Office for National Statistics

A Guide to Sources of Data on Earnings and Income

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Official Statistics

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The Government Statistical Service (GSS) is a network of professional statisticians and their staff operating both within the Office for National Statistics and across more than 30 other government departments and agencies.

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A Guide to Sources of Data on Earnings and Income

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Introduction:

The following document aims to outline the different data sources and outputs that feed into the analysis of earnings and income within the UK.

It would be pertinent first to outline the different stages of earnings and income and to explain how these various stages can be calculated and how they fit together.

The best place to start is with **Earnings**. In this article Earnings refer to that received by employees in return for employment. Most analyses of earnings consider only **gross earnings**, which is earnings before any changes are made in light of taxes (including National Insurance Contributions (NIC's)) and benefits.

From gross earnings we can also look at two similar measures. Firstly **take-home pay** refers to the earnings received by an employee after they have paid tax on their earned income, typically referred to as "Income Tax", and after their Employee National Insurance Contributions have been deducted. This is typically what is paid into an employees' bank account. Measuring take-home pay can be particularly challenging and so some of the estimates and measures outlined in this paper may not adhere precisely to the definition above. For instance the deduction of student loan repayments may or may not be included depending on which source is being considered.

Alternatively, from the point of view of the employer, we can also consider **labour costs**. These typically refer to the gross earnings paid by a business (wage costs), plus a number of non-wage related costs such as Employer National Insurance Contributions; pension contributions and benefits in kind paid by the employer.

Returning back to the starting point of **gross earnings** we can then consider how earnings feed into **income**.

Combining employee earnings with those of the self-employed, along with private pensions and other sources such as, income from investments gives **original income.** Then adding cash benefits to original income, such as the state pension, child benefit or Jobseekers Allowance, gives **gross income**.

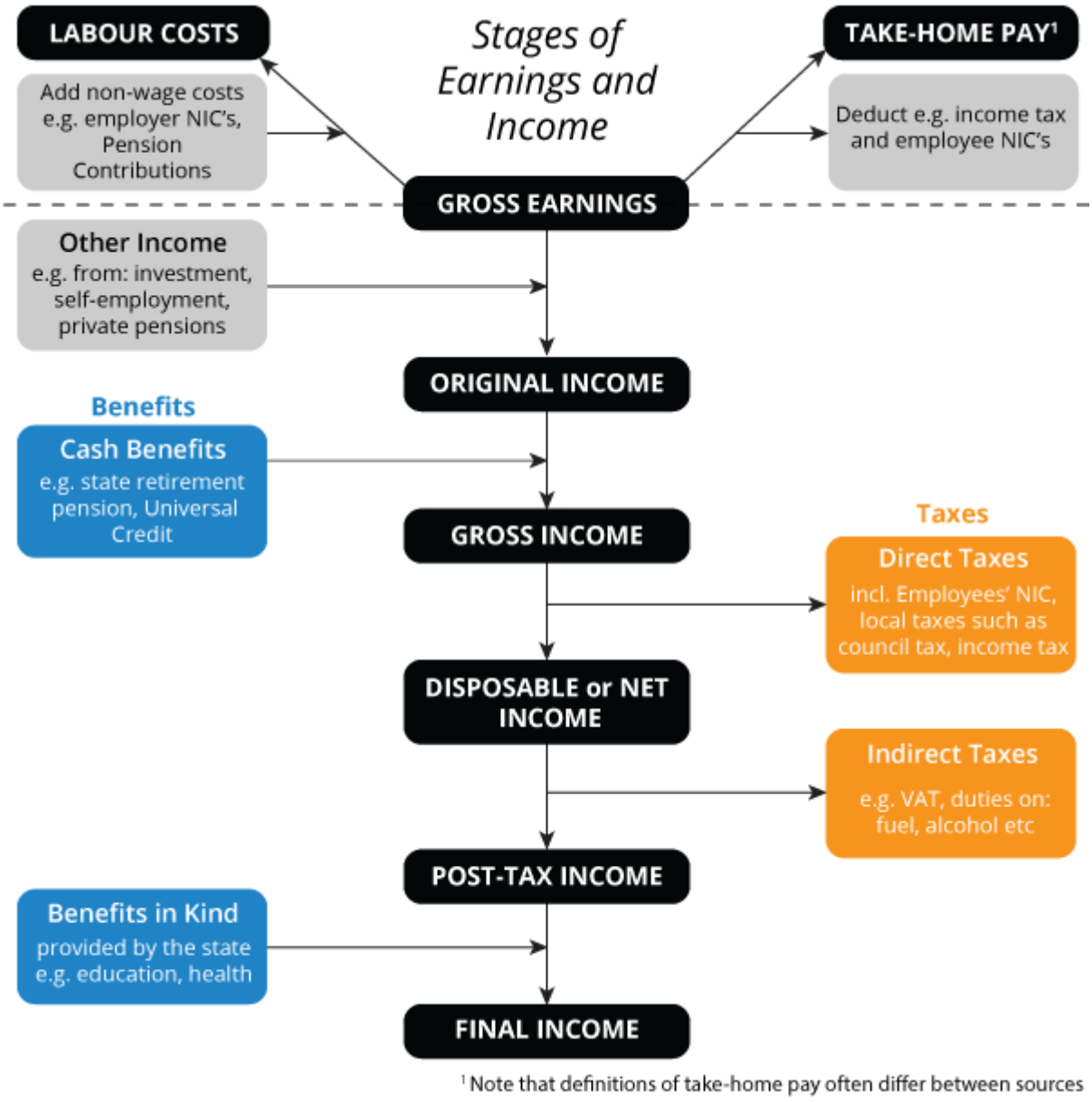
From gross income we then consider deductions. Firstly subtracting direct taxes (e.g. income tax), Employee National Insurance Contributions and Council Tax/NI Rates, leaves **disposable** or **net income**. Then further deductions of indirect taxes (where the tax is typically levied on one entity but paid by another) like VAT and duties on alcohol, tobacco etc. result in what is referred to as **post-tax income**.

Finally we add in benefits in kind paid by the state such as health and education which are allocated on the basis of household characteristics. This leaves us with **final income**.

Earnings and income data are often collected and analysed at different levels. Typically earnings data concern individuals. This is because it is relatively easy to attribute earnings from employment to each employee. On the other hand income data is often considered at both the individual and the household level. This is because many forms of government intervention, particularly cash benefits,

are often assessed at the benefit unit[1] level and are therefore more difficult to attribute to individual household members. Income statistics that are considered at the household level are also often adjusted or 'equivalised' to account for the fact that different sized households require and generate different levels of income. Equivalisation then allows for comparisons to be made across households with differing compositions (e.g. comparing a single-person household with a household containing a family of four).

The stages of earnings and income are summarised in the graphic below.



[1] A household may consist of one person living alone or a group of people (not necessarily related) who live at the same address that share cooking facilities and share a living room, sitting room, or dining area. A household will consist of one or more benefit units/families. A family or benefit unit consists of a single adult or a couple living as married and any dependent children

The Office for National Statistics (ONS) and a number of Government Departments are responsible for collecting data and publishing analysis on all these stages of earnings and income, often with more than one survey or publication covering any given stage. This paper will go on to outline many of the different sources available at the different stages, pointing out what they measure, their weaknesses and their strengths. The aim is that this document will make it easier for users of earnings and income data to select the most appropriate data source for their analytical needs.

Wages/Earnings

The sources in this section collect and/or publish data on **Gross Earnings** which is that paid to an employee in return for employment before any deductions are made. This section also covers sources of information on **take-home pay**. It should be noted that measures of take-home pay often differ conceptually between different data sources.

Average Weekly Earnings

Average Weekly Earnings can be found in the monthly labour market statistical bulletin, published by ONS under section 6 and also in the reference tables EARN01-EARN03

Average Weekly Earnings microdata are not publically available

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1. What exactly does it measure?

The Average Weekly Earnings (AWE) measure is the ONS's lead indicator of short-term changes in earnings. It replaced the Average Earnings Index (AEI) in 2010.

AWE is calculated from returns to the Monthly Wages and Salaries Survey (MWSS), a survey of 9,000 businesses covering 13.8 million employees. The MWSS captures information about each company's total wage bill and the number of people paid in the reference period. Having been weighted to the Great Britain level the total wage bill is then divided by the number of employees to give average weekly earnings.

AWE also reflects changes to the industrial composition of the workforce. For instance, all other things being equal, an increase in the relative number of employees in highly paid industries will cause average earnings to rise. This compositional effect, known as the employment contribution, was not captured by AWE's predecessor, the AEI. ONS publishes separate estimates of the wage and employment contributions to AWE growth in supplementary tables called the AWE decomposition.

2. What sort of information is usually published/what can we extract from the data?

AWE is published on a monthly basis as part of the Labour Market Statistics statistical bulletin. The section on AWE typically covers:

- the levels of average weekly earnings broken down into:
    - regular pay (excluding bonuses)
    - total pay (including bonuses)
    - bonus pay
- Average weekly earnings by sector (public and private).
- Average weekly earnings by industry.

These measures are typically available both before and after a seasonal adjustment. Seasonal adjustment is widely used in official statistics as a technique to interpret time-series data which would otherwise be distorted by seasonal factors that don't reflect underlying trends.

3. What are the key limitations?

The MWSS is a survey of employers and as such does not cover the self-employed. Nor does it cover HM Armed Forces or Government Supported Trainees. Furthermore it does not collect any information on individual employees' characteristics and as such does not allow analysis beyond sector and industry.

The MWSS also excludes businesses with fewer than 20 employees in order to limit costs and respondent burden. Employment figures for these businesses are taken from the Inter-Departmental Business Register (IDBR) while earnings are estimated using a factor from the Annual Survey of Hours and Earnings (ASHE), which does cover small businesses.

