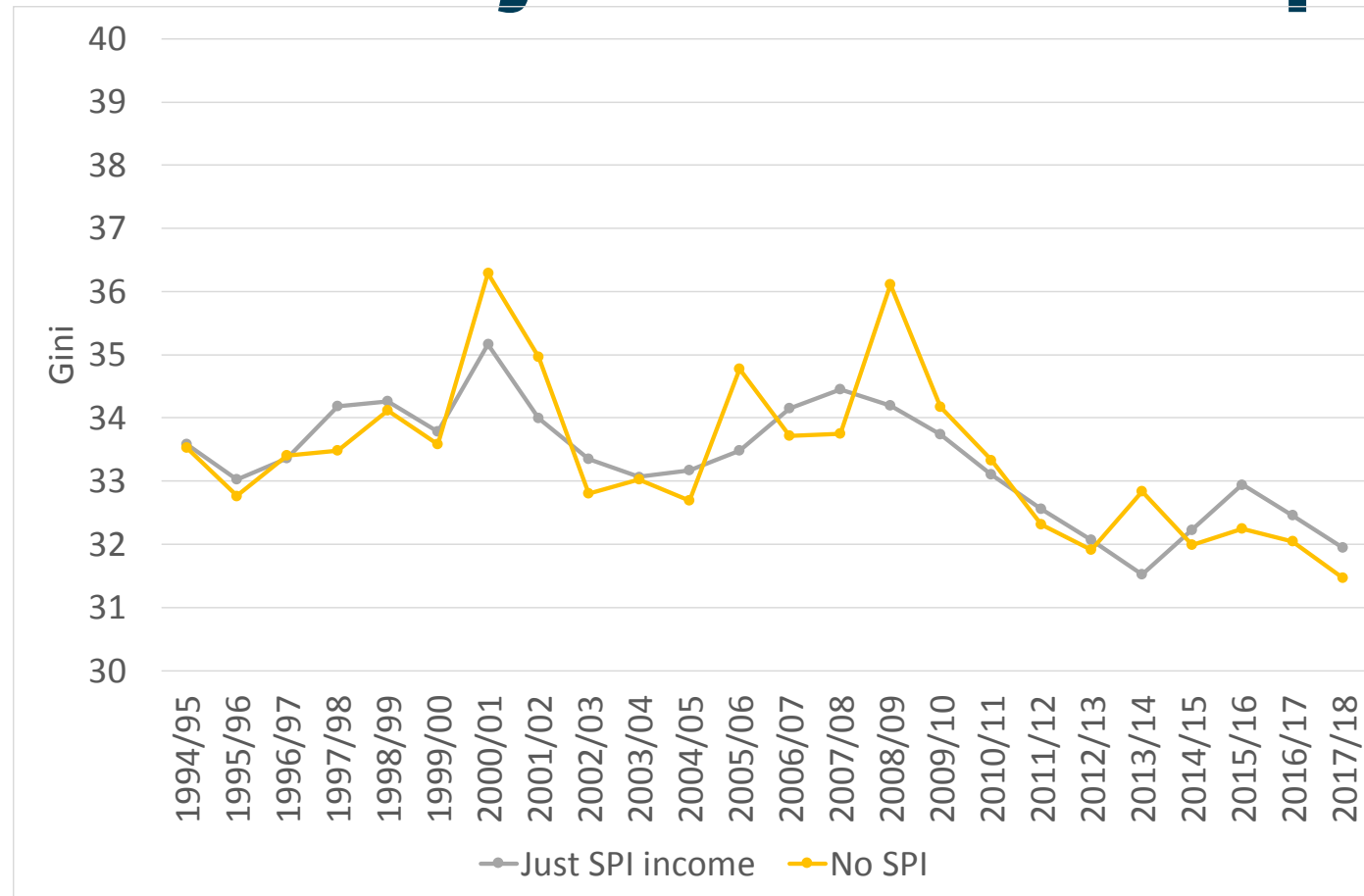
We currently 'SPI adjust' separately for:

- Top 0.36% of non-pensioner adults
 - Separately for GB and NI
- Top 1.16% of pensioners
 - Separately for GB and NI

