

Article

Measuring self-employment income using administrative data: tax year ending 2016

Research using HM Revenue and Customs' Self Assessment data to produce estimates of self-employment income.

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Release date:
23 June 2021

Next release:
To be announced

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1 . Main points

- This research is the first conducted by the Office for National Statistics (ONS) to investigate the use of HM Revenue and Customs (HMRC) Self Assessment data to produce an administrative data-based measure of self-employment income.
- We developed this measure using the [Canberra Group Handbook on Household Income Statistics](#), widely agreed as the international standard for household income statistics.
- While our measure does not quite match these international standards, it brings us a step closer when compared with existing survey-based measures of self-employment income.
- Initial analyses suggest both mean and median self-employment income are lower when using our new admin-based measure compared with our existing survey-based measure of self-employment income.
- This new measure of self-employment income has been incorporated into our experimental admin-based income statistics, which meets an important user need to better capture this component of income.

2 . Overview of our transformation research

The Office for National Statistics (ONS) publishes official estimates of income in the [Effects of taxes and benefits on UK household income](#) (ETB) yearly statistical bulletins, using Living Costs and Food survey (LCF) data. The data and publications include breakdowns for self-employment income.

This article presents research into the use of administrative data to produce estimates of self-employment income. HM Revenue and Customs (HMRC) Self Assessment data are used in conjunction with international standards of household income statistics to produce a solely administrative-based measure of self-employment income.

The outcomes of this research will contribute to two of our key work streams as part of [our plans to transform population and social statistics](#):

- the development of a measure of self-employment income to incorporate into our [Admin-based income statistics](#)
- the potential use of administrative data to improve existing survey-based measures of income or as an alternative data source to replace survey income questions

Definition of self-employment income

The [Canberra Group Handbook on Household Income Statistics](#), as set out by the United Nations Economic Commission for Europe, is widely agreed as the international standard for household income statistics. It provides detailed guidance on how components of income should be defined and measured.

From this guidance we define net self-employment income as including:

- the profit or loss that accrues to owners of, or partners in, unincorporated enterprises who work in these enterprises
- the estimated value of goods and services produced for barter, less expenses
- the estimated value of goods produced for own consumption, less expenses

This excludes the profit or loss from the capital investment of partners who do not work in these enterprises, also known as “silent” partners. Such income would fall under dividend income rather than self-employment income.

3 . Creating an administrative-based measure of self-employment income

The definition of self-employment income as outlined in the [Canberra Group Handbook](#) is used in conjunction with HM Revenue and Customs (HMRC) Self Assessment data to create our proposed administrative-based measure of self-employment income.

In using this classification of self-employment income, Self Assessment data cannot cover the entirety of the definition, namely the estimated value of goods and services produced for barter (Table 1). However, unlike the Effects of taxes and benefits (ETB) measure of self-employment income (sourcing Living Costs and Food survey (LCF) data), Self Assessment data do capture losses accrued to owners of, or partners in, a business. This provides an opportunity to more closely align to the Canberra Group Handbook measure of self-employment income.

Table 1: Comparison of LCF and HMRC’s Self Assessment data sources with components of Canberra Group Handbook definition of net self-employment income

Data source	Net profit	Net loss	Goods and services for barter	Goods for own consumption
LCF	Yes	No	No	Yes
Self-Assessment	Yes	Yes	No	Yes

Source: Office for National Statistics

Two administrative-based measures of self-employment income have been created separately for sole traders (Equation 1) and business partners (Equations 1 and 2), as this information is collected separately through different Self Assessment returns. These two measures are subsequently combined to create our overall measure of administrative-based self-employment income.

The Self Assessment returns submitted by sole traders provide raw values for the various components of self-employment income, such as turnover and expenses, which are used to create our bespoke measure of net profit or net loss. In contrast, returns submitted by business partners provide an already derived measure of net profit or net loss. It has been calculated at the partnership level then split between partners, meaning the creation of a bespoke measure is not possible for partners. Instead, this derived income figure is adjusted for the partner’s basis period, with any extra income they have received outside of the partnership being added to their total partner income.