The composition effect captured by the AWE refers only to changes between industries. Therefore it does not capture compositional changes between occupation, age or changes within the same industry.

It should also be highlighted that AWE refers only to weekly earnings and so a relative increase in the prevalence of part-time working would indicate that average weekly pay was falling whereas average hourly pay may remain the same.

4. What are the key uses and strengths?

A key strength of using AWE is its frequency and timeliness with results being produced on a monthly basis, usually with a six to seven week gap between the end of the reference period and the publication date. This timeliness and frequency is why the AWE is the ONS lead indicator of short-term changes in earnings. It is the AWE measure of average earnings that is most often compared to measures of inflation to calculate changes in real earnings.

Another strength of AWE is its ability to capture bonus payments. With the MWSS being conducted monthly it captures bonus payments in every month of the year, with March often being the main month in which bonuses are paid. An article 'Average Weekly Earnings – Bonus Payments in Great Britain' is published on the ONS website once a year[2].

Given its strength in capturing bonus payments AWE is also used to supplement ASHE data in ONS estimates of public and private sector pay differentials[3]. ASHE data is adjusted at an industry level, in line with the AWE measures of bonuses. This is crucial given bonus payments are one of the key differences in remuneration between the public and private sectors.

[2] http://www.ons.gov.uk/ons/rel/awe/average-weekly-earnings/index.html
[3] http://www.ons.gov.uk/ons/rel/lmac/public-and-private-sector-earnings/index.html

Annual Survey of Hours and Earnings

The latest Annual Survey of Hours and Earnings publication can be found on the ONS website.

Due to the sensitive nature of ASHE microdata they are not available for download from the UK Data Service website but may be accessed through Secure Access arrangements. Access requires accreditation by the UK Statistics Authority as an Approved Researcher, completion of face-to-face training, and agreement to the Secure Access's User Agreement and Breaches Penalties Policy. For more information on access to ASHE microdata please see the UK Data Service website.

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1. What exactly does it measure?

The Annual Survey of Hours and Earnings (ASHE) provides information about the levels, distribution and make-up of earnings and hours worked for employees in all industries and occupations across the UK. ASHE and the New Earnings Survey (NES), which preceded it, have been collected every year since 1970 allowing for comparison over time. It should be noted that weighted data are available from 1997 onwards, prior to 1997 data are unweighted. Furthermore data prior to 1997 refers only to Great Britain; data from 1997 onwards covers the UK as a whole.

Businesses are surveyed in the April of each year and are asked to provide information on employees who fall within a one per cent sample of the HM Revenue and Customs (HMRC) PAYE Register taken in the January of the same year. ASHE data typically covers around 180,000 jobs from around 50,000 responding businesses.

2. What sort of information is usually published/what can we extract from the data?

The main ASHE publication is, as its name suggests, annual with the survey relating to April and publication taking place in the following November.

The main publication focuses on full-time employees on adult rates of pay and whose pay was unaffected by absence. It covers:

- Hourly, Weekly and Annual Earnings
- Distribution of Earnings
- Earnings trends (e.g. changes over time)
- Gender pay differences
- Public sector vs. Private sector
- full-time vs. part-time
- Earnings by:
    - Region
    - Age
    - Occupation
- The components of earnings (overtime, incentive pay etc.)

While the main release focuses on full-time employees the data covers part-time employees too such that they can be analysed separately or incorporated with full-time employees. Furthermore, where appropriate, analysis can also include those whose pay was affected by absence and/or those who were not on adult rates of pay.

Because the sample upon which ASHE is based doesn't change from year to year (except for new entries/retirees) ASHE datasets are combined to create a panel dataset. This dataset observes the same employees in each year that they are in employment and their employer responded to the survey.

The panel dataset covers most of the same variables as the annual datasets allowing for the analysis of hours and earnings for different cohorts of employees. For instance the ONS made use of the panel dataset in its analysis of Earnings in the UK Over the Last Four Decades[4], by tracking those who were 21 in 1975, 1985 and 1995 up to 2013 to compare the first 18 years of the careers of each cohort (from the age of 21).

3. What are the key limitations?

The most obvious limitation of ASHE is that it is not as timely as other measures of earnings. Whereas AWE has a 6 to 7 week lag, the lag from the ASHE reference period to publication is usually 7 months.

Like AWE, ASHE also only covers employees and therefore excludes the self-employed. The selection of personal characteristics is also more limited than other sources such as the Labour Force Survey.

A further limitation is that there is no information on what individuals are doing when they are not present on the survey. Potentially they could be unemployed; have switched to self-employment; have exited the labour market for a period or their employer may not have responded to the survey.

There are known coverage issues with data on bonus and incentive payments relating to the reference period. Primarily, this is because the information is not available to respondents at the time when they are required to provide the information to ONS. Data on annual bonus payments are thought to be better in this respect, though some respondents still do not have access to the necessary information at the time when they complete the questionnaires.

Since 1970 there have also been a number of changes to coverage, methodology, and classification conventions for the survey. These result in a series of discontinuities where the data may not strictly be comparable between any given pair of years where a discontinuity exists. However it is thought that when comparing over a longer time series that the discontinuities have a minimal impact on longer term trends. Since 2000, discontinuities in the series exist between 2003-2004, 2005-2006 and 2010-2011. For each of these discontinuities ONS has produced two versions of results, enabling valid comparisons with series on either side of the discontinuity.

[4] http://www.ons.gov.uk/ons/rel/lmac/uk-wages-over-the-past-four-decades/2014/rep---uk-wages-over-the-past-four-decades.html

4. What are the key uses and strengths?

The main use of ASHE is to analyse the distribution of earnings in the UK. Whilst this is also possible using the Labour Force Survey (see below), ASHE is thought to be a more accurate source of information on earnings as it the information is provided by employers rather than being self-reported by employees.

ASHE also benefits from a large sample size which coupled with the array of individual and geographic characteristics that are also gathered allows for more detailed analysis than other sources of earnings data.

ASHE is the principal source of data used in the ONS estimates of the public and private sector pay differential and the gender pay gap. ASHE is also the principal data source used for estimating the number of employees being paid below the national minimum wage.

ASHE also benefits from sampling the same employees over time which gives it a longitudinal aspect which isn't present to the same extent on other surveys of earnings.

Box 1: Estimated Take-home pay and Labour Costs data

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It is possible to make estimates of individual 'take-home pay' and the 'labour costs' associated with employees at different points of the wage distribution using gross wage information from the Annual Survey of Hours and Earnings.

This analysis defines 'take-home pay' as gross wages with employees National Insurance Contributions (NICs) and income tax deducted, and 'labour costs' as gross wages plus employer NICs. This is consistent with the OECD's methodology employed in its 'Taxing Wages' publications[5]. To create these variables income tax and NICs (employee and employer) liabilities for earnings at each percentile of the wage distribution[6] are calculated based on the relevant tax rates and thresholds. This form of analysis does not take in to account pensions contributions, or any other salary deductions, such as student loan repayments. As such, the analysis assumes that NICs contributions are calculated based on being contracted in to the second state pension. However once ASHE pension data are made available (typically in February/March), a variable is available which indicates whether an individual is contracted into NICs allowing NICs rates to be modelled explicitly. In addition, the analysis does not include the self-employed, nor does it include income from the benefits or tax credits system.
However, showing the impact of income tax and employee NICs on individual take home pay is a

[5] http://www.oecd-ilibrary.org/taxation/taxing-wages-2014_tax_wages-2014-en
[6] Income tax is applied on an annual basis whereas NICs are applied on a weekly basis. Gross weekly pay is scaled up by 365/7 to reach annual pay for the purpose of this analysis.

better reflection of the individual gains to work than earnings alone. Furthermore, impacts of all government tax and benefit policies depend on each household's composition and situation, and so it is difficult to relate this to the earnings of individual employees.

As well as in the OECD's 'Taxing Wages' publications, analysis of this nature has also been published in the past by the Department for Business, Innovation and Skills[7]. It is also considered as part of the Governments evidence to the Low Pay Commission[8].

Labour Force Survey

LFS Earnings information is published in the monthly labour market statistical bulletin on the ONS website in reference tables EARN04-EARN08. These reference tables are updated on a quarterly basis.

LFS microdata can be accessed through the UK Data Service website under a standard End User Licence. More detailed microdata are available under a Special Licence though users must be Approved Researchers to attain this special licence.

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1. What exactly does it measure?

The Labour Force Survey (LFS) is a rolling survey of households which has taken place on a quarterly basis since 1992. It forms the basis of the monthly publication of Labour Market Statistics including the rate/level of both employment and unemployment. Each sample is made up of approximately 40,000 responding households. Each household selected remains in the survey for five quarters with information on earnings requested only in quarters 1 and 5, thus enabling year on year comparisons. The earnings questions were not part of the initial variable set in the LFS with earnings questions in respect of weekly pay being added in winter 1992 and hourly pay in autumn 1993. Until 1997 earnings questions were asked only in quarter 5; the change to asking in quarters 1 and 5 reduced sampling errors by approximately 30%. The current range of earnings questions dates from 1999.

The primary purpose of the LFS is "the prompt publication of key aggregate, whole economy, indicators, for the integrated assessment of labour market conditions". The "labour market" covers all aspects of people's work, including the education and training needed to equip them for work, the jobs themselves, job-search for those out of work, and income from work and benefits.

As such the LFS collects information on a wide range of characteristics including both gross earnings (hourly and weekly) and take home pay after deductions.