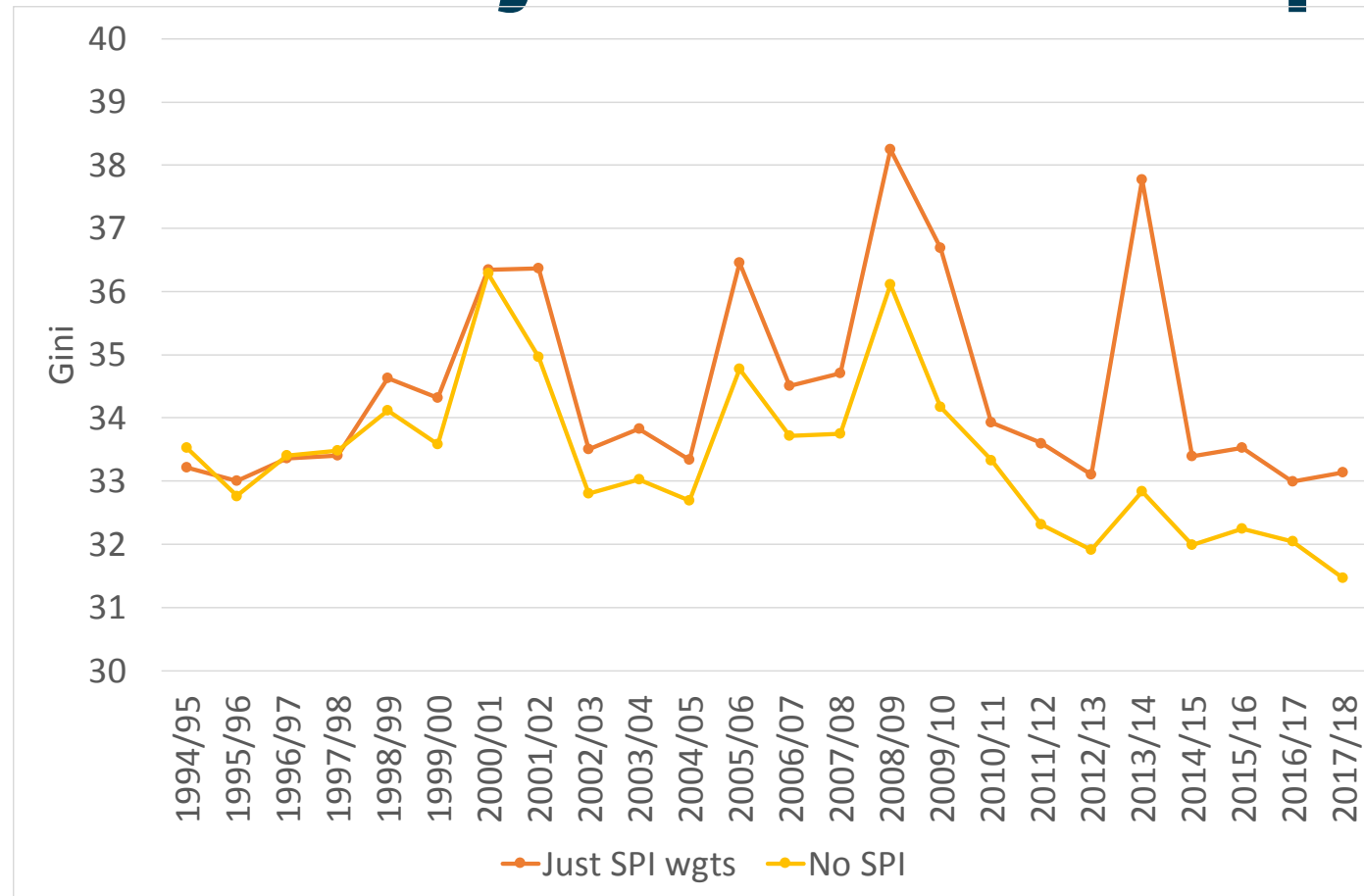
Top income adjustment - impacts



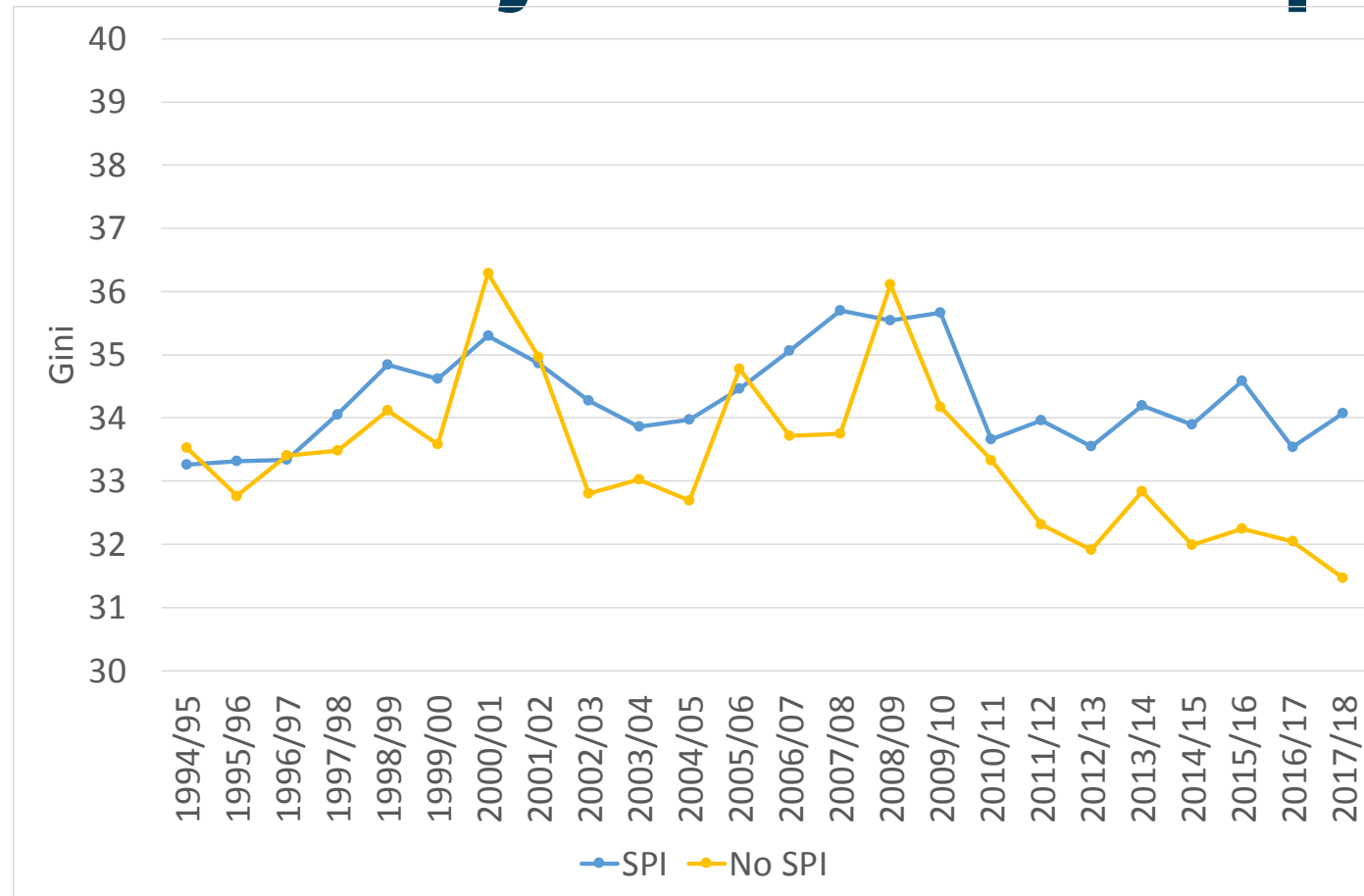
Top income adjustment - impacts



Top income adjustment - impacts



Top income adjustment - impacts



Proposed new top income adjustment

Analysis on ONS data

Developing new adjustment:

Criteria:

- 1) methodologically sound, based on academic standards
- 2) transparent and understandable by users
- 3) adjustment is made on underlying microdata rather than aggregates

Builds on methods implemented by DWP and later adapted by Burkhauser *et al.* (2018)

How it works – quantile method

- 1) Rank ETB and SPI data by gross income
- 2) Decide a threshold, and size of quantile groups above threshold, e.g. 96% threshold, 0.5% quantile groups

Effects of taxes and benefits data

9th decile										10th decile									
81st	82nd	83rd	84th	85th	86th	87th	88th	89th	90th	91st	92nd	93rd	94th	95th	96th	97th	98th	99th	100th

Survey of personal income data

9th decile										10th decile									
81st	82nd	83rd	84th	85th	86th	87th	88th	89th	90th	91st	92nd	93rd	94th	95th	96th	97th	98th	99th	100th

Effects of taxes and benefits data (adjusted)

9th decile										10th decile									
81st	82nd	83rd	84th	85th	86th	87th	88th	89th	90th	91st	92nd	93rd	94th	95th	96th	97th	98th	99th	100th

