

Nowcasting household income in the UK

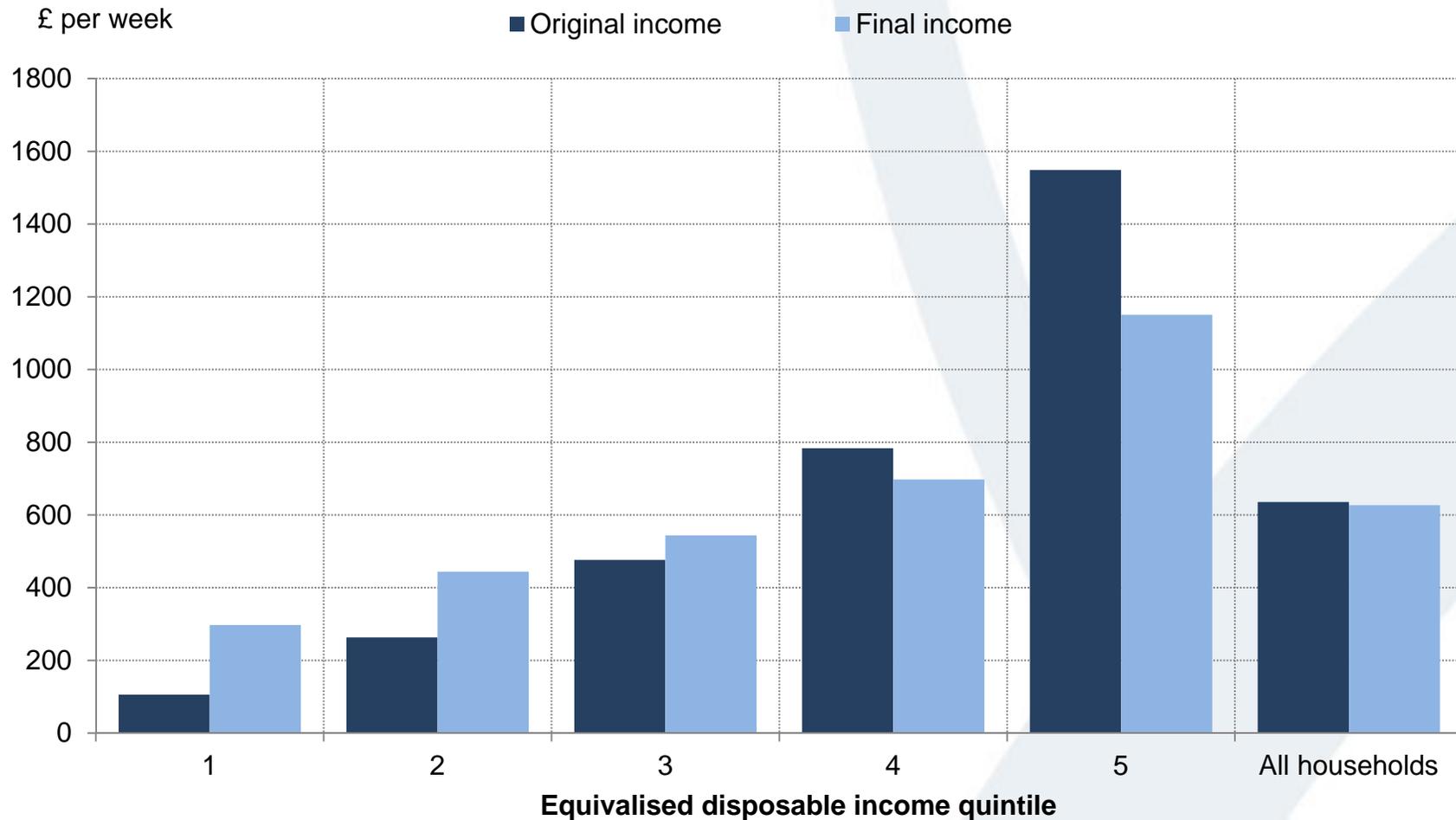
Sofiya Stoyanova & Richard Tonkin
Family Finance Survey User Day – 1st July 2015