[7] See for instance: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/284825/BIS_analysis_of_changes_in_earnings_net_of_income_tax_and_NICs_2012-2013.pdf

[8] https://www.gov.uk/government/publications/national-minimum-wage-interim-government-evidence-for-the-2015-low-pay-commission-report

2. What sort of information is usually published/what can we extract from the data?

Earnings data from the LFS are published quarterly and typically cover:

- Gross weekly earnings of full-time employees by:
    - Region
    - Occupation
    - Industry
- The Distribution of gross hourly earnings of employees

LFS microdata also include information on usual pay and why this may have differed from pay in the reference week. The LFS also captures respondents' take-home pay after "all deductions". It is important to note that this differs conceptually to the measure of take-home pay that can be estimated from ASHE (see box 1) as it may include deductions such as pension contributions and student loan repayments.

The microdata also cover a wide range of individual characteristics including but not limited to:

- Age
- Gender
- Qualifications
- Employment status
    - full-time/part-time
    - public/private
    - permanent/temporary
- Ethnicity
- Disability

The full catalogue of LFS variables can be found in the LFS User Guides – Details of LFS Variables[9]

3. What are the key limitations?

The data on individual's earnings captured by the LFS is thought to be of a lower quality than ASHE as LFS information is self-reported through computer assisted interview or telephone interview. ASHE and AWE however, gather information from the employer which is thought to be more accurate as employers can consult payroll records. Individuals may not have such records to hand and their responses may therefore be subject to higher levels of recall error. Furthermore LFS responses can be given by proxy (by other individuals in the same household) when an individual is unavailable for interview. This gives further scope for recall error from respondents. Due to this recall error, estimates of earnings based on the LFS that are published by the ONS typically exclude those who earn more than £100 per hour as a quality assurance measure. These factors combined mean that gross weekly and hourly pay are known to be underestimated on the LFS.

[9] http://www.ons.gov.uk/ons/guide-method/method-quality/specific/labour-market/labour-market-statistics/index.html

Earnings information on the LFS is only captured for employees and so like AWE and ASHE it excludes the self-employed (though other information is captured for the self-employed).

The LFS has also suffered from falling response rates over recent years. In 1999 the Wave 1 (i.e. the first quarter that a household is included in the LFS sample) response rates were around 80% whereas a steady decline over the intervening period meant that in 2014 they were approximately 60%.

A further limitation of the LFS from an analytical perspective is the repeated changes to some classifications (e.g. Ethnicity) and year specific variable names. Extensive recoding may be required where comparing some of these variables/characteristics over time.

4. What are the key uses and strengths?

The principal strength of using the LFS measures of earnings is the rich selection of classificatory variables that are gathered on the survey. Whilst ASHE is often favoured for its accuracy there are many individual characteristics that are only gathered on the LFS. For instance information on education, ethnicity, nationality, disability and many other variables are captured on the LFS but not on ASHE. Analysing how earnings vary with any of these characteristics is typically done using LFS data.

The LFS also has a longitudinal element to its data as individuals' earnings data are captured in both waves 1 and 5 of the survey. This allows analysis of changes to individuals' earnings over the course of the year.

The LFS is also used widely in academia due to the ease of access offered by the UK Data Archive. By contrast ASHE is only accessible by attending onsite ONS microdata labs.

Labour costs

Labour costs typically refer to the **gross earnings** paid by a business (wage costs), plus a number of non-wage related costs such as employer national insurance contributions; employer pension contributions and benefits in kind provided by the employer.

Index of Labour Costs per Hour

ILCH is published on a quarterly basis and can be found on the ONS website

ILCH microdata is not publically available

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1. What exactly does it measure?

The Index of Labour Costs per Hour (ILCH) is a measure of the cost of having an employee for an hour of work. ILCH was first published in 2005 and is published quarterly. It reflects changes in wages and salaries, non-wage costs, and the quantity of hours worked over the quarter and is important for monitoring inflationary pressures in the labour market.

ILCH is primarily based on the Monthly Wages and Salaries Survey (MWSS) and the Labour Force Survey (LFS). The MWSS sample is drawn from the Inter-Departmental Business Register (IDBR) which is also used to weight the data. The LFS provides estimates of total hours worked based on average total hours worked in first and second jobs by employees. The Annual Survey of Hours and Earnings (ASHE) provides estimates of pay for employees of small businesses and the data are also used to produce factors to estimate Northern Ireland's wages and salaries. The Labour Costs Survey (LCS) and the Annual Business Survey (ABS) are also inputs to ILCH, providing estimates of non-wage labour costs.

The ILCH index goes beyond other earnings indicators to include non-wage costs (sickness, maternity and paternity costs, pensions contributions, benefits in kind and National Insurance contributions), as well as the wages and salaries component. ILCH is currently published as an experimental statistic. Further development work is required before ILCH is submitted for assessment as a National Statistic by the UK Statistics Authority.

2. What sort of information is usually published/what can we extract from the data?

The main publication of ILCH typically covers the most recent data broken down by wage costs and non-wage costs and also looks at longer term trends. The publication also covers a breakdown of ILCH by industry.

3. What are the key limitations?

The key limitation of ILCH is that only index numbers are published quarterly with no monetary values, though EUROSTAT derive annual data on hourly labour costs, which are published on the EUROSTAT website. This then also means that ILCH cannot be used to investigate the distribution of labour costs. ILCH data is not seasonally adjusted.

Furthermore the ILCH can be volatile when observing low-level industry aggregates where individual firms can have a larger impact on the data.

Given that the MWSS is a survey of employers ILCH refers only to employees and therefore excludes the self-employed.

4. What are the key uses and strengths?

The production of ILCH is driven by European Legislation which requires that a harmonised index of labour costs be produced by all member states. It is the only short-term earnings per hour indicator in the UK and can be used as an early gauge of economic performance. This is because a business will typically alter the number of regular or overtime hours its employee works before considering changing the number of people it employs.

Unit Labour Costs

Unit Labour costs are published as part of the quarterly Labour Productivity Statistical Bulletin on the ONS website

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1. What exactly does it measure?

Unit labour costs (ULCs) measure the cost of labour input per unit of real (inflation adjusted) economic output. This is calculated by dividing total labour costs by output. With gross value added (GVA) used as the measure for real output, total labour costs can be broken into the compensation of employees (CoE) and the labour share of mixed income. The CoE measures the aggregate labour costs of employees and mixed income measures the income of the self-employed, which conceptually includes returns to labour and to capital employed.

$$\text{Unit Labour Costs} = \frac{Total\ Labour\ Costs}{Output}$$

$$= \frac{Cost\ of\ the\ employed\ and\ self\ employed}{Output}$$

$$= \frac{Compensation\ of\ employees + Labour\ share\ of\ mixed\ income}{Output}$$

$$= \frac{CoE + \alpha MI}{GVA}$$

As such, ULCs reflect the full labour costs, including social security and employers' pension contributions, incurred in the production of a unit of economic output. This methodology is consistent with other ONS data on labour inputs and the returns of labour.

2. What sort of information is usually published/what can we extract from the data?

Estimates of ULCs for the whole economy are published quarterly in the Labour Productivity bulletin.

Within this dataset are sectional ULCs, broken down by industry, in both index levels and percentage changes on the previous quarter and on the previous year. The ULCs are provided in both seasonally adjusted and not seasonally adjusted terms. The seasonally adjusted figures are presented for the whole economy, market sector, manufacturing, production and total services industry classifications. In addition to these categories, the not seasonally adjusted data are disaggregated further into: agriculture, forestry and fishing; mining and quarrying, utilities; construction; wholesale and retail trade, transportation and storage, accommodation and food; information and communication; financial and insurance industries; real estate activities; professional, scientific and technical activities, administrative and support service activities; public administration and defence, education, health and social work; arts and entertainment, other services.

3. What are the key limitations?

ULC measures deal exclusively with the cost of labour, which though important, should also be considered in relation to changes in the cost of capital. This consideration is more relevant in capital-intensive economies.

One of the difficulties with compiling an accurate measure of the costs associated with labour input within the UK is that there is no direct measure of labour costs in the self-employed sector. However by using a factor share of mixed income derived from national accounts estimates of mixed income, we obtain an implied return to self-employed labour, which is conceptually preferable to the measure used previously as it incorporates information on the income of the self-employed.

One of the main limitations previously was that estimates were not available below the whole economy level, thus manufacturing unit wage costs (UWCs) were used. This is no longer the case, as manufacturing ULCs, alongside other sectional ULCs, are available as part of the Labour Productivity bulletin. UWCs are limited in two ways. Firstly, wage costs are a narrower measure than CoE, which includes non-wage labour costs, including social security and employers' pension contributions. Secondly, the UWC methodology assumes that wage costs of the self-employed were equal to those of employees. This was despite evidence from the National Accounts that such an assumption is inconsistent with the income attributed to the self-employed.

4. What are the key uses and strengths?

Since labour costs account for around two-thirds of the cost of production of UK economic output, unit labour costs provide an indication of inflationary pressures in the economy. ULCs are used by the Bank of England among others when analysing the extent of spare capacity in the labour market; as they provide a comprehensive indicator of the inflationary pressure in the supply side of the economy. This is especially true when non-wage labour costs move differently to wages.

Although not a direct measure of productivity, an inverse relationship between unit costs and productivity tends to be observed. Movements in ULCs can be decomposed into movements in costs per unit of labour (which can be approximated by an index of earnings) minus the movement in labour productivity. Thus other things equal, increases in labour productivity will tend to reduce ULCs.

ULCs also have the benefit of being fully consistent with both the output and income presentations of the National Accounts.

Household income

The surveys and publications in this section are the principal sources of information on Household Income. They cover some or all of the stages identified in the introduction between **original** and **final** income though they may differ slightly in how certain deductions and additions are made at the different stages of income redistribution.

Family Resources Survey

The Family Resource Survey Annual Report is published on the Gov.uk website alongside information for respondents and additional papers on measuring uncertainty and grossing methodology.