3) Impute the mean average for each SPI quantile group onto individuals in equivalent survey quantile groups

- 4) Results in dataset which represents original data, but incomes at top are adjusted to represent the top data

How it works – reweighting method part 1

- 1) Rank ETB and SPI data by gross income
- 2) Decide a threshold, and size of quantile groups above threshold, e.g. 98% threshold, 1% quantile groups

Effects of taxes and benefits data

9th decile										10th decile									
81st	82nd	83rd	84th	85th	86th	87th	88th	89th	90th	91st	92nd	93rd	94th	95th	96th	97th	98th	99th	100th

Survey of personal income data

9th decile										10th decile									
81st	82nd	83rd	84th	85th	86th	87th	88th	89th	90th	91st	92nd	93rd	94th	95th	96th	97th	98th	99th	100th

£100,000
£140,000

£100,000
£140,000

- 3) Calculate income boundaries for quantile groups in SPI
- 4) Create bands in ETB using these boundaries

Effects of taxes and benefits data

																		1	2
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How it works – reweighting method part 2

5) Impute the mean average for each SPI quantile group onto individuals in equivalent survey bands

Survey of personal income data

9th decile										10th decile										
81st	82nd	83rd	84th	85th	86th	87th	88th	89th	90th	91st	92nd	93rd	94th	95th	96th	97th	98th	99th	100th	