Measuring Economic Well-being

- ONS's annual article The Effects of Taxes & Benefits article published 29 June 2015
 - Provides important insights into distributional impact of government policy on taxes and benefits
 - Provide a consistent time series of key measures (e.g. median disposable income) going back to 1977

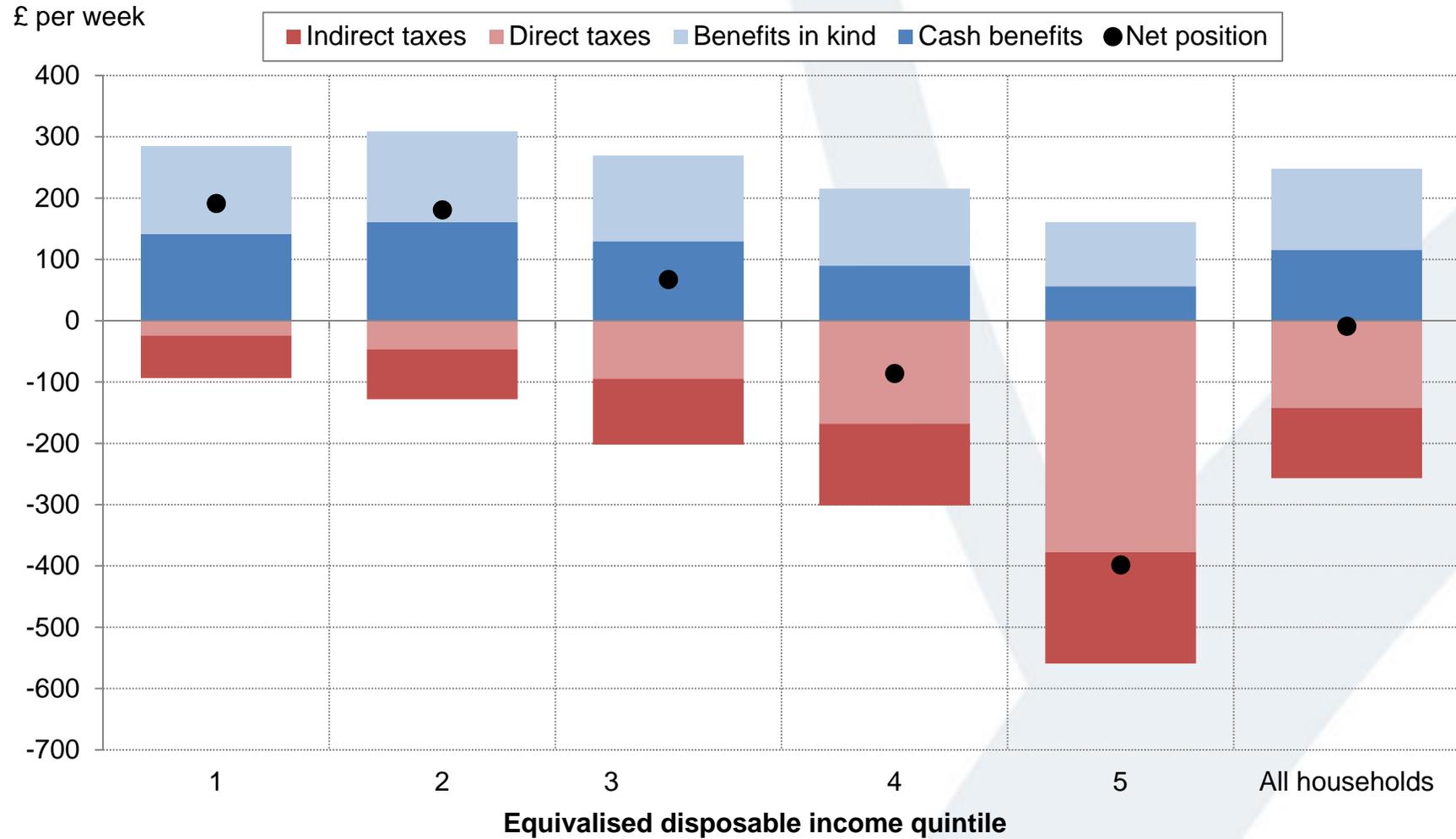
Headlines: Effects of Taxes & Benefits

The effects of taxes and benefits on household income by quintile groups, 2013/14