Equation 1: Variables sourced from Self Assessment sole trader and business partner tax returns to create measure of self-employment income

Sole traders (SA103)

turnover

+

any other business income

+

goods or services for own use

+

any other business income not already included

+

balancing charges

+

total disallowable expenses

-

(total expenses + total capital allowances) or trading income allowance¹

+

adjustment for different basis period²

Business partners (SA104)

your share of partnership's profit or loss

+

adjustment for different basis period²

+

any other business income not included in partnership accounts

Notes:

1. Trading income allowance was introduced in the tax year ending 2018, therefore it has not been included in our calculations for the tax year ending 2016.
2. Adjustments for different basis periods can be positive or negative.

Equation 2: Creation of "your share of partnership's profit or loss" variable in partnership-level Self Assessment form, used by business partners in SA104 Self Assessment form

your share of partnership's profit or loss
=
turnover
+
any other business income
+
goods taken for own use and other adjustments that increase profit
+
balancing charges
+
total disallowable expenses
-
total expenses
-
total capital allowances
-
deductions from net profit or additions to net loss

Initially, these separate measures of self-employment income were created for all individuals with a relevant Self Assessment return. These individuals were then filtered based on their raw turnover values (or share of partnership's profit or loss for partners, given a turnover value is not available). Only individuals with a non-zero value for turnover (sole traders) or share of profit or loss (partners) were included in our final measure of self-employment income. We reasoned that only those working as self-employed during the given year should be included in our measure, therefore those without a turnover were considered not self-employed, despite having submitted a Self Assessment return.

The inclusion of business partners in our measure of self-employment income adds two complications in relation to the Canberra Group Handbook definition:

- our calculation does not differentiate between incomes which include or exclude VAT; this can be very difficult to identify given the application of VAT depends on a business' profession
- all individuals reporting a business partner income have been included, without confirming whether these individuals work in unincorporated enterprises (as required by the Canberra Group Handbook)

These two factors require further exploration of the Self Assessment partnership-level forms. This has not formed part of this initial research, but will be explored as we further develop our measure of administrative-based self-employment income.

Individuals who receive income from multiple sole trader and/or partnership enterprises are required to submit separate Self Assessment tax returns for each enterprise. As such, a Unique Taxpayer Reference (UTR) number has been used to combine each of these Self Assessment returns per individual, creating a person-level measure of self-employment income.

Table 2 shows the final descriptive statistics for our proposed administrative-based measure of self-employment income for the tax year ending 2016, having combined individual-level information for sole traders and business partners. Aggregate estimates of self-employment income taken from the survey-based ETB publication are included for comparison.

When comparing these two measures of self-employment income, it is important to consider some key differences between them:

- during LCF processing, non-zero loss income amounts are converted to zeros, with these zeros included with profits in the calculation of self-employment income in the ETB; the Self Assessment measure includes both profit and loss values when calculating self-employment income
- LCF respondents can source a value for their self-employment income from several relevant documents, one of which is their Self Assessment tax return

While both measures are capturing self-employment income, the value that individuals are providing for each may be impacted by the document used. The mean values for self-employment income are very similar for the Self-Assessment and ETB measures, but the total number of self-employed individuals, median income value and total income value are all noticeably higher in the ETB-based measure of self-employment income. As such, it appears that when aligning the Self Assessment measure with the Canberra Handbook definition as much as is possible, the administrative-based measure of self-employment income produces lower estimates for self-employment income than does our existing survey-based measure.

Table 2: Canberra Group Handbook-aligned estimates of self-employment income using HMRC's Self Assessment data, with Effects of taxes and benefits aggregate estimates for comparison, tax year ending 2016

	Self Assessment Effects of taxes and benefits	
Count	4,608,485	5,000,446
Mean	£17,480	£17,965
Median	£8,294	£12,098
Sum	£80,554,479,973	£89,831,197,668

Source: HM Revenue and Customs, Office for National Statistics

For more in-depth comparisons between ETB and Self Assessment measures of self-employment income, see our [Survey and administrative data comparisons of self-employment income](#) article.

This proposed administrative-based measure of self-employment income has now been incorporated as an additional component of income into our experimental [Admin-based income statistics](#).