Family Resource Survey microdata can be accessed under a standard End User Licence on the UK Data Service website. More detailed microdata are available as a Secure Access File to be used in the Safe Room at the University of Essex – additional approval is needed for this level of access.

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1. What exactly does it measure?

The Family Resources Survey collects information on the incomes and circumstances of private households in the United Kingdom. It is designated as a National Statistic.

The FRS has been running since 1992 and is an annual cross-sectional survey. Until 2002/03 the survey covered Great Britain; it was then extended to cover all of the UK.

The target sample size for the 2012/13 survey was 20,000 households; this was reduced from 25,000 households from April 2011. The achieved sample size for 2012/13 was 20,201 households.

From April 2012 the FRS is also being used as the survey source for the cross-sectional element of the European Union Statistics on Income and Living Conditions (EU-SILC). The first EU-SILC findings using the FRS as a source were released in December 2013.

2. What sort of information is usually published/what can we extract from the data?

- Income and state support receipt
- Tenure
- Disability
- Carers
- Pension participation

Information can be derived on an individual, benefit unit or household level depending on which is the most appropriate.

The FRS is the primary data source for Households Below Average Income and the Pensioners' Incomes Series. It is also a key source of DWP's estimates of Take-Up of Income Related Benefits and

the Policy Simulation Model which is used extensively by DWP analysts for policy evaluation and costing of policy options.

The FRS is also used by other government departments including HM Revenue and Customs and HM Treasury and is also made available for external users via the UK Data Service.

3. What are the key limitations?

In common with all income surveys, the FRS results suffer from several issues of non-sampling error. These include:

Measurement error – in particular, the FRS is known to under-report benefit receipt.

Non-response error – the FRS response rate in 2012/13 was 60 per cent. To correct for differential response rates, estimates are weighted using population totals.

Survey coverage - the FRS covers private households in the United Kingdom. Therefore individuals in nursing or retirement homes, for example, will not be included.

Survey design - the FRS uses a clustered sample designed to produce robust estimates at region level. The FRS is therefore not suitable for analysis below region level.

Sample size - although the FRS has a relatively large sample size for a household survey, small sample sizes may require several years of data to be combined. Estimates by ethnic group are published using 3-year averages.

4. What are the key uses and strengths?

Specific strengths of the FRS include:

The FRS is considered to be the best source for looking at cash benefit and tax credit receipt by characteristics not captured on administrative sources and for looking at total benefit receipt on a benefit unit or household basis.

Capturing information on incomes: it captures more detail on different income sources compared to most other household surveys.

It collects a lot of contextual information on the household and individual circumstances, such as employment, education level and impairment. The FRS is therefore a comprehensive data source allowing for a wide variety of detailed analysis.

The FRS began in 1992 and so allows for comparisons over time.

Households Below Average Income

The HBAI annual report is published on the gov.uk website.

HBAI microdata can be accessed under a standard End User Licence on the UK Data Service website. More detailed microdata are available as a Secure Access File to be used in the Safe Room at the University of Essex – additional approval is needed for this level of access.

HBAI – Department for Work and Pensions – team.hbai@dwp.gsi.gov.uk +44 (0)20 7499 7337

1. What exactly does it measure?

The Households Below Average Income (HBAI) uses data from the Family Resources Survey (FRS) to represent information on living standards in the UK using disposable household income. The data are also equivalised which takes into account of the size and composition of households to make the income figures comparable[10].

The HBAI statistics incorporate widely-used, international standard measures of low income and inequality. There are a range of measures of low income, income inequality and material deprivation which capture different aspects of changes to living standards. HBAI is generally held to be the foremost source of UK data and information about household net income and poverty.

Annual estimates for a several statistics related to the number and percentage of people living in low-income households are provided against a number of key client groups including children, working-age adults, pensioners, and individuals living in a family where someone is disabled. Results are available for the UK from for the period 2002/03 through to 2012/13, with earlier results for Great Britain from 1994/95.

Income Before Housing Costs (BHC) takes income from all household members including dependants
and includes the following main components:

- usual net earnings from employment
- profit or loss from self-employment (losses are treated as a negative income)
- all Social Security benefits and tax credits
- income from occupational and private pensions
- investment income
- maintenance payments, if a person receives them directly
- income from educational grants and scholarships (including, for students, top-up loans and parental contributions)
- the cash value of certain forms of income in kind (free school meals, Healthy Start vouchers and free school milk and free TV licence for those aged 75 and over).

[10] The Department for Work and Pensions has published an infographic summarising the process behind estimates of low income in HBAI
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/325418/hbai-low-income-how-is-it-measured-infographic.pdf

Income is net of the following items:

- income tax payments
- National Insurance contributions
- domestic rates / council tax
- contributions to occupational pension schemes
- all maintenance and child support payments, which are deducted from the income of the person making the payment
- parental contributions to students living away from home
- student loan repayments.

Income After Housing Costs (AHC) is derived by deducting a measure of **housing costs** from the above income measure.

Housing costs include the following main components:

- rent (gross of housing benefit)
- water rates, community water charges and council water charges
- mortgage interest payments
- structural insurance premiums (for owner occupiers)
- ground rent and service charges

2. What sort of information is usually published/what can we extract from the data?

- Relative low income
- Absolute low income
- Income inequality e.g. Gini coefficient
- Household income distributions and averages before and after housing costs
- Income components including income from wages, self-employment and benefits

3. What are the key limitations?

In common with all income surveys, the HBAI results suffer from several issues of non-sampling error. These include:

Measurement error – in particular, the FRS (on which HBAI is based) is known to under-report benefit receipt. That said, the FRS is considered to be the best source for looking at benefit and tax credit receipt by characteristics not captured on administrative sources, and for looking at total benefit receipt on a benefit unit or household basis.

Non-response error – the FRS response rate in 2012/13 was 60 per cent. To correct for differential response rates, estimates are weighted using population totals.

Coverage error – the FRS cover private households in the UK – therefore individuals in nursing or retirement homes, for example, will not be included.

4. What are the key uses and strengths?

HBAI is a key source of data and information about household income, income poverty, and inequality, and is used for the analysis of low income by researchers and the Government. Key uses include:

- informing policy development and monitoring of indicators on child, pensioners, and disability poverty. Most notably, HBAI statistics are used to report against targets set out in the 2010 Child Poverty Act.
- International comparisons within EU and OECD countries (though EU SILC is considered the principal source for these comparisons)
- Parliamentary, academic, voluntary sector and lobby group analysis. Examples include using the HBAI data to examine income inequality, poverty, the distributional impacts of fiscal policies and understanding the income profiles of vulnerable groups.

Effects of Taxes and Benefits on Household Income / Living Costs and Food Survey

The ETB statistical bulletin is published annually on the ONS website. Alongside the statistical bulletin, a report is also published covering further analysis of the results and information on how the data are derived.

The LCF annual publication 'Family Spending' is also available on the ONS website

ETB and LCF microdata are available at various levels of detail under different user agreements. For more information on accessing these data please see the UK Data Service website.

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LCF - ONS Contact – Giles Horsfield – socialsurveys@ons.gsi.gov.uk +44 (0)1633 45 5678

1. What exactly does it measure?

The Effects of Tax and Benefits on Household Income (ETB) is one of ONS's longest standing outputs, having been produced each year since 1961. It is an annual analysis looking at how taxes and benefits affect the income of households in the UK. It provides estimates of household incomes, including the average amount of taxes that households pay, and also the value of benefits that they receive.

ETB data are from the Living Costs and Food survey (LCF), formally known as the Expenditure and Food Survey (EFS) which is a voluntary sample survey of around 5,500 private households in the UK, covering both income and expenditure. Each individual aged 16 and over in the household visited is asked to keep diary records of daily expenditure for two weeks. Information about regular expenditure, such as rent and mortgage payments, is obtained from a household interview along with retrospective information on certain large, infrequent expenditures such as those on vehicles. Detailed information on income (including cash benefits received from the state) of each adult member of the household is collected through the interview. In addition, personal information such as age, sex and marital status is recorded for each household member. Children aged 7 to 15 are asked to keep a simplified version of the diary.

One of the unique contributions of ETB is the detailed breakdown of household income it provides, including estimates of both direct and indirect taxes, and both cash benefits and 'in kind' benefits provided by the state. The ETB analysis uses 5 main measures of household income:

- The starting point of the analysis is **original income**. This is the annualised income in cash of all members of the household before the deduction of taxes or the addition of any state benefits. It includes income from employment, self-employment, investment income, private pensions and annuities which include all workplace pensions, individual personal pensions and annuities.
- The next stage of the analysis is to add cash benefits and tax credits to original income to obtain **gross income**.
- Income tax, council tax and Northern Ireland rates, and employee's and self employed National Insurance contributions are then deducted to give **disposable income**.
- The next step is to deduct indirect taxes (such as VAT, and fuel and alcohol duties) to give **post-tax income**.
- Finally the analysis adds benefits which are provided 'in kind' to households by government for which there is a reasonable basis for allocation to households to obtain **final income**. These 'in kind' benefits include the provision of education, health services, and subsidised travel and housing.

The measure of disposable income used in ETB is designed to be consistent with the international standards set out in the Canberra Group Handbook on Household Income Statistics[11] (UNECE, 2011). This results in a small number of differences between ETB disposable income and the BHC measure in HBAI. For example,

- ETB includes benefits in kind provided by employers (e.g. company cars) within income, but these are not included within HBAI.
- HBAI includes certain benefits in kind provided by the state (such as free school meals and Healthy Start vouchers) within BHC income. In ETB, these are included with other benefits in kind as part of final income.