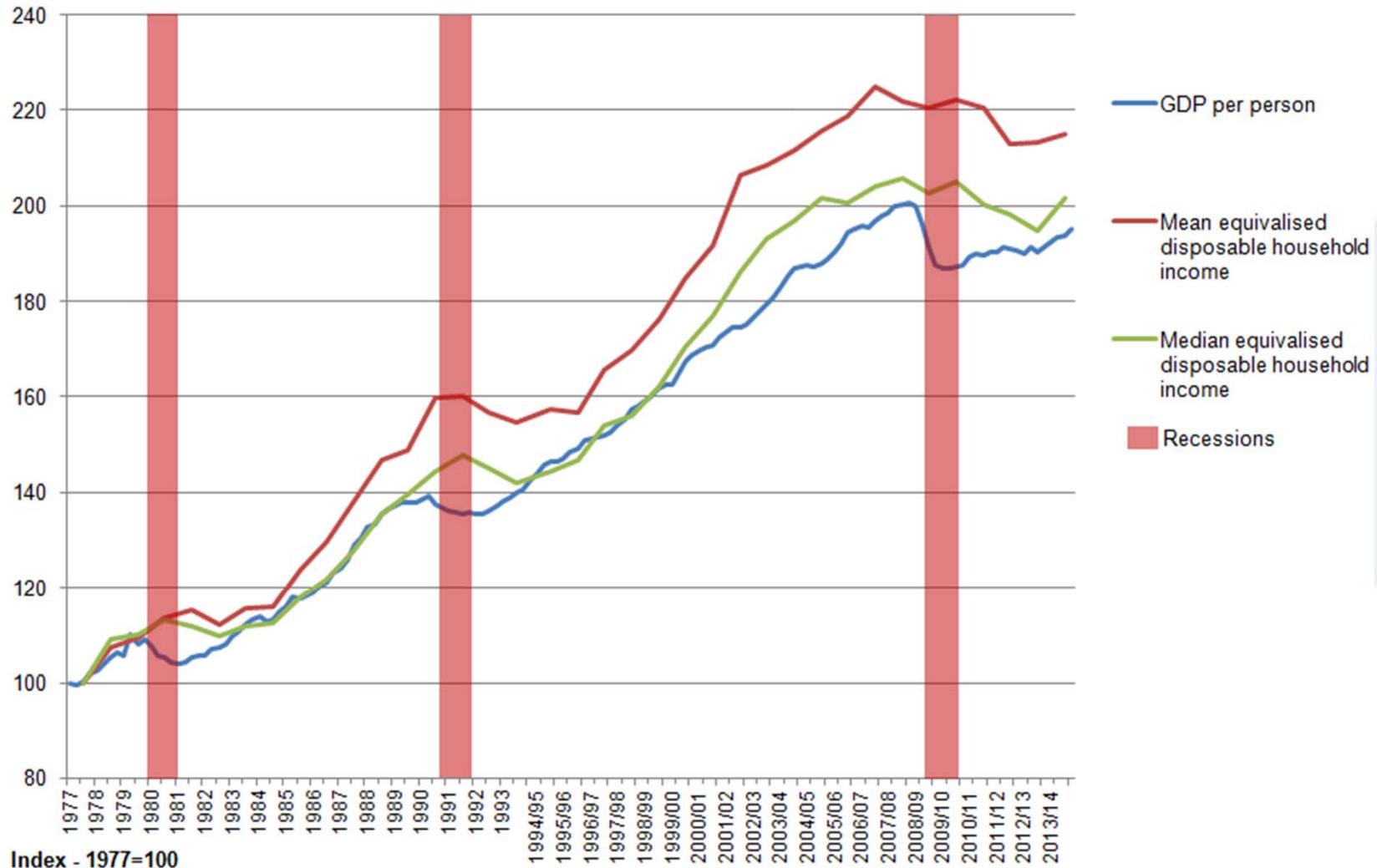
Headlines: Effects of Taxes & Benefits

Summary of the effects of taxes and benefits on all households, 2013/14



Headlines: Effects of Taxes & Benefits

Change in median and mean equivalised disposable income & GDP per person, UK, 1977-2013/14