We are inviting feedback on our new administrative-based measure of self-employment income (Admin.Based.Characteristics@ons.gov.uk) and will continue to review it as we further develop our research into the use of Self Assessment data.

4 . Data sources and quality

Self Assessment administrative data

Self Assessment is the system used by HM Revenue and Customs (HMRC) to collect income tax. Tax is usually deducted automatically from wages, pensions and savings. However, individuals and businesses with other types of income must report their income in a Self Assessment tax return.

Individuals with self-employment income are required to submit one of two Self Assessment supplementary pages for each one of their businesses: an SA103 sole trader form or SA104 business partner form. Two options are available for both forms, a short or full form, depending on the individual's circumstances. Most sole traders and business partners complete the short version of their respective forms given the relatively simple nature of their business. However, sole traders or business partners with complicated businesses or incomes above a certain threshold are required to complete the full version of these forms, providing more detailed information about their business. Income information provided via both short and full SA103 and SA104 forms have been included in our analyses.

Sole traders must complete an SA103 form if their turnover for that tax year was over £1,000, although individuals with turnovers falling below this threshold can still choose to submit a tax return for several reasons (for example, to gain access to benefits or provide proof of income). All business partners are required to complete an SA104 form if they were a member of a business partnership in that tax year. They source their partner-level income information needed to complete the SA104 form from the partnership-level SA800 tax return form, which is completed by one nominated partner and contains information covering the entire partnership.

All individuals completing a Self Assessment tax return are assigned a Unique Taxpayer Reference (UTR) number, which is included on every Self Assessment form. These UTR numbers were used to identify unique individuals within each dataset, to allow for multiple self-employment incomes to be combined to produce a single self-employment income figure per person.

We are aware that a National Insurance contributions error resulted in some self-employed individuals submitting Self Assessment forms for the tax year ending 2016 being assigned multiple UTR numbers. This issue has had a negligible impact on our analyses so without in-depth knowledge of the issue it was decided to leave these cases in the analysis. We do not expect this issue to affect self-employment estimates in future years.

5 . Future developments

This article presents initial research into the use of HM Revenue and Customs (HMRC) Self Assessment data to produce estimates of self-employment income. As we develop our knowledge and understanding of these Self Assessment data, we will work to further develop this measure of self-employment income to ensure all self-employed individuals are captured in line with the [Canberra Group Handbook](#) where possible.

This will include exploration of individuals who do not submit SA103 and SA104 Self Assessment forms, yet may have self-employment income captured elsewhere via Self Assessment returns (such as via SA200 returns, which capture certain individuals with simple tax affairs, who haven't completed an SA103 or SA104 form). We will also investigate whether it is possible to differentiate between business partner incomes which include or exclude VAT, as well as differentiating between partners who do and do not work within unincorporated businesses.

6 . Related links

[Survey and administrative data comparisons of self-employment income, UK: tax years ending 2016 to 2018](#)

Research article | Released 23 June 2021

Research comparing the Office for National Statistics' (ONS) official survey-based estimates and new administrative data-based estimates of self-employment income.

[Admin-based income, England and Wales: tax year ending 2016 revised results](#)

Research article | Released 23 June 2021

Brings together data from the Pay As You Earn, Self Assessment and benefits systems to derive experimental estimates of income. We're publishing these statistics to demonstrate the progress we're making and asking for feedback on whether these statistics meet user needs.

[Effects of taxes and benefits on UK household income: financial year ending 2020](#)

Statistical bulletin | Released 28 May 2021

The redistribution effects on individuals and households of direct and indirect taxation and benefits received in cash or kind, analysed by household type.

[The effects of taxes and benefits on household income, technical report: financial year ending 2020](#)

Technical report | Released 8 June 2021

This technical report provides an update on how the effects of taxes and benefits on household income (ETB) datasets for financial year ending (FYE) 2018 to FYE 2020 are produced. It contains information relating to questionnaire changes and new or changed methodology for these years.

[Living Costs and Food Survey technical report: financial years ending March 2018 and March 2019](#)

Technical report | Released 7 August 2020

User guidance and technical information for the Living Costs and Food Survey