2. What sort of information is usually published/what can we extract from the data?

ETB data are published in both an annual Statistical Bulletin and a supplementary analysis and methodology paper. The bulletin provides analysis of each stage of the redistribution process from original income through to final income, looking at the impact of taxes and benefits on income inequality. The bulletin and tables also look at:

- long term trends in household income for income quintiles/deciles, with detailed breakdowns by income component (including individual taxes and benefits)
- income for quintiles/deciles of retired and non-retired households, again with detailed breakdowns by income component.

[11] http://www.unece.org/fileadmin/DAM/stats/publications/Canberra_Group_Handbook_2nd_edition.pdf

- long term trends in income inequality, measured through the Gini coefficient[12], and S80/S20[13] and P90/P10 [14]ratios.
- Average incomes, taxes and benefits by household type, tenure status and region
- Taxes paid (direct & indirect) as a proportion of income and expenditure.
- Households receiving more in benefits than paid in taxes
- Characteristics of income quintile/decile groups (including number of adults/children, household type, tenure, age/employment status of chief economic supporter).

The ETB data are also used to produce a range of ad hoc pieces of analysis by ONS and others. Examples of analysis using the ETB data include:

- Middle Income Households, 1977-2011/12[15]
- Household Energy Spending in the UK, 2002-2012[16]
- Income, Expenditure and Personal Well-being, 2011/12[17]
- Income of Retired Households, 1977-2010/11
- An expenditure-based analysis of the redistribution of household income
- Social Transfers in Kind in the United Kingdom and Finland: Micro-level Measurement and Distributional Impact[18]

The main LCF publication, Family Spending, is primarily concerned with assessing household expenditure. The publication does however include a chapter on income which considers how expenditure varies across the income distribution.

3. What are the key limitations?

As a survey based source, ETB shares many of the same limitations as HBAI, such as the under-reporting of benefit receipt.

An additional limitation of the ETB data compared with HBAI is the sample size on which the figures are based. All survey-based estimates are subject to a level of uncertainty. As ETB is based on a smaller sample of households than HBAI, the level of precision is lower. This means that for income based analysis which does not require examination of individual taxes & benefits (especially indirect taxes or benefits in kind) or expenditure, it may be preferable to use HBAI as a source in order to benefit from the larger sample size. This is particularly the case when looking at smaller subgroups of the population.

[12] The Gini coefficient is the most widely used summary measure of inequality in the distribution of household income. The lower its value, the more equally household income is distributed. For more information see: http://www.ons.gov.uk/ons/guide-method/method-quality/specific/social-and-welfare-methodology/the-gini-coefficient/index.html

[13] The income quintile share ratio or the S80/S20 ratio is a measure of the inequality of income distribution. It is calculated as the ratio of total income received by the 20 % of the population with the highest income (the top quintile) to that received by the 20 % of the population with the lowest income (the bottom quintile).

[14] The income decile ratio or the P90/P10 ratio is a measure of the inequality of income distribution. It is calculated as the ratio of the level of income at the 90th percentile to the level of income at the 10th percentile.

[15] http://www.ons.gov.uk/ons/rel/household-income/middle-income-households/index.html

[16] http://www.ons.gov.uk/ons/rel/household-income/expenditure-on-household-fuels/2002---2012.html

[17] http://www.ons.gov.uk/ons/rel/wellbeing/measuring-national-well-being/income--expenditure-and-personal-well-being.html

[18] http://www.iariw.org/papers/2014/TonkinPaper.pdf

4. What are the key uses and strengths?

These statistics allow for analysis of the distributional impact of government policy on taxes and benefits. They are the only statistics available that are able to give such a complete picture of the distribution of income including indirect taxes and benefits in kind. The 2009 report by the Commission on the Measurement of Economic Performance and Social Progress by Stiglitz, Sen and Fitoussi identified income distribution, in addition to measures of average income, as an important factor in the measurement of well-being, giving a more complete picture of the standards of living experienced by individuals.

These characteristics of the ETB data also mean that they are also the best source for any analysis of household income that includes a breakdown by source or individual taxes or benefits.

ETB data are the primary source used by HM Treasury in their Intra-Governmental Tax and Benefit Microsimulation Model (IGOTM). This is used to model possible tax and benefit changes before policy changes are decided and announced.

As ETB data come from the LCF survey, which is the primary source of household expenditure data in the UK, it is also possible to use this data to carry out joint analysis of income and expenditure, something that is strongly recommended by OECD (2013) and many others for better understanding people's economic well-being in terms of their material living standards.

From 2015, there are plans to improve the timeliness of some of the key income series published within the Effects of Taxes & Benefits release. In particular, ONS plans to publish a new short bulletin in March 2015 which will provide users with key income statistics for 2013/14 at the earliest opportunity, along with longer term trends (going back to 1977), which are an important aspect of the Effects of Taxes & Benefits series. The statistics in this release will potentially include measures such as median disposable income, inequality measures such as the Gini, and breakdowns of the components of disposable income by quintile and decile groups. The full Effects of Taxes & Benefits on Household Income 2013/14 data and release, including indirect taxes and benefits in kind will be published at the normal time. This means that the new bulletin will provide the earliest analysis of the household income distribution each year, allowing people insight into the evolution of living standards as early as possible.

Other income measures

The sources covered in this section again refer to **income**. However unlike the sources listed in the previous section, income may not be the sole focus of the source or the source may only cover a very specific measure of income.

European Union Statistics on Income and Living Conditions

Indicators based on EU-SILC for the UK and other EU countries are published on Eurostat's website, along with more detailed articles and analysis.

EU-SILC microdata is also available to researchers through Eurostat's User Database (UDB).

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DWP Contact – team.frs@ons.gsi.gov.uk +44 (0)20 7449 7341

1. What exactly does it measure?

EU-Statistics on Income and Living Conditions (EU-SILC) is the EU reference source for comparative statistics on income, poverty, social exclusion and living conditions at the European level.

It provides two types of annual data for the 28 European Union countries as well as Iceland, Norway, Switzerland and Turkey:

- Cross-sectional data pertaining to a given time or a certain time period with variables on income, poverty, social exclusion and other living conditions, and
- Longitudinal data pertaining to individual-level changes over time, observed periodically over a four year period.

EU-SILC is coordinated by Eurostat (the European Commission's statistical agency) under EC regulation. In the UK, EU-SILC is collected jointly by DWP and ONS, while information for other countries is mainly collected by other national statistical institutes.

The UK cross-sectional component is made up of a sample of around 10,000 households, which is taken from the first six months of Family Resources Survey (FRS) interviews in any given year. A sub-sample of these households are then tracked longitudinally through a follow-up survey to the FRS called the Survey on Living Conditions (SLC). The overall achieved longitudinal sample is approximately 7,500 households each year.

The main topics covered by the EU-SILC microdata are:

- income
- poverty
- material deprivation
- housing

- labour
- education
- health

2. What sort of information is usually published/what can we extract from the data?

Indicators and reports based on EU-SILC data are made available through the Eurostat website: http://ec.europa.eu/eurostat/web/income-and-living-conditions/overview

Published indicators cover the following areas:

- Relative low income
- Material deprivation
- Low work intensity
- Income inequality (including Gini and S80/20 ratios)
- Housing deprivation, overcrowding and housing cost overburden
- Persistent at-risk-of-poverty (relative low income in current year and at least of two preceding years)
- Labour market and pay transitions

Many of these indicators are broken down by age, gender, employment status, level of education, housing tenure, country of birth, and citizenship.

More detailed analysis of EU-SILC is frequently published by the European Commission in publications such as Employment and Social Developments in Europe[19]

EU-SILC also includes annual ad hoc modules on important topics of policy interest, allowing more detailed analysis in these areas. Recent ad hoc modules include:

- Subjective well-being
- Housing conditions
- Intergenerational transmission of disadvantages
- Intra-household sharing of resources
- Over-indebtedness and financial exclusion
- Social participation

There are many publications and papers, based on these modules, produced by the European Commission, national statistical offices and academia. For example: http://www.ons.gov.uk/ons/rel/household-income/intergenerational-transmission-of-poverty-in-the-uk---eu/2014/index.html

3. What are the key limitations?

As a survey based source, EU-SILC shares the same limitations as HBAI and ETB.

[19] http://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=7684&type=2&furtherPubs=yes

There are also some limitations relating to the international dimension of EU-SILC. EU-SILC is harmonised in terms of variables and concepts but the means of data collection are more loosely specified. Some countries collect data via household surveys, whilst others collect information via administrative sources. Additionally there may be variation between countries due to translation issues with the questionnaire, or culturally-based differences. The need to specify a framework for classifying income that is consistent across countries means that the benefit income variables made available to researchers are grouped into streams such as "old-age benefits", rather than classified as the individual benefits themselves[20].

4. What are the key uses and strengths?

A key strength of EU-SILC is the consistency of the variables and concepts across countries, which allows for meaningful comparative analysis across the EU. For this reason, EU-SILC is the main source of data used for policy monitoring and development at a European level. At a national level, this comparability is helpful in allowing researchers to examine what is happening in the UK in comparison to other countries with different welfare regimes and different policy interventions.

EU-SILC is used to measure the European Commission's Europe 2020 target on the number of people at risk of poverty or social exclusion. This measure combines a number of different dimensions of poverty and social exclusion into a single indicator. According to this definition, people are considered at risk of poverty or social exclusion if they are experiencing at least one of three conditions – having a household income below the poverty threshold, being severely materially deprived, or living in a household with low work intensity.

Probably the most important strength of EU-SILC over other official sources of income data is its longitudinal component, which provides crucial information for policy development. In particular it can help us understand how, when and for how long people move into and out of poverty.