Effects of taxes and benefits data



Effects of taxes and benefits data



7) Reweight rest of dataset to population totals

Effects of taxes and benefits data



8) Results in dataset with top incomes adjusted and reweighted to match top of SPI data

6) Reweight ETB bands, so that their weights are the same as the SPI quantiles

Things to note:

- Both methods impute separate SPI incomes for retired and non-retired individuals
- For most recent years (2016/17 and 2017/18) projected SPI data is used as full outturn data is not yet available
- There is currently no SPI data available for 2008/09

To be determined about adjustment:

- Threshold – How far down should data be adjusted?
95%-99%.
- Width – What size should the quantile groups be?
0.25%,0.5%,1%.
- Method – Quantile or reweighting?

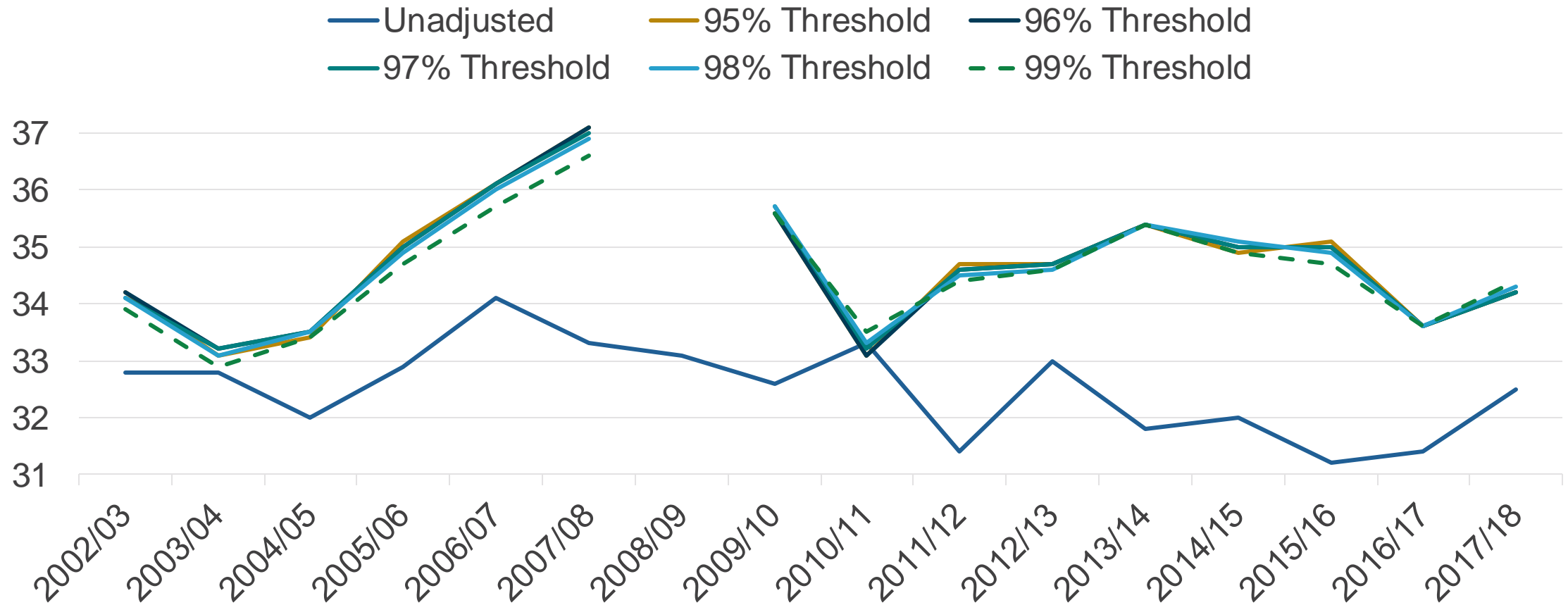
Effect on ETB estimates

The impact of including a top income adjustment on ONS' data

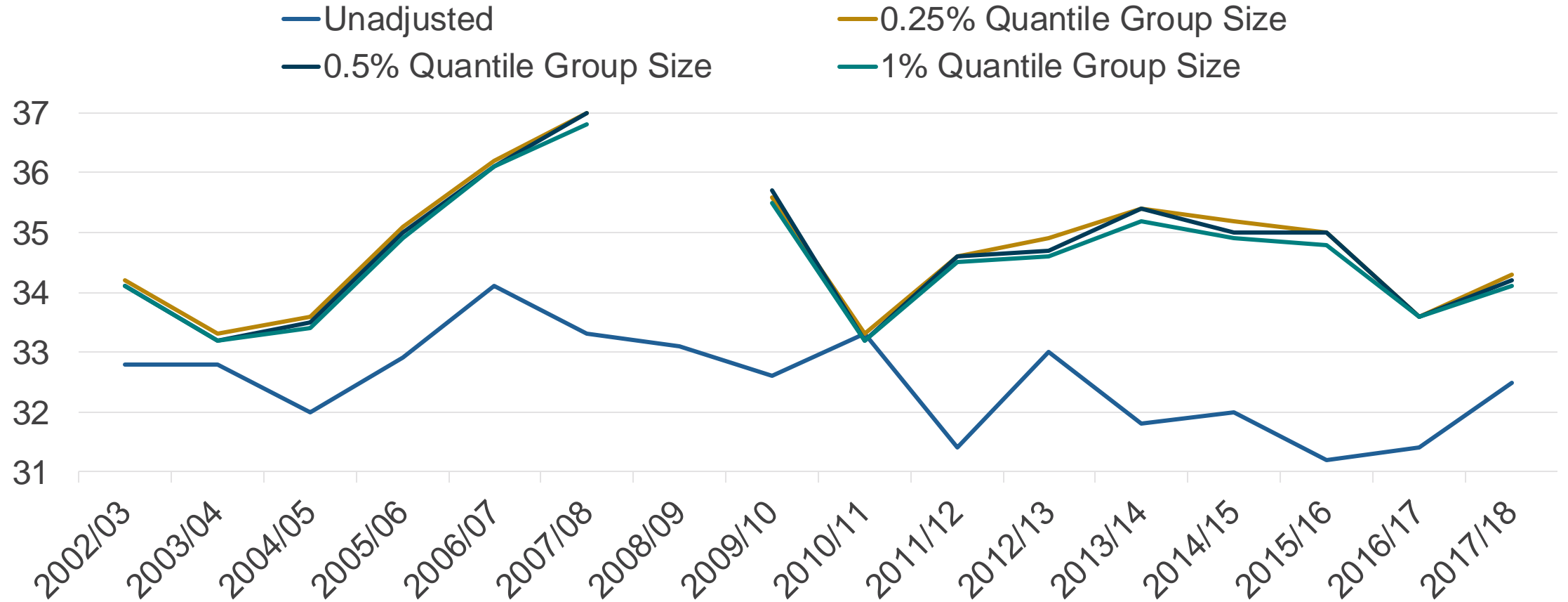
Increase in top earners' income and inequality

- Large change in measures of inequality and top decile income regardless of method of adjustment
- Variation by adjustment type needs exploring to know what best method is

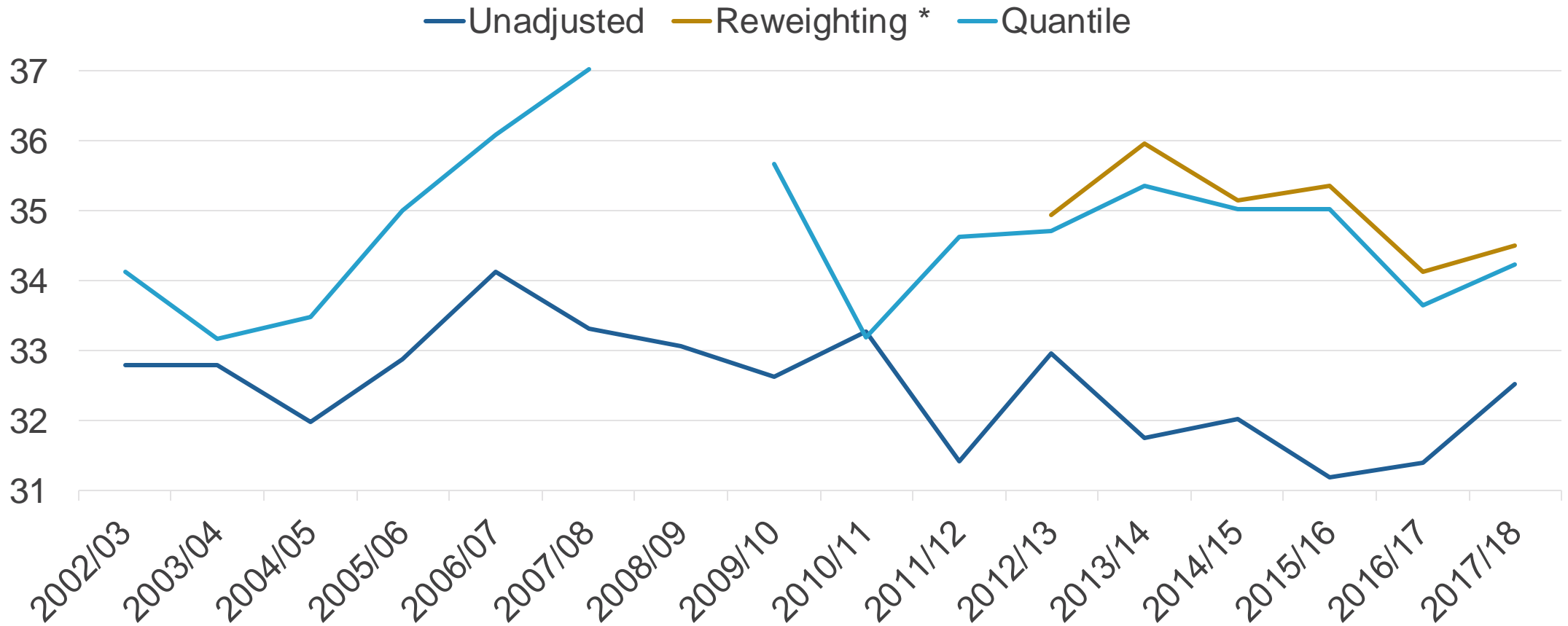
Different thresholds – Gini of ETB disposable income