Source: ONS

Measuring Economic Well-being

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 - Provides important insights into distributional impact of government policy on taxes and benefits
 - Provide a consistent time series of key measures going back to 1977
- In assessing economic well-being / material living standards, it's important to look at experience of the "typical" household and distribution of income
 - See, for example, OECD, 2013; ONS, 2014; Stiglitz et al., 2009
- Median equivalised household disposable income therefore one of key measures on in ONS's Quarterly Economic Well-being release
 - Latest release published 30 June 2015

Economic Well-being indicators: Q1 2015



Measuring Economic Well-being

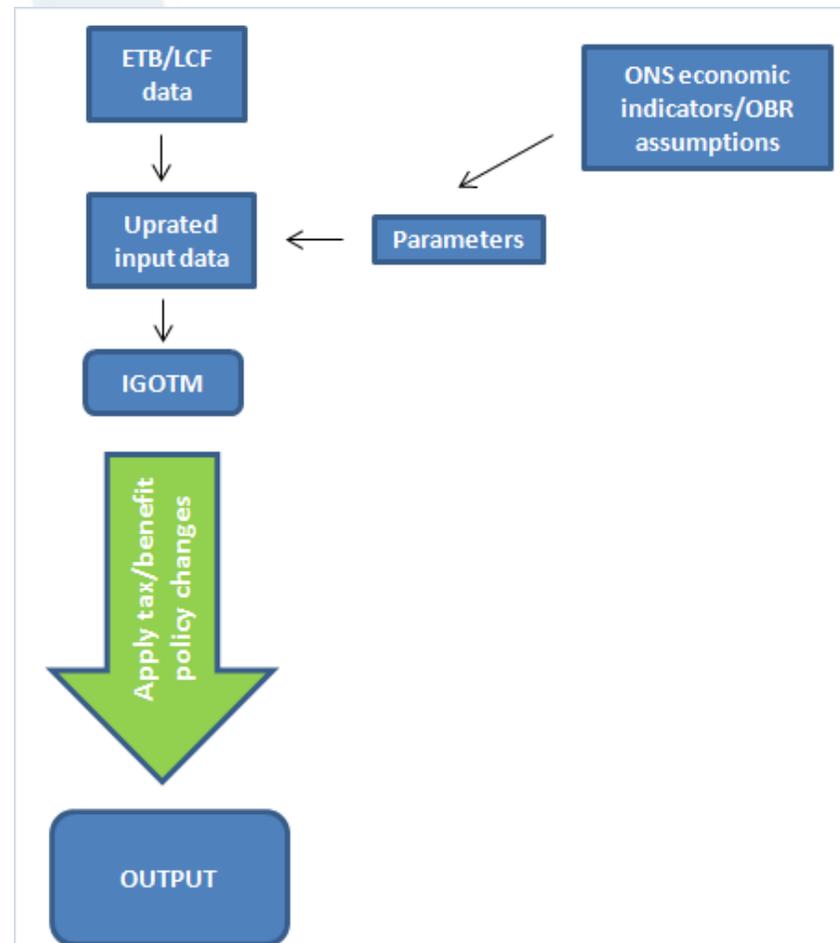
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- Median equivalised household disposable income therefore one of key measures on in ONS's Quarterly Economic Well-being release
 - Latest release published 30 June 2015
- Latest median income data available for 2013/14
- Other measures (e.g. RHDI per capita) timely but don't reflect distribution

Nowcasting household income

- In response to considerable user feedback, ONS investigating 'nowcasting' techniques to provide early estimates of key ETB indicators:
 - Median equivalised disposable income
 - Distributional measures
- Initial methodological article was published today (1 July 2015)
- This is a work in progress!!
 - Not intending to present finalised methodology or definite proposals for future publication
 - Aim is to share progress to date and get feedback on methodology and further understand user requirements

Data sources

- Nowcast data built upon Inter Governmental Tax and Benefit Model (IGOTM) – micro-simulation built and maintained by HM Treasury
 - Uses ETB and LCF data provided by ONS.
- 2008/11 data used for 2013/14 nowcasts in initial report in order to provide robust test of methodology.
- Future work will use more up to date base data where available.