The longitudinal component of EU-SILC allows the measurement of persistent relative low income. It is widely agreed that the impact of long-term poverty on individuals is worse than when poverty is experienced only for a short time (see e.g. Atkinson et al., 2002; Dickerson & Popli, 2011; Jenkins & Van Kerm, 2013[21]). Whilst short episodes can sometimes be dealt with through use of savings/ borrowing / reduced consumption, long lasting poverty is a lot more likely to damage life chances. For this reason, persistent poverty is particularly interesting to policy makers.

Additionally, researchers within and outside government have used EU-SILC to research topics including:

- The relationship between single year at-risk-of-poverty rates and persistent risk-of-poverty
- The evolution over time of poverty entry and exit rates

[20] Though in most countries, including the UK, the data is collected at the level of the individual benefit.

[21] Atkinson, T., Cantillon, B., Marlier, E. & Nolan, N. (2002) *Social Indicators: The EU and Social Inclusion.* Oxford: Oxford University Press

Dickerson, A. & Popli, G. (2011). *Persistent poverty and children's cognitive development: Evidence from the Millenium Cohort Study*. Working Paper. Department for Economics. University of Sheffield.

Jenkins, S.P. & Van Kerm, P. (2013). *The relationship between EU indicators of persistent and current poverty.*CASEpapers, CASE/169, London School of Economics.

- The relationship between entering the labour market and moving out of poverty
- Which individuals are most at risk of persistent poverty?
- Dynamics of material deprivation
- Flexible employment and poverty
- Disability and low income persistence

Pensioners' Incomes Series

The Pensioners' Income Series annual report is published on the gov.uk website

Anonymised microdata is made available on the UK Data Service Website as part of the FRS project

PI – Department for Work and Pensions – pensioners-incomes@dwp.gsi.gov.uk +44 (0)20 7449 5046

1. What exactly does it measure?

Pensioners' Incomes Series (PI) contains estimates of the levels, sources and distribution of pensioners' incomes. It also examines the position of pensioners within the income distribution of the population as a whole. The series includes information about gross and net income, both before and after housing costs.

The publication is based on two household surveys – the Family Expenditure Survey and the Family Resources Survey. The latest information, for the financial years 1994/95 to 2012/13, comes solely from the Family Resources Survey.

2. What sort of information is usually published/what can we extract from the data?

The annual PI publication includes chapters covering the following:

- Income for different groups of pensioners by age, for singles and couples, and broken down by region;
- Detailed look at various sources of income, including the proportion of pensioners who receive income from these different sources;
- The distribution of pensioners' incomes, both within the pensioner population and within the household population overall;
- Additional analysis, including couples where one member is above State Pension age and the other below, married and cohabiting couples and results for ethnic groups.

The datasets are also deposited with the UK Data Archive post-publication (as part of the FRS project), to allow researchers to conduct their own analysis. These datasets have adjustments made to ensure anonymisation of the data, such as rounding all incomes to the nearest pound and 'top-coding' ages at 80.

3. What are the key limitations?

As PI is from the Family Resources Survey, many of the caveats that apply for the FRS also apply for PI. For example, the levels of receipt of a number of benefits are under-reported on the FRS, and this will feed into PI.

PI is based on survey data, hence is subject to sampling variation and other forms of error associated with a sample survey. As such, it is often difficult to draw conclusions about significant changes in incomes from one year to the next.

The surveys on which the series are based are household surveys, and so people living in institutions – such as nursing homes and communal establishments – are not covered.

When carrying out analysis of PI it is worth bearing in mind the definitions that apply to the data, and how this affects and results and interpretation. For example, analysis is at a household level, and incomes are not equivalised (unlike in HBAI).

Analysis can be carried out on gross or net income, on all pensioner units or by splitting out singles and couples, on a 'Before' or 'After' housing costs basis, and may use means or medians to summarise results. We advise some thought to ensure analysts are using the most appropriate measures for any work.

Some analysis of PI looking at small subgroups may need to pool years of data to produce large enough samples from which to draw robust results. Some analysis in the main PI publication uses three years of data to achieve this (e.g. analysis by region, ethnicity, some quintile analysis).

4. What are the key uses and strengths?

The data can be used to understand the levels, sources and distribution of pensioners' incomes – as covered in sections one and two of this note.

One of the key strengths of PI is the relatively long time series available for assessing trends going back to 1994/95 on the FRS – and further with the FES.

Survey of Personal Incomes

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Personal Income National Stats: https://www.gov.uk/government/collections/personal-incomes-statistics

SPI Public Use Tape (PUT): http://discover.ukdataservice.ac.uk/Catalogue/?sn=7569&type=Data catalogue

1. What exactly does it measure?

The Survey of Personal Incomes (SPI) is an administrative dataset based on information held by HM Revenue and Customs tax offices on individuals who could be liable to UK tax. It is carried out annually by HMRC and covers income assessable to tax for each tax year. Not all of them are taxpayers because the operation of personal reliefs and allowances may remove them from liability. Where income exceeds the threshold for operation of Pay-As-You-Earn (PAYE), the survey provides the most comprehensive and accurate official source of data on personal incomes.

The SPI sample is drawn from three separate systems:

a) The National Insurance and PAYE Service (NPS) system covers all employees and occupational pension recipients with a Pay-As-You-Earn (PAYE) record. NPS replaced the Computerisation of PAYE (COP) system. The 2009-10 SPI is the first SPI produced using data sourced from NPS. The 2008-09 SPI will use NPS data when compiled.
b) The Computerised Environment for Self Assessment (CESA) system covers people with self-employment, rental or untaxed investment income. It also covers directors, those subject to higher rate tax and other people with complex tax affairs. Where people have both NPS and CESA records, their CESA record is selected because it provides a more complete picture of their taxable income.
c) The Claims system covers people without NPS or CESA records who have had too much tax deducted at source and claim a repayment.

There were approximately 705,000 valid cases on the final 2012-13 SPI dataset.

2. What sort of information is usually published/what can we extract from the data?

The dataset contains a range of variables about personal incomes arising from employment, self-employment, pension, taxable benefits, property, savings, investments and other income sources. The dataset also contains variables about tax allowances, deductions and reliefs, which people might be due. There is also a regional code variable on the dataset and a trade code for cases which are self-employed.

An anonymised version of the SPI called the Public Use Tape (PUT) is also published and available to the public for download; the UK Data Archive (UKDA) currently holds the PUT data for 1985-86 and 1995-96 onwards (data for 2008-09 is currently unavailable). For further details of sampling and coverage criteria, see the accompanying documentation on the UKDA website.

The SPI is also used to create HMRC's personal income statistics publications, which contain a variety of charts and tables illustrating the findings from that year's SPI including breakdowns of income information by, for example: age; geographical region; gender; self employment.

3. What are the key limitations?

The SPI is an individual level survey based on administrative records, as HMRC does not require information on household earnings or hours worked to administer income tax, this information is not available from the SPI.

As mentioned in section 1, not all of the individuals in the SPI sample are taxpayers. About 24% have no income tax liability because deductions and reliefs and personal allowances exceed their total income. Where income exceeds the threshold for the operation of PAYE (£8,105 for 2012-13), the SPI provides the most comprehensive and accurate official source of data on personal incomes.

However, as HMRC does not hold information for all people with personal incomes below this level, the SPI is not a representative data source for this part of the population and no attempt has been made to estimate the numbers of cases below the tax threshold or the amount of their incomes.

Therefore National Statistics published from the SPI - with the exception of Tables 3.9 and 3.10 - only cover individuals liable to UK income tax (taxpayers) and their incomes.

With regards to benefits, the SPI covers only taxable benefits (or benefits in kind). This means that it doesn't capture benefits like Job Seekers Allowance or housing benefits. It therefore cannot provide a complete picture of income.

Some other elements of the SPI have to be imputed or estimated based on other available information and, as with all sample surveys, estimates from the SPI have a sampling error attached to them. These issues are covered in more detail in Annex B of our personal income statistics publication on GOV.UK.

4. What are the key uses and strengths?

The SPI is compiled to provide a quantified evidence base from which to cost proposed changes to tax rates, personal allowances and other tax reliefs for Treasury Ministers. It is used to inform policy decisions within HMRC and the Treasury, as well as for tax modelling and forecasting purposes. In addition, it is used to provide summary information for the National Accounts that are prepared by the Office for National Statistics. Finally, it is used to provide information to Members of Parliament, other Government Departments, companies, organisations and individuals.

The SPI is also used to create HMRC's aforementioned personal income national statistics releases. These tables would be of interest to policy makers in government, academics, journalists, 'think-tanks' and other research bodies. They would be of use to individuals or organisations interested in the distributions of numbers and amounts of personal incomes, for example by taxpayer marginal rate or income band.

Wealth and Assets Survey

Wealth in Great Britain Wave 3, Wealth and Income, is the most recent publication of WAS analysis which focuses on income measures.

WAS datasets are available in two forms from the UK Data Archive – a Special Licence dataset which, although anonymised, contains data at a very low level so specific permission has to be granted for access; and an End User Licence dataset – much easier to access as all geographical data has been removed, age has been top coded and some detail of non-wealth related variables has been removed

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1. What exactly does it measure?

The Wealth and Assets Survey (WAS) commenced in 2006 with the aim of measuring the economic well-being of households and individuals in Great Britain. It is a biennial, longitudinal survey conducted by the ONS and funded by a consortium of government departments.

WAS data is fundamental to understanding the distribution of assets, debts, and liabilities in Great Britain and fills gaps in official statistics for which evidence was lacking from either other survey sources or administrative data. It collects information concerning all forms of personal assets held

by individuals within private households, including their financial wealth, property wealth, physical wealth and private pension wealth.

During the period 2010-2012 – the third wave of WAS - over 40,000 individuals aged 16 or over were interviewed in more than 21,000 private households across Great Britain.