Different widths – Gini of ETB disposable income

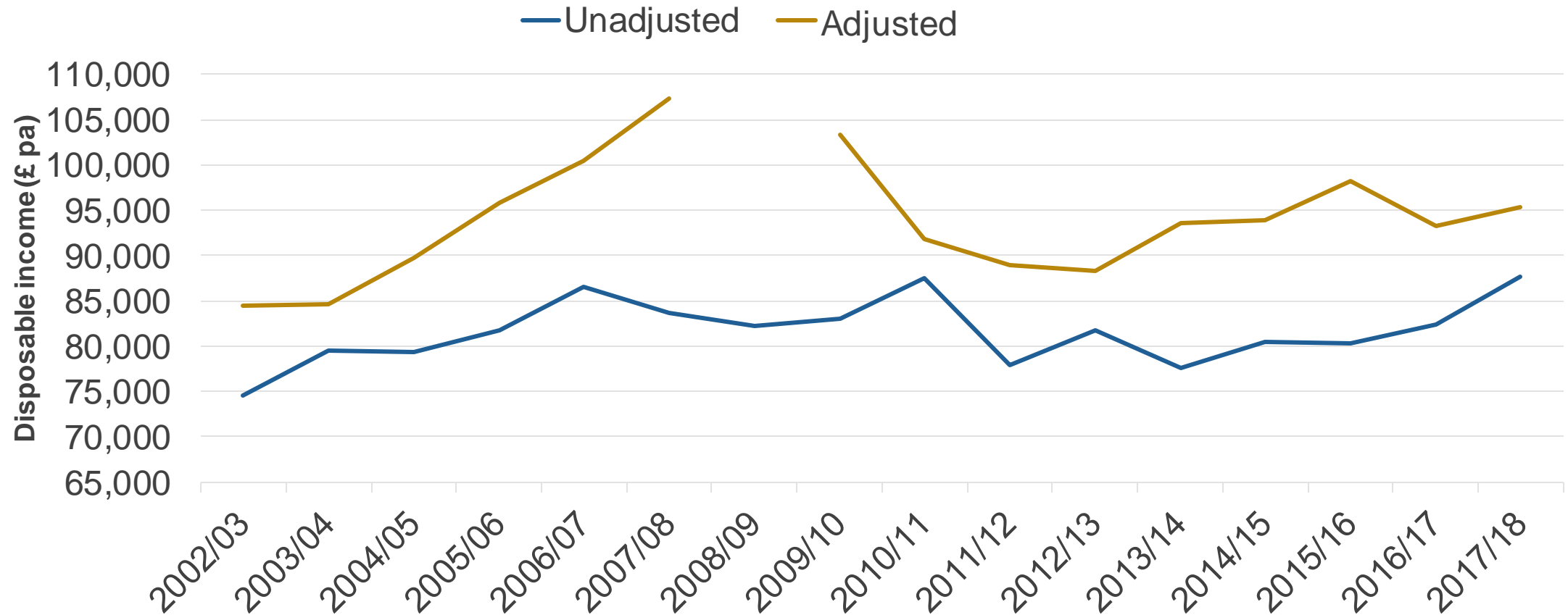


Different methods - Gini of ETB disposable income

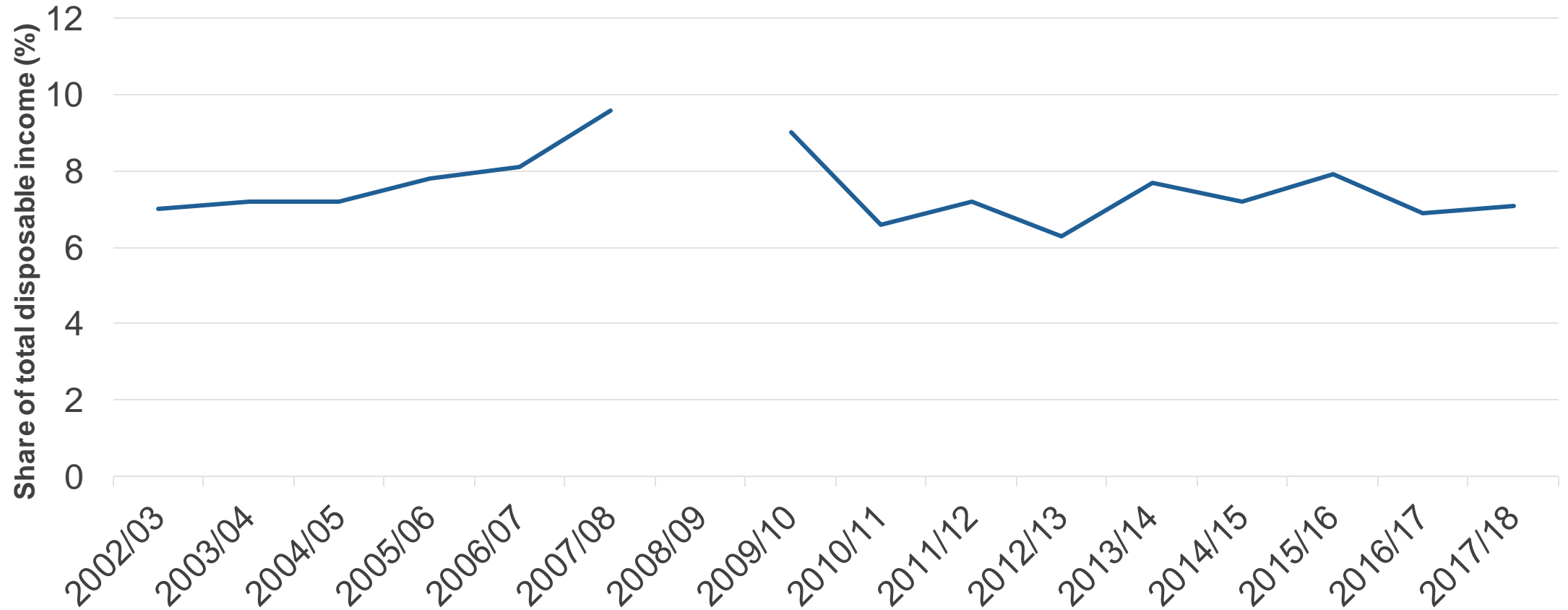


*Reweighting method is not finalised

Adjusting increases average income of the top decile

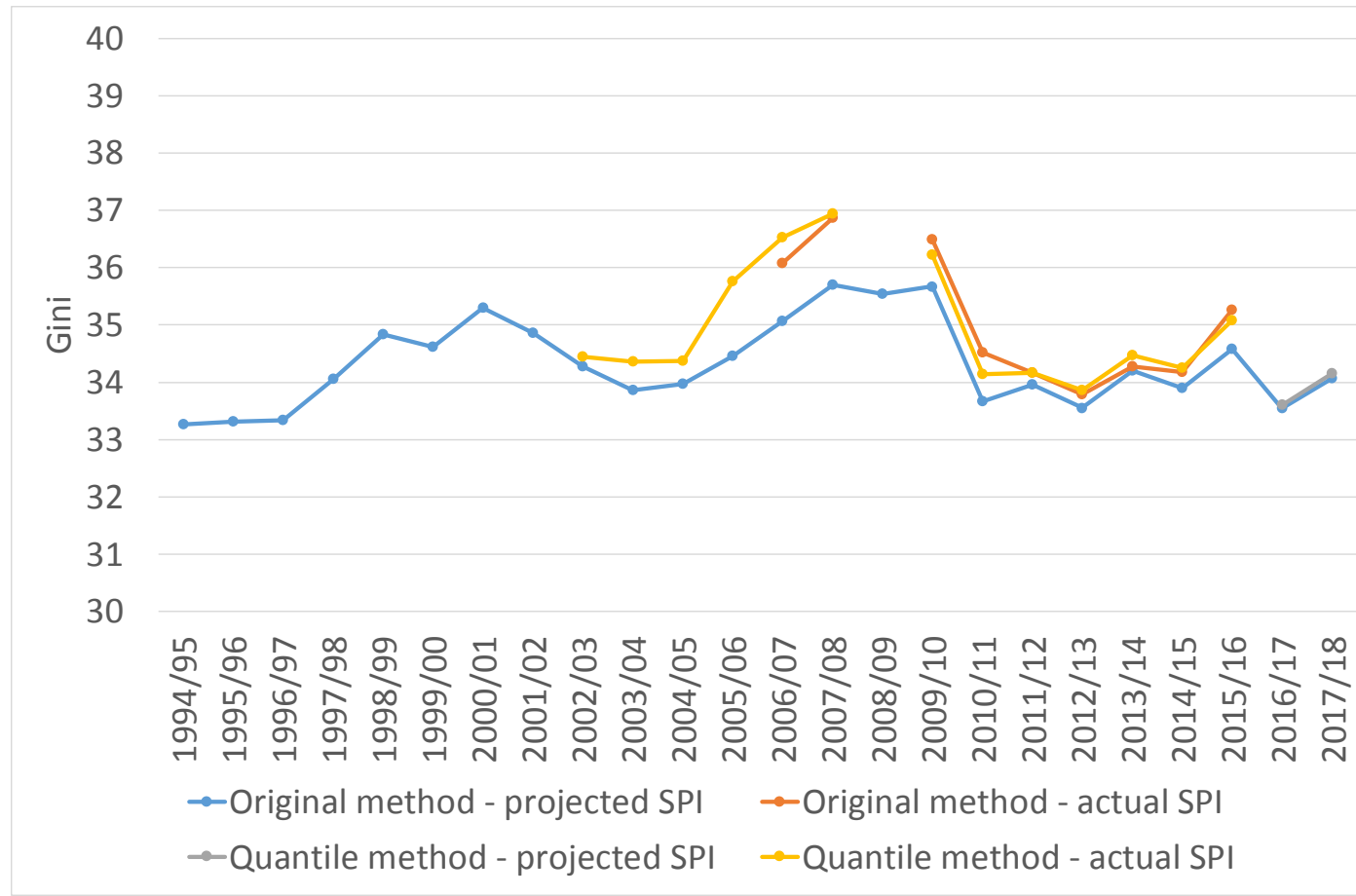