Methodology: Uprating financial variables

- First step is to uprate income microdata to year for which nowcast estimates are being produced
 - Use published series produced by ONS & others for periods where actual data available
 - IGOTM uses OBR forecasts for later periods
- Earnings uprating based on ASHE data for earnings growth across distribution, plus latest average earnings estimates from National Accounts
 - Individual employees assumed to be paid at least NMW
- Other financial variables:
 - Income from self-employment & odd jobs uprated in line with average earnings
 - Income from private pensions & annuities uprated by RPI
 - Income from main government benefits uprated by CPI or other values as appropriate

Methodology: Policy changes

- Data run through IGOTM
 - Rules of tax & benefit system for relevant year applied
 - Model calculates how much direct and indirect taxes due & level of benefits would be received
 - Rules applied at individual, benefit unit or household level as appropriate
- Tax & benefit changes in 2013/14 included:
 - Benefits for working age people including JSA, Income Support & ESA increased by 1%
 - Benefits received by disabled people & pensioners (including DLA & Attendance Allowance) increased in line with CPI (2/2%)
 - State Pension increased by 2.5% due to the 'triple lock'
 - Households deemed to be under-occupying socially rented accommodation had Housing Benefit reduced
 - First full year of High Income Child Benefit Charge
 - Benefits cap for people aged 16 to 64 in England, Scotland & Wales
 - Personal allowance for under 65s increased from £8,105 to £9,440.
 - Council tax frozen in Scotland & many local authorities in England

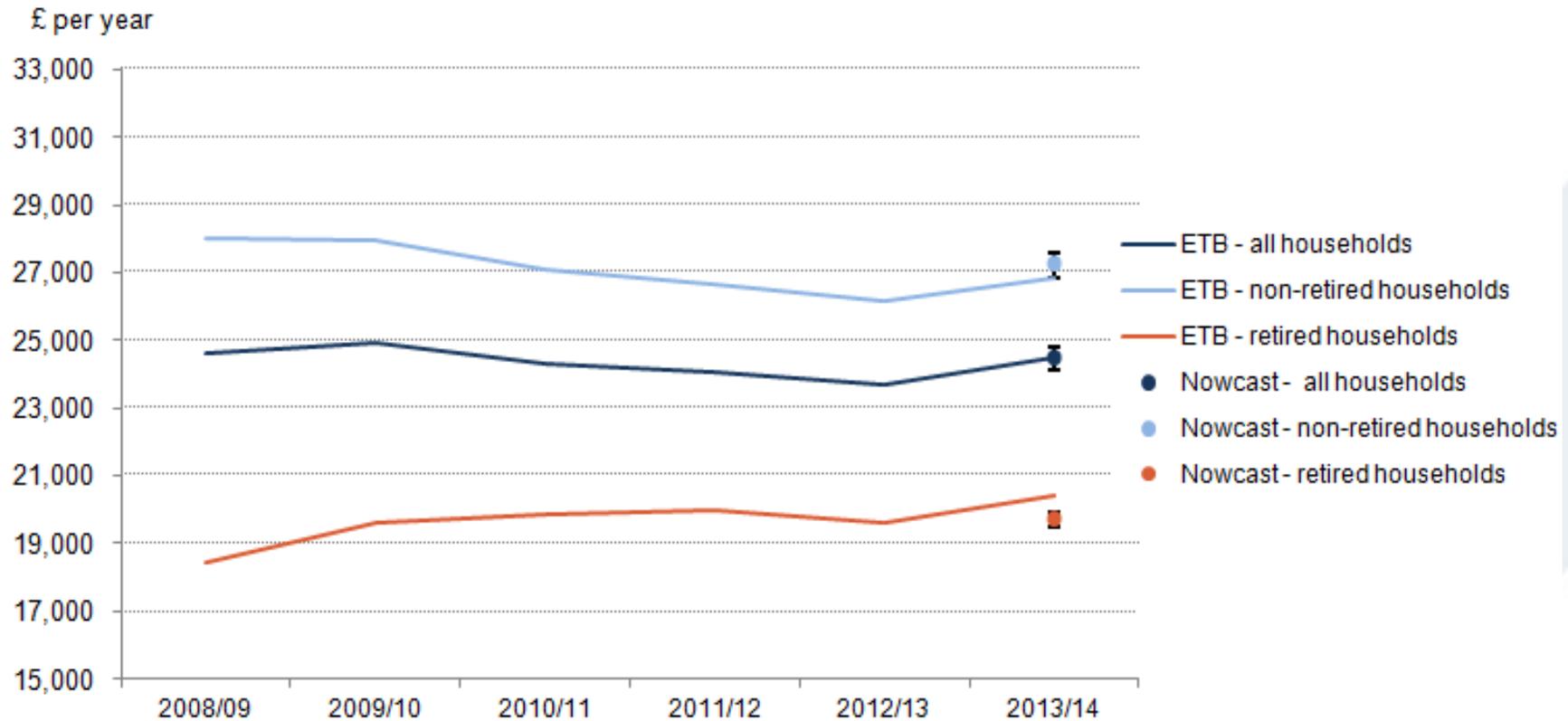
Methodology:

Labour market & demographic changes

- Recalibrate original ETB weights to account for shifts in labour market participation and demographic characteristics of population
- Number of different calibrations tested
 - Tempting to introduce many constraints, but this can lead to extreme weights
- Calibration variables used for results presented today:
 - Region / country (12 categories)
 - Age/sex (22 categories)
 - Economic status (5 categories) – Self-employed, employee, unemployed, retired/unoccupied & under 16
- Totals for economic status from Annual Population Survey

Initial results: Median income

Median equivalised disposable income – published & nowcast estimates (2013/14 prices)



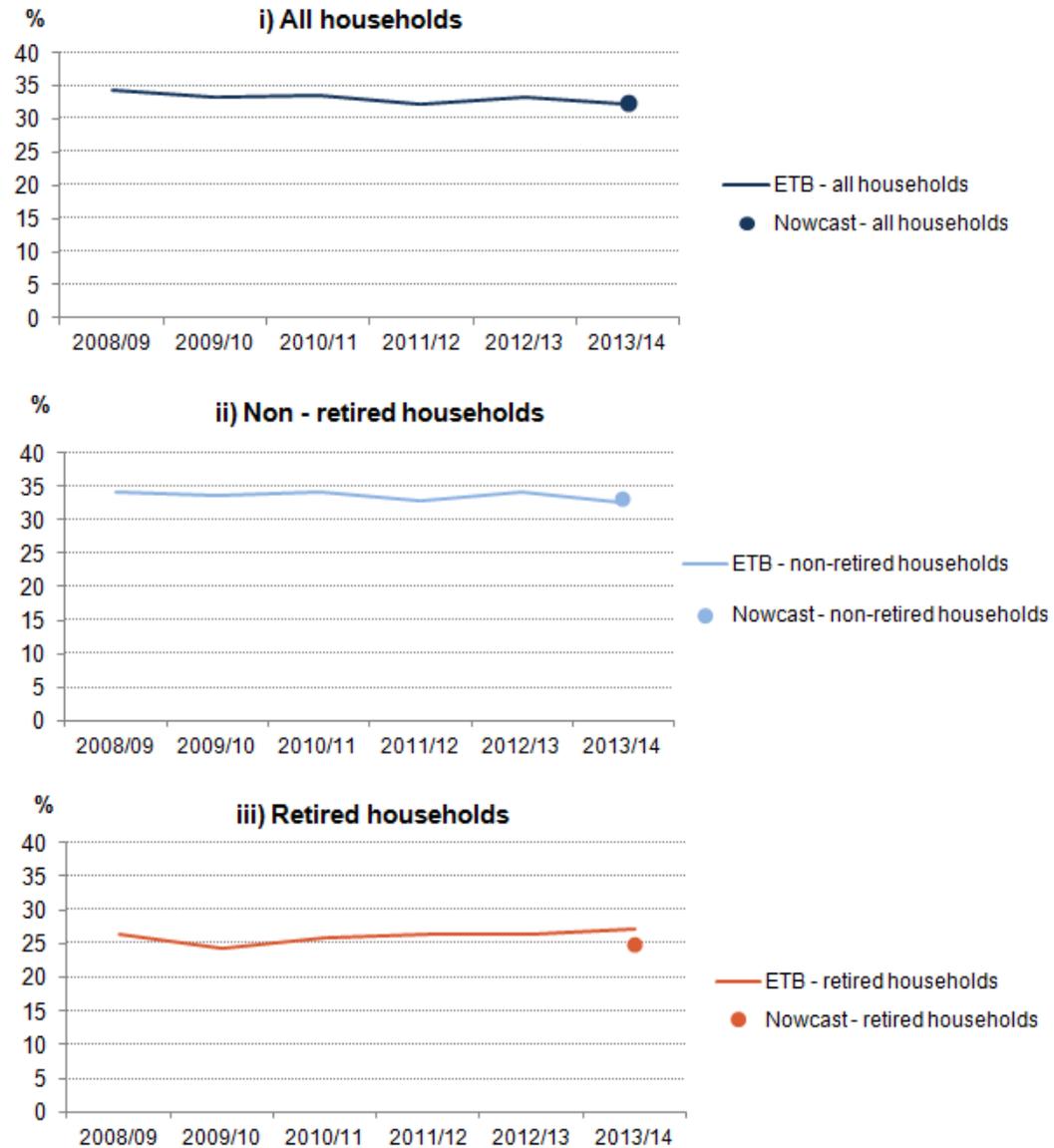
1 Using the modified-OECD scale.