The design of the survey recognises the fact that wealth is highly skewed, with a small proportion of households owning a large share of the wealth. The efficiency of the sample is therefore improved by over-sampling addresses likely to be in the wealthiest 10% of households (established utilising data from HMRC).

Studies investigating a household's economic resources have often focussed primarily on income. Such estimates of income are frequently used as a key indicator on which governments are held to account, and by which countries are compared. Nevertheless, income provides just one estimate of material well-being. The 2009 report by the Commission on the Measurement of Economic Performance and Social Progress[22] highlighted the need to consider wealth in conjunction with income to better assess living standards. This need to look beyond income was a key motive for the introduction of the Wealth and Assets Survey (WAS).

Income data collected by WAS has been extensively quality assured and compares well with data from sources that are focused on income, such as the FRS. Whilst the primary focus of WAS is the estimation of household and individual wealth, data on a household's total income are available for the period 2010-12[23]. The income data is all self reported, regular income is available as both net and gross annual measures and covers:

- Earned income from employees and self employed (main and second/other jobs)
- Income from benefits (inc. State pensions)
- Income from private pensions (inc. Occupational, personal pensions etc.)
- Income from investments
- Other regular income

Whilst the coverage of income is good, as the data is self reported, it is not expected to be as accurate as some other sources (e.g. Employer based earnings data). It is therefore recommended that income be used as a classificatory variable only (e.g. Analysed by deciles/quintiles etc.) alongside wealth estimates. In addition, proxy information is taken for some respondents who cannot be contacted, and any missing data is statistically imputed[24].

[22] Report by the Commission on the Measurement of Economic Performance and Social Progress. Professors Joseph E. Stiglitz, Amartya Sen and Jean-Paul Fitoussi. 14 September 2009. In particular, WAS supports two of the recommendations: Recommendation 3: Consider income and consumption jointly with wealth and Recommendation 4: Give more prominence to the distribution of income, consumption and wealth. Both recommendations underpin how UK, EU and OECD are shaping up their requirements on the wider measurement of economic performance, social progress, the environment and sustainability.

[23] In the first two waves of the survey, the only income data that were successfully collected related to earned income – so excluded income from benefits, private pensions and other income such as that from investments and property rentals.

[24] See the Technical chapter of the Wealth in Great Britain Report[7]

Unlike some other sources the definition of net measures cannot be specifically defined. Respondents are asked, for example, for their net earnings 'after all deductions (excluding and Tax Credits, bonuses and commissions not received each pay period)'. For some this will be entirely net of Income tax and National Insurance, but for many will also be net of any pension contributions, student loan or other employer loans.

In addition the survey also collects net irregular income such as inheritances, lottery wins etc.

2. What sort of information is usually published/what can we extract from the data?

To date, only limited income estimates have been published from WAS – concentrating on the relationship between household wealth and income. However, the scope for analysis is huge.

The main publication for WAS data is Wealth in Great Britain. The main report for wave 3 did not contain income data, but this was published subsequently, as it was the first time total household income was published from WAS[25].

Estimates of means are no longer published from WAS, as the distribution of wealth is so highly skewed towards the wealthiest, the median value gives a much better measure of average than the mean (and unlike other financial surveys) WAS does not top code any measures of wealth or income.

The datasets are available in two forms from the UK Data Archive – a Special Licence dataset which, although anonymised, contains data at a very low level so specific permission has to be granted for access; and an End User Licence dataset – much easier to access as all geographical data has been removed, age has been top coded and some detail of non-wealth related variables has been removed.

3. **What are the key limitations?**

The focus of WAS is the estimation of household and individual wealth. Income measures are only designed to provide classificatory variables e.g. used to divide the population into income groups in order to analyse wealth by income grouping.

4. What are the key uses and strengths?

Income is only one measure of material well-being and alone, might not accurately reflect the full picture. For example, some older people may have relatively low incomes, but have, over their lifetime accumulated a good degree of wealth – e.g. property wealth, financial investments etc. Conversely some young people may have high incomes but have not had time to accumulate much wealth – e.g. have large student loans and mortgages.

The Wealth and Assets Survey allows consideration of factors other than income when considering an individual's or household's economic well-being. This is of growing importance in many areas of government policy which are focussing on wealth rather than income or are concerned with saving for retirement.

[25] http://www.ons.gov.uk/ons/rel/was/wealth-in-great-britain-wave-3/wealth-and-income--2010-12/index.html

In addition to this, the longitudinal design of the survey means that the impact of specific life events (e.g. from working life to retirement) can be analysed, as can general life cycle effects.

National Accounts Estimates of Gross Disposable Household Income

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1. What exactly does it measure?

Household Sector Accounts are published by ONS on quarterly and annual bases: quarterly from 1995 Q1 and annually from 1948. Estimates in the Household Sector Accounts are comparable across time and across countries, as they are produced in line with international standards set out in the European System of Accounts (ESA10) and the United Nations System of National Accounts (SNA08). However, the entire back series is not always comparable because of changes in international national accounts standards over this period. As with other components of the National Accounts, Household Sector Accounts are compiled using information from a multitude of different sources, including household and business surveys as well as administrative records, to ensure that estimates are as coherent and integrated as possible

2. What sort of information is usually published/what can we extract from the data?

Household Sector Accounts use the following process to derive Gross Disposable Income:

a) Total Household Income = Gross Operating Surplus + Mixed Income + Compensation of Employees + Property Income + Pension Income + Social Security benefits received (other than pensions) + Miscellaneous transfers and Insurance claims received

b) Total Uses = Taxes paid + Social Contributions paid + Property Expenditures + Miscellaneous transfers and Insurance premiums paid

c) Gross Disposable Household Income (GDHI) = Total Household Income – Total Uses

3. What are the key limitations?

For the time being ONS does not separately publish information on Non-Profit Institutions Serving Households (NPISH), but includes them alongside households as part of the Household sector. The publication of separate Household and NPISH accounts will be introduced from Blue Book 2016.

Due to compliance with National Accounts concepts, such as the inclusion of imputed rental of owner occupiers as income may not match specific user requirements.

4. What are the key uses and strengths?

The main use of National Accounts Estimates of Gross Disposable Household Income is within the calculation of Gross National Income (GNI) and Gross Domestic Product (GDP). Furthermore they are used to inform decisions made by policy makers in both central and local government as well as frequently being used in academia.

One of the main strengths of using the National Accounts estimate of gross disposable income is that it includes the income of institutional households which are often excluded from other survey sources of income.

The National Accounts also offer a long time series, with data going back to 1948 (1955 on a quarterly basis). Furthermore the more recent data is also widely comparable on an international basis as it follows the ESA10 and SNA08 regulations on national accounts

Small Area Income Estimates

Small Area Income Estimates are available on the Neighbourhood Statistics website

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1. What exactly does it measure?

The estimates provide the average household income for small areas within England and Wales. It is the income a household receives from wages and salaries, self-employment, benefits, pensions, plus any other source of income. These estimates are produced at the middle layer super output area (MSOA).

The technique used to produce small area income estimates is a multiple linear regression modelling technique with synthetic estimation. This technique is used when survey data alone are insufficient to produce accurate estimates of income in smaller geographical areas. At the level of these areas, sample survey sources often do not have sufficient sample size, and it is therefore necessary to combine survey data with other data sources known as auxiliary data or covariates. The auxiliary data, which can be obtained from an administrative system or a previous census, can provide data on a small area basis for all areas within the target population.

To produce small area income estimates, it is necessary to model the area-level relationship between the survey variables and auxiliary variables. The survey data can be used to estimate the mean level of income for a particular type of individual within the larger population, while other data sources can be used to estimate the proportion of a particular type of individual living within the small area e.g. the proportion of the population claiming Income Support. The relationship between the two can then be fitted to derive an estimate of weekly household income within a small area. The fitted model produces an estimate that describes the relationship between the area-level values of the target survey variable and the auxiliary variable.

This modelling methodology enables survey data from a Family Resource Survey to be combined with census and administrative data to improve the quality of estimates at the small area level. As the estimates are model-based they are different to standard direct estimates.

2. What sort of information is usually published/what can we extract from the data?

The small area income estimates are produced for four different income types:

- Average weekly household total income (unequivalised)
- Average weekly household net income (unequivalised)
- Average weekly household net income before housing costs (equivalised)
- Average weekly household net income after housing costs (equivalised)

3. What are the key limitations?

A limitation of the small area income estimates is the frequency with which they are produced and the lag from reference period to publication. For instance at the time of this publication the most recent data refers to 2007/08 and the next publication of data is scheduled for 2015 where the data will refer to 2011/12.

Estimates have been produced for four different types of income. In some cases slight inconsistencies (when examining the estimates) may occur between the income types for a particular MSOA, e.g. an MSOA may have a larger estimate for net income when compared with total income. Although there may be some such inconsistencies the models selected are the best possible to describe the general pattern of income over all MSOAs. This reinforces the need to look at the confidence interval for income estimates, not just the point estimate, since the confidence intervals summarise the variability in the estimates caused by the modelling process.

4. What are the key uses and strengths?

The key strength of small area income estimates is the low level of geography that the data are provided at. There is currently no other source of income data that can produce estimates at such a low geographical level. As such the estimates are often used to answer questions from the public, academics and parliament that require detailed information on income at low levels of geography.