Adjusting allows new analysis – income share of top 1%



Effect on DWP's results

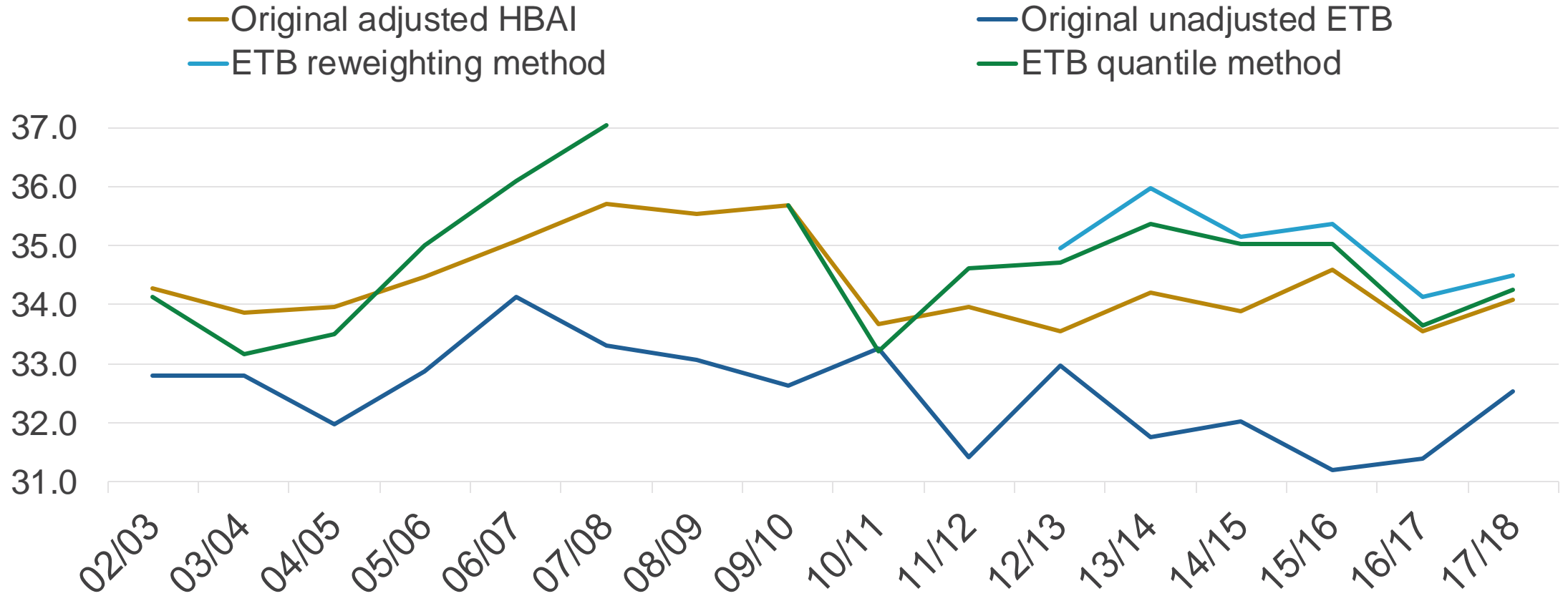
Different methods and SPI data options compared



Small increases in inequality

- Going from the current method to the quantile method or using outturn rather than projected SPI both increase the Gini by similar orders of magnitude
- Trends are less affected

Comparing HBAI and ETB



Future outlook

Future work:

- Article was released on the ONS website at the end of February
- Hoping to publish joint ONS/DWP ESCOE paper
- Top income adjustment to be included in ONS' headline income statistics for 2018/19 data
- Adjustment hoped to be applied to whole time series