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# The UK Flow of Funds Project: Comprehensive review of the UK Financial Accounts

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**Abstract:** This article provides an update on the UK Flow of Funds Project, which is conducted in partnership between Office for National Statistics (ONS) and the Bank of England (the Bank). Amongst other things, the project aims to develop from-whom-to-whom estimates for financial account transactions and balance sheet levels, publishing the counterparty relationships for each financial instrument rather than the total asset and/or liability position for each institutional sector in isolation.

Included in this article is a presentation of the currently available ‘from-whom-to-whom’ statistics, with experimental estimates for the majority of financial instruments from 1997-2014. Although a joint publication, this article represents data that are consistent with that published in ONS UK Economic Accounts (UKEA), consistent with the UK National Accounts (Blue Book) 2015, and does not make use of additional Bank of England data.

## 1 Introduction

In late 2014, ONS began working in partnership with the Bank to improve both the coverage and quality of flow of funds statistics for the UK. An [article](#) introducing the project and presenting the initial findings was published in July 2015. A principal aim of the project is to develop from-whom-to-whom estimates for financial account transactions and balance sheet levels, publishing the counterparty relationships for each financial instrument rather than the total asset and/or liability position for each institutional sector in isolation. The term ‘flow of funds’ in this context therefore differs from that used to describe the financial account in general and goes far beyond what is required under international statistical regulation.

This article provides a further update on progress and represents the completion of the first stage of the project by presenting an assessment of the currently available ‘from-whom-to-whom’ statistics and the subsequent quality of these new estimates. The currently available data sources are those used in the regular compilation of the UK’s sector and financial accounts within the [UK Economic Accounts](#) (UKEA). While some from-whom-to-whom information is available from these data sources, this has not all been previously published

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by ONS, and therefore these new experimental statistics offer an enhanced view of UK balance sheets by institutional sector.

Investigating the current availability of from-whom-to-whom data has led to the most comprehensive review of the financial accounts for some years, not only identifying where counterparty information is available but also assessing the quality of the estimates currently published in the accounts. This article and accompanying explanatory notes therefore highlight strengths in the current data but also areas where the quality of current statistics could be improved or undergo further review. A key area identified for improvement to the counterparty information published in these experimental statistics would be to seek new data sources to refine the counterparty splits where these are allocated by fixed proportions.

Section 2 presents the update on the progress of the Flow of Funds Project while the results of the detailed investigation into existing data sources and the new publication of 'from-whom-to-whom' matrices for selected financial instruments are presented in Section 3. The full experimental statistics can be downloaded from the [ONS webpage](#). An update on the future programme of work is given in Section 4.

## 2 Update on progress

In July 2015, new experimental statistics on from-whom-to-whom lending were published. These estimates provided further information on the inter-sectoral relationships within the UK economy and with the rest of the world with respect to loans. Since then, work has been focussed on investigating the availability of counterparty information for the remaining financial instruments based on the current data sources used by ONS in the compilation of the UKEA. The results of this work are presented in Section 3 along with example matrices. These matrices show the counterpart relationships underlying the total asset and liability data published in the UKEA where it is possible to identify these. Where estimates are available, time series estimates from 1997 to 2014 have been published alongside this article as experimental statistics. This includes new 2014 data for the experimental loans statistics, first published in July 2015.

This work has been conducted both to identify readily available counterparty information for the publication of a full set of flow of funds matrices, as well as to assess the quality of the current financial account and balance sheet estimates published in the UKEA. The project has therefore identified areas of strength, but also areas where new data sources are required to fill gaps or where the data or methodology for compiling existing estimates could be improved.

[Explanatory notes](#) for the newly published estimates which outline the data sources and methods used in the construction of the matrices, have been published alongside this article. These also highlight areas for further review and areas where estimates are different to similar series published elsewhere, for example by the Bank of England. This includes an updated, more detailed version of the explanatory notes for the experimental loans statistics, first published in July 2015. The explanatory notes are important in increasing user understanding of the financial account data and ONS welcomes feedback on the sources and methods outlined.

Any feedback on the experimental statistics and accompanying explanatory notes can be sent to [flowoffundsdevelopment@ons.gov.uk](mailto:flowoffundsdevelopment@ons.gov.uk).

Further improvements and implementation into the UKEA will require more detailed investigation. This will be taken forward in line with the National Accounts priorities and is dependent on the availability of resources within ONS. Although further changes and improvements based on this work are important, the changes needed to meet legal requirements take priority.