Annex A: Summary Tables

Earnings													
Publication	**Frequency**	**Sample**	**Strengths**	**Weaknesses**	**Geography**				**Units of Analysis**			**Level of Analysis**	
					UK	GB	Region	Sub-Region	Mean	Median	Distribution	Individual	Household
Average Weekly Earnings *(AWE)* Office for National Statistics	**Monthly** From Jan 2000 High-Level estimates are available from January 1963 Estimates prior to 2000 do not have National Statistic status.	Around 9,000 businesses covering around 13.8 million employees	Timely and Frequent Good coverage of bonuses Can isolate employment and wage effects	No data on individual employees Excludes the self employed Earnings for employers with less than 20 employees are estimated Excludes Northern Ireland		**X**			**X**			**Whole Economy** With industry breakdown (24 sectors)	
Annual Survey of Hours and Earnings *(ASHE)* Office for National Statistics	**Annual** From April 1970 (data available from 1975)	Around 300,000 employees. Response file covers around 180,000 employees	Distributional Analysis Detailed individual characteristics Longitudinal Analysis Large sample allows for detailed analysis	Less timely than other earnings sources No information on education/qualifications Bonus payments known to be underestimated Excludes the self employed	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	

Earnings cont.														
Publication	**Frequency**	**Sample**	**Strengths**	**Weaknesses**	**Geography**				**Units of Analysis**			**Level of Analysis**	
					UK	GB	Region	Sub-Region	Mean	Median	Distribution	Individual	Household
Labour Force Survey *(LFS)* Office for National Statistics	Earnings data published **Quarterly** from Q1 1997	Approx 41,000 responding households per quarter	Large array of classificatory variables not available on ASHE and other surveys More frequent than ASHE	Known to underestimate hourly and weekly pay. This is due to recall error from self reported and proxy response information No earnings information is gathered for the self employed	**X**	**X**	**X**		**X**	**X**	**X**	**X**	

Labour Costs												
Publication	**Frequency**	**Sample**	**Strengths**	**Weaknesses**	**Geography**				**Units of Analysis**			**Level of Analysis**	
					UK	GB	Region	Sub-Region	Mean	Median	Distribution	Individual	Household
Index of Labour Costs per Hour *(ILCH)* Office for National Statistics	**Quarterly** From Q1 2000	Wages data from AWE (see above) other data taken from LFS (also see above). Data also gathered from the Labour Costs survey and Annual Business Survey.	Timely and frequent Comparable across Europe.	No distributional aspect Index number rather than money values		**X**			**Index**			**Whole Economy** With industry breakdown (24 sectors)	
Unit Labour Costs Office for National Statistics	**Quarterly** within the Labour Productivity Bulletin	HMRC data from a 1% sample of Tax Returns alongside a number of smaller sources	Indicates Inflationary pressures within the economy Inverse relationship between unit costs and productivity observed Fully accounts for cost of labour, including wage and non-wage costs	Self-employed data is not directly measured though is obtained by a suitable implied return	**X**				**Index**			**Whole Economy** With Market Sector Breakdown	

Household Income													
Publication	**Frequency**	**Sample**	**Strengths**	**Weaknesses**	**Geography**				**Units of Analysis**			**Level of Analysis**	
					UK	GB	Region	Sub-Region	Mean	Median	Distribution	Individual	Household
Family Resource Survey (FRS) Department for Work and Pensions	**Annual**	Target sample for 2012/13 was 20,000 households. Achieved sample was 20,201 households	Long time series of consistent data back to 1994/95 Large sample size and breadth of variables allow for detailed sub-category analysis	Known to under-report benefit receipt when compared to admin data Doesn't include residential institutions Typically a 15 month lag from reference period to publication	**X**	**X**	**X**		**X**	**X**	**X**	**X**	**X**
Households Below Average Income (HBAI) Department for Work and Pensions	**Annual**	c.20,000 households	Long time series of consistent data back to 1994/95 Large sample size and breadth of variables allow for detailed sub-category analysis	Known to under-report benefit receipt when compared to admin data Doesn't include residential institutions Typically a 15 month lag from reference period to publication	**X**	**X**	**X**		**X**	**X**	**X**	**X**	**X**

Households Income cont.												
Publication	**Frequency**	**Sample**	**Strengths**	**Weaknesses**	**Geography**				**Units of Analysis**			**Level of Analysis**	
					UK	GB	Region	Sub-Region	Mean	Median	Distribution	Individual	Household
Living Costs and Food Survey / The Effects of Taxes and Benefits on Household Income *(LCF/ETB)* Office for National Statistics	**Annual** article since 1961/62, Comparable time series estimates and microdata since 1977	Approximately 5,000 households	ETB income measures designed to be consistent with international standards (e.g. UNECE, 2011). Long time series of consistent data back to 1977. Includes details on types of income, taxes and benefits Detailed breakdown of the components of income distribution by tenure and family composition Includes income from the self-employed LCF includes data on expenditure	Similar weaknesses to FRS/HBAI. In addition, survey has a smaller sample size. Typically 15 month lag from reference period to publication. However, from 2013/14, key statistics will be available after 11 months.	**X**	**X**	**X**		**X**	**X**	**X**		**X**

Other Income Sources												
Publication	**Frequency**	**Sample**	**Strengths**	**Weaknesses**	**Geography**				**Units of Analysis**			**Level of Analysis**	
					UK	GB	Region	Sub -Region	Mean	Median	Distribution	Individual	Household
European Union Survey on Income and Living Conditions *(EU-SILC)* Office for National Statistics / Department for Work and Pensions	**Annual** Main series started 2005. Limited information available from 1995	Cross sectional element, 10,000 households Longitudinal element 7,500 households	Internationally comparable with other EU and EFTA countries Longitudinal data, allowing analysis of income and labour market dynamics. Time series data available Broken down by a number of categories	Doesn't include residential institutions Currently a 9 month lag from reference period to publication of cross-sectional indicators and a 15 month lag for longitudinal indicators.	**X**				**X**	**X**	**X**	**X**	

Other Income Cont.												
Publication	**Frequency**	**Sample**	**Strengths**	**Weaknesses**	**Geography**				**Units of Analysis**			**Level of Analysis**	
					UK	GB	Region	Sub-Region	Mean	Median	Distribution	Individual	Household
Pensioners' Income Series Department for Work and Pensions	**Annual** Yearly data from FRS from 1994/95; data from FES back to 1979	Subset of cases from the FRS where one member is over the State Pension age. Over 7,000 benefit units for the 2012/13 publication	The long time series available for assessing trends going back to 1994/95 on the FRS – and further with the FES	Many of the caveats that apply for the FRS also apply for PI (e.g. the levels of receipt of a number of benefits are under-reported on the FRS). The FRS is a household survey, so people living in institutions (e.g. nursing homes and communal establishments) are not covered.	**X**	**X**	**X**		**X**	**X**	**X**		**X**

Other Income Cont.												
Publication	**Frequency**	**Sample**	**Strengths**	**Weaknesses**	**Geography**				**Units of Analysis**			**Level of Analysis**	
					UK	GB	Region	Sub-Region	Mean	Median	Distribution	Individual	Household
Survey of Personal Incomes *(SPI)* HM Revenue and Customs	**Annual** data from 1995/96 tax year	600,000 observations from three HMRC business systems	Includes income from Self employment	Some variables are imputed from the using the personal tax model (PTM) Not Longitudinal Captures only taxable benefits and therefore doesn't provide a complete picture of income. Not representative of population below personal allowance threshold. Currently a one year lag between reference period and publication	**X**	**X**	**X**	**X**			**X**	**X**	

Other Income Cont.												
Publication	**Frequency**	**Sample**	**Strengths**	**Weaknesses**	**Geography**				**Units of Analysis**			**Level of Analysis**	
					UK	GB	Region	Sub-Region	Mean	Median	Distribution	Individual	Household
Wealth and Assets Survey *(WAS)* Office for National Statistics	**Biennial** Wave 1: 2006-08 Wave 2: 2008-10 Wave 3: 2010-12 Wave 4: 2012-14 Wave 5: 2014-16	Approximately 30,000 achieved household interviews (70,000 individuals) for wave 1 Approximately 20,000 achieved households (45,000 – 50,000 individuals) for waves 2 & 3 Expect to achieve approximately 20,000 household interviews for waves 4 & 5	Detailed coverage of wealth and includes income as a classificatory variable. Extensive range of related variables available. Longitudinal survey allows life cycle changes to be analysed.	Total income data only available from wave 3 onwards, wave 1 and wave 2 only have earned income. Whilst the income data compares well with other sources, it is not possible to exclude housing costs with wave 3 and 4 data and the income measures available are only designed to be classificatory and analysed alongside wealth measures.		**X**	**X**	**X**		**X**	**X**	**X**	**X**

Other Income Cont.												
Publication	**Frequency**	**Sample**	**Strengths**	**Weaknesses**	**Geography**				**Units of Analysis**			**Level of Analysis**	
					UK	GB	Region	Sub-Region	Mean	Median	Distribution	Individual	Household
National Accounts Estimates of Gross Disposable Household Income *(GDHI)* Office for National Statistics	**Annual** data from 1948 **Quarterly** data from Q1 1995		Includes institutional households Internationally comparable with other ESA and SNA accounts Long time series is available Uses a range of reliable administrative and survey data Frequent and timely	Currently includes NPISH income Compliance with NA concepts may not match user requirements (e.g. the inclusion of imputed renal of owner occupiers as income) Only economy wide information is published	**X**				**National Aggregate**				

Other Income Cont.														
Publication	**Frequency**	**Sample**	**Strengths**	**Weaknesses**	**Geography**				**Units of Analysis**			**Level of Analysis**	
					UK	GB	Region	Sub-Region	Mean	Median	Distribution	Individual	Household
Small Area Income Estimates Office for National Statistics	1998/99 (ward) 2001/02 (ward) 2004/05 (MSOA) 2007/08 (MSOA) **To be published in 2015** 2011/12 (MSOA)		Provides figures at low geographical level	Does not include Scotland and Northern Ireland Care should be taken when drawing conclusions and making comparisons as each estimate includes standard errors Currently a three year lag from reference period to publication date			**X**	**X**	**X**				**X**