2 All income figures have been deflated to 2013/14 prices using an implied deflator for the household sector.

Initial results: Gini coefficient

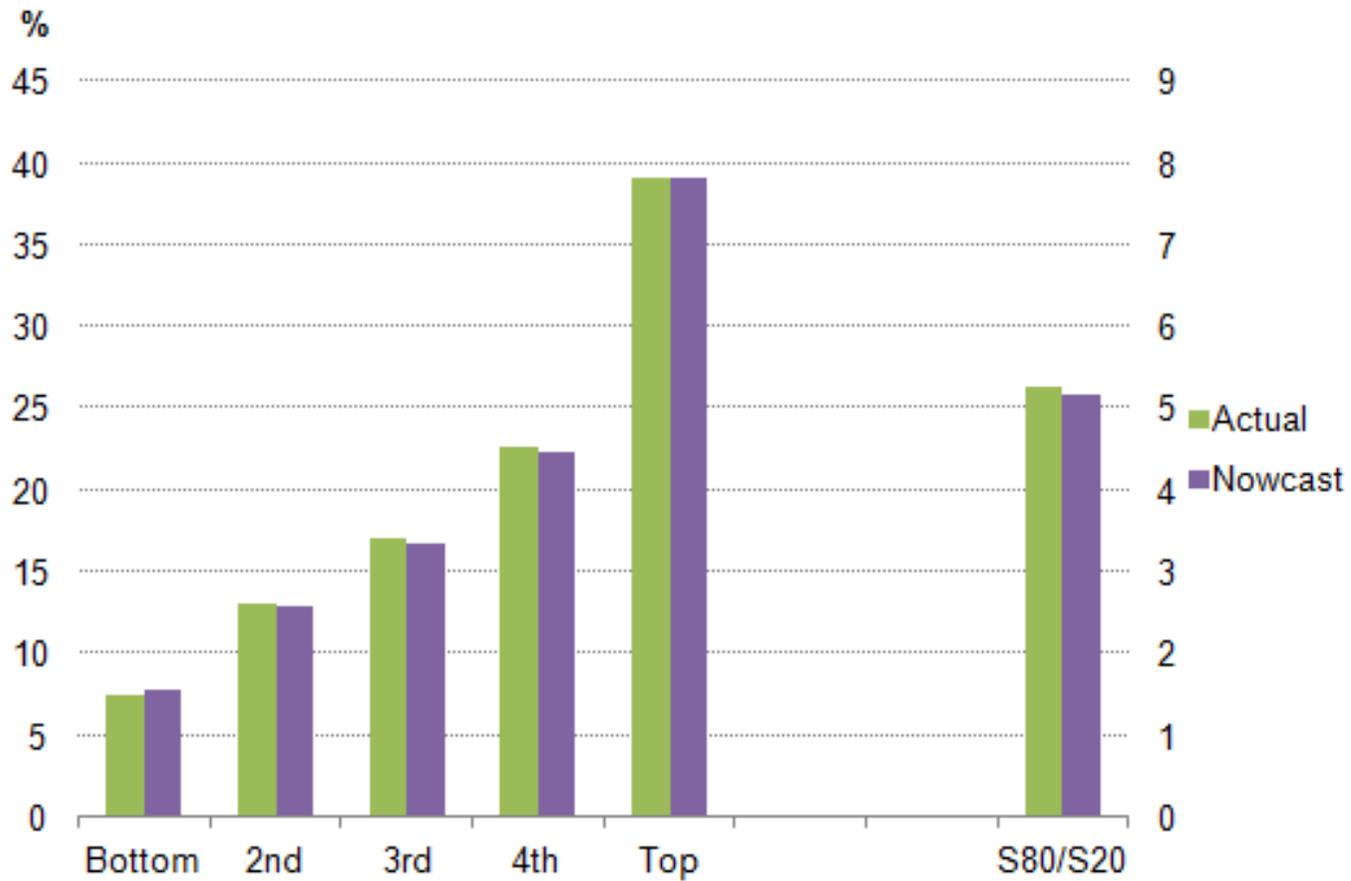
Gini coefficient: Equivalised disposable income: Published and nowcast estimates

- Nowcasts for all households & non-retired closely match published estimates.
- Recent increase in inequality among retired households not fully reflected in nowcasts
 - Nowcasts underestimate recent substantial growth in income from private pensions & annuities



Initial results: Quintile shares

Quintile shares & S80/20 ratio: Published and nowcast estimates



Conclusions

- Clear user demand for more timely data
- Key issue: Can nowcasting provide sufficiently robust early/provisional estimates?
- Tested variety of approaches in developing initial methodology
- Results of initial methodology promising:
 - Many 2013/14 nowcasts of key indicators very close to published estimates – particularly all households & non-retired households
- But more work is needed:
 - Nowcast figures for retired households less close to published estimates – not fully reflecting growth in private pension income (cohort effect?)

Caveats

- Accuracy of any nowcast dependent on:
 - Choice of uprating indices
 - Accuracy with which microsimulation techniques reflect impact of tax/benefit changes
 - Control totals used to re-calibrate weights
- Nowcast based estimates cannot perfectly reflect changes in distribution, particularly for small population subgroups
 - Behavioural responses to policy changes not necessarily fully reflected
 - Certain income sources may follow different trends during periods of crisis / across regions
- As with any statistics, need to take into account limitations
 - Survey based distributional data also estimates, with sampling error and various sources of non-sampling error associated with them

Next steps

- Over Summer 2015:
 - Update base data to more recent reference period
 - Consider ways to better account for changes in income from private pensions
 - Consider whether to introduce additional calibration constraints
 - Examine use of nowcasting to produce rates of growth/change rather than point estimates
- In considering next steps, keen to get feedback from:
 - Those with experience/expertise on nowcasting on refining methodology
 - Potential users in order to better understand needs and ensure fit for purpose
- Feedback welcome at any time, but anything received by 30 July 2015 particularly helpful!
 - Richard Tonkin: richard.tonkin@ons.gsi.gov.uk or 01633 45 6082