### 3 Data review and matrices

The review of existing ONS data sources has led to the publication of a new set of flow of funds matrices for the following instruments:

- currency;
- deposits;
- short-term debt securities;
- long-term debt securities;
- equity and investment fund shares/units;
- insurance, pension and standardised guarantee schemes; and
- financial derivatives.

These matrices include new estimates for the counterparty breakdown where available, based on a combination of data explicitly available from existing sources as well as a series of assumptions and modelling techniques. The sources and methods used are outlined in detail within the explanatory notes for each instrument. There are still many areas, however, where full counterparty information is not available from existing sources and no additional assumptions have been made in these experimental statistics for these splits. The matrices have therefore been published with an 'unknown counterparty' element of sectoral assets and liabilities where relevant. As shown in Figure 1, there is an increase in the counterparty information published here from that available in the current UKEA for all financial instruments. These new estimates therefore constitute a marked improvement on the counterparty coverage of the UKEA publication.

Matrices have not been published for monetary gold and special drawing rights, employee stock options or for other accounts payable/receivable. For monetary gold and special drawing rights, there is only one sector on the asset side and therefore a flow of funds matrix is not necessary. For the other two instruments, no counterparty data are currently available.

**Figure 1: Comparison of counterparty information available in UKEA and in Flow of Funds experimental statistics, average across time period 1997-2014**

| Instrument  | Counterparty information available (% total assets) |                             | Improvement (percentage points) |
|---|---|-----------------------------|---------------------------------|
|   | Currently Published UKEA                            | FoF experimental statistics |                                 |
| Currency  | 0   | 6                           | 6                               |
| Deposits  | 99  | 100                         | 1                               |
| Short-term debt securities                            | 91  | 98                          | 7                               |
| Long-term debt securities                             | 56  | 60                          | 4                               |
| Loans   | 84  | 100                         | 16                              |
| Equity and investment fund shares/units               | 31  | 60                          | 29                              |
| Insurance, pension and standardised guarantee schemes | 0   | 100                         | 100                             |
| Financial derivatives                                 | 0   | 100                         | 100                             |
| <b>Total</b>  | <b>50</b>   | <b>88</b>                   | <b>38</b>                       |

## Currency

Estimates for currency relate to the issuance and holdings of notes and coin, both sterling and foreign currency. On the liabilities side, monetary financial institutions (MFIs) issue sterling notes and central government issues sterling coin (through Royal Mint, a public corporation). The rest of the world issues foreign currency notes and coin. All institutional sectors can in theory hold currency but it is assumed that insurance companies and pension funds, central government and local government do not have holdings of cash as this will instead all be deposited.






An example matrix for currency is given in Figure 2. Limited data are available for the split of holdings of currency into notes (issued by MFIs) and coin (issued by Central Government) and thus there are gaps in the matrix that will require the development of alternative data sources to fill. When we consider total assets, counterpart relationships are known for six per cent of the total on average across the time period 1997-2014; these are based on both ONS and external data sources with respect to RoW liabilities, while the breakdown of PC and RoW assets are estimated using an assumption on the proportional split. The remaining holdings should be split between the liabilities of the MFI and Central Government sectors but there is currently no data available or assumption made for this breakdown. However given the relatively small level of coin in issue, we are almost able to estimate the holdings of sterling notes by sector from these new estimates.

**Figure 2: A from-whom-to-whom balance sheet matrix for total currency, 2014 unconsolidated<sup>2</sup> current prices<sup>3</sup> £ billion**

| Liabilities:       |                   |      |             |     |      |            |    |          |            |       |             |
|--------------------|-------------------|------|-------------|-----|------|------------|----|----------|------------|-------|-------------|
| Assets:            | PC <sup>(a)</sup> | PNFC | MFI         | OFI | ICPF | CG         | LG | HH+NPISH | RoW        | Total | Unknown c/p |
| PC                 |                   |      | 0.6         |     |      | 0.1        |    |          | -          | 0.6   | 0.0         |
| PNFC               |                   |      | -           |     |      | -          |    |          | 0.6        | 5.8   | 5.2         |
| MFI                |                   |      | -           |     |      | -          |    |          | 0.2        | 11.4  | 11.2        |
| OFI                |                   |      | -           |     |      | -          |    |          | -          | 0.1   | 0.1         |
| ICPF               |                   |      | -           |     |      | -          |    |          | -          | -     | -           |
| CG                 |                   |      | -           |     |      | -          |    |          | -          | -     | -           |
| LG                 |                   |      | -           |     |      | -          |    |          | -          | -     | -           |
| HH+NPISH           |                   |      | -           |     |      | -          |    |          | -          | 58.8  | 58.8        |
| RoW                |                   |      | 1.5         |     |      | 0.2        |    |          |            | 1.7   | 0.0         |
| <b>Total</b>       |                   |      | <b>73.1</b> |     |      | <b>4.5</b> |    |          | <b>0.8</b> |       |             |
| <b>Unknown c/p</b> | -                 | -    | 71.0        | -   | -    | 4.3        | -  | -        | 0.0        |       |             |

(a) PC = public corporations; PNFC = private non-financial corporations; MFI = monetary financial institutions; OFI = financial institutions other than MFIs and insurance corporations and pension funds; ICPF = insurance corporations and pension funds; CG = central government; LG = local government; HH+NPISH = households and non-profit institutions serving households; RoW = rest of the world.

**Key:**

|   |   |
|---|---|
|    | Estimate is already published in UKEA   |
|   | Estimate is not currently published in UKEA   |
|  | Cell could be allocated some (or all) of the unknown counterparty data                    |
|  | No estimate is currently made for this cell, although theoretically data could exist here |
|  | Not possible  |

The entries shown in bold and shaded in blue are those already available and published by ONS; in this case it is only the total assets and liabilities for each sector. The remaining entries shaded in green are all previously unpublished. Cells with a dashed border are those where the unknown counterparty data could potentially be attributed, although we currently have no information on the correct split. These new estimates therefore supplement the existing data by showing the split between holdings of UK and rest of the world (RoW) issued currency.

## Deposits

Transferable and other deposits are deposits and repurchase transactions (repos)<sup>4</sup> with banks and building societies in the UK and in the rest of the world, as well as other deposits such as national savings instruments issued by the central government. On the liabilities side, deposits can be held with UK MFIs, central government and the RoW. No other sector is able to accept deposits; amounts held with other institutions are instead classified as loans from the originating sector to the borrower. All institutional sectors are able to make deposits; inter-MFI lending is also included here as both an asset and liability of the MFI sector.

<sup>2</sup> Unconsolidated means that these data include the inter-sector position. Users are able to construct consolidated estimates if required by subtracting any estimates that have the same asset and liability sector.

<sup>3</sup> Current price means that no attempt has been made to control for changes due to price or exchange rate, and that the figures are presented in the market price for that year.

<sup>4</sup> Users may find this existing ONS glossary document helpful - <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/investment-by-insurance-companies/index.html>

An example matrix for deposits is given in Figure 3; this includes full counterparty information for all deposits based primarily on external data sources, supplemented with ONS survey data. Currently, sectoral deposits with UK MFIs and RoW are published separately in UKEA but all other deposits are aggregated. Central government should be the only other liability sector, but the current UKEA estimates also include series for deposits with public corporations and other financial institutions that have been reclassified in these experimental statistics.<sup>5</sup> These new estimates therefore identify deposits with central government explicitly, supplementing the currently published statistics for deposits. This constitutes a one percentage point increase in the available counterparty information with respect to total assets.

**Figure 3: A from-whom-to-whom balance sheet matrix for total deposits, 2014 unconsolidated current prices £ billion**

| Assets:      | Liabilities:      |      |         |     |      |       |    |          |         |         |
|--------------|-------------------|------|---------|-----|------|-------|----|----------|---------|---------|
|              | PC <sup>(a)</sup> | PNFC | MFI     | OFI | ICPF | CG    | LG | HH+NPISH | RoW     | Total   |
| PC           |                   |      | 2.8     |     |      | 1.8   |    |          | 0.0     | 4.6     |
| PNFC         |                   |      | 357.7   |     |      | 3.3   |    |          | 144.8   | 505.8   |
| MFI          |                   |      | 916.8   |     |      | 0.0   |    |          | 1,620.5 | 2,537.4 |
| OFI          |                   |      | 697.4   |     |      | 17.4  |    |          | 680.7   | 1,395.6 |
| ICPF         |                   |      | 94.7    |     |      | 0.0   |    |          | 52.6    | 147.3   |
| CG           |                   |      | 18.1    |     |      | 2.7   |    |          | 7.0     | 27.8    |
| LG           |                   |      | 25.9    |     |      | 1.0   |    |          | 1.0     | 27.9    |
| HH+NPISH     |                   |      | 1,169.3 |     |      | 113.0 |    |          | 72.0    | 1,354.3 |
| RoW          |                   |      | 2,678.2 |     |      | 1.3   |    |          |         | 2,679.5 |
| <b>Total</b> |                   |      | 5,961.0 |     |      | 140.5 |    |          | 2,578.6 |         |

(a) PC = public corporations; PNFC = private non-financial corporations; MFI = monetary financial institutions; OFI = financial institutions other than MFIs and insurance corporations and pension funds; ICPF = insurance corporations and pension funds; CG = central government; LG = local government; HH+NPISH = households and non-profit institutions serving households; RoW = rest of the world.

**Key:**

|   |   |
|---|---|
|   | Estimate is already published in UKEA   |
|   | Estimate is not currently published in UKEA   |
| - | No estimate is currently made for this cell, although theoretically data could exist here |
|   | Not possible  |

## Short-term debt securities

Short-term debt securities are the issuance and holdings of money market instruments (MMIs) with an original maturity of one year or less. This includes certificates of deposit, commercial paper, treasury and local authority bills and all other MMIs. All institutional sectors can theoretically issue and hold short-term debt securities. It is currently assumed that issuance by public corporations and insurance corporations and pension funds (ICPFs) is zero.

An example matrix for short-term debt securities is given in Figure 4. This includes some series for which the counterparty is unknown and no assumption has been made; the unknown counterparty data accounts for two per cent of the total assets on average across

<sup>5</sup> Please see the explanatory notes for more detail on this reclassification and the impact on published estimates.

the time period 1997-2014. These unknown holdings relate to sterling commercial paper issued by private non-financial corporations (PNFCs) and OFIs where the exact split between the liabilities of the two sectors is not known.

Estimates of sectoral holdings of short-term debt securities issued by MFIs, central government, local government and RoW are published in UKEA. However, the holdings of debt securities issued by other UK residents are all aggregated in the UKEA. These new estimates provide further information on the inter-sectoral relationships for this instrument, based on a combination of both ONS and external data sources as well as a series of assumptions about the proportional split across sectors where data are not currently explicitly available. This is outlined in detail within the explanatory notes. The increase in known counterparty information out of the level of total assets is eight percentage points; from 91 per cent in the UKEA to 99 per cent in these newly published matrices.

**Figure 4: A from-whom-to-whom balance sheet matrix for total short-term debt securities, 2014 unconsolidated current prices £ billion**

| Assets:                | Liabilities: |      |       |      |      |      |     |              |      | Unknown<br>c/p |       |
|------------------------|--------------|------|-------|------|------|------|-----|--------------|------|----------------|-------|
|                        | PC<br>(a)    | PNFC | MFI   | OFI  | ICPF | CG   | LG  | HH+<br>NPISH | RoW  |                | Total |
| PC                     | -            | -    | 0.4   | 0.1  | -    | 0.3  | -   | -            | -    | 0.8            | 0.0   |
| PNFC                   | -            | 0.5  | 9.0   | 4.8  | -    | 0.7  | -   | -            | 2.9  | 18.0           | 0.0   |
| MFI                    | -            | 0.1  | 5.2   | 0.0  | -    | 6.7  | 0.0 | -            | 43.8 | 55.8           | 0.0   |
| OFI                    | -            | 0.5  | 34.7  | 0.0  | -    | 20.7 | 0.0 | -            | 8.2  | 67.6           | 3.5   |
| ICPF                   | -            | -    | 8.9   | -    | -    | 4.8  | -   | -            | 5.5  | 21.3           | 2.1   |
| CG                     | -            | 2.6  | 0.0   | -    | -    | -    | -   | -            | 3.2  | 5.7            | 0.0   |
| LG                     | -            | 0.0  | 1.6   | 0.0  | -    | 2.3  | -   | 1.3          | -    | 5.2            | 0.0   |
| HH+NPISH               | -            | -    | 5.9   | 0.5  | -    | 0.0  | 0.0 | -            | -    | 6.4            | 0.0   |
| RoW                    | -            | 27.4 | 130.4 | 1.2  | -    | 27.2 | -   | -            | -    | 186.7          | 0.5   |
| <b>Total</b>           | -            | 30.3 | 196.3 | 13.4 | -    | 62.6 | 0.0 | 1.3          | 63.6 | -              | -     |
| <b>Unknown<br/>c/p</b> | -            | -0.7 | 0.0   | 6.8  | -    | 0.0  | 0.0 | 0.0          | 0.0  | -              | -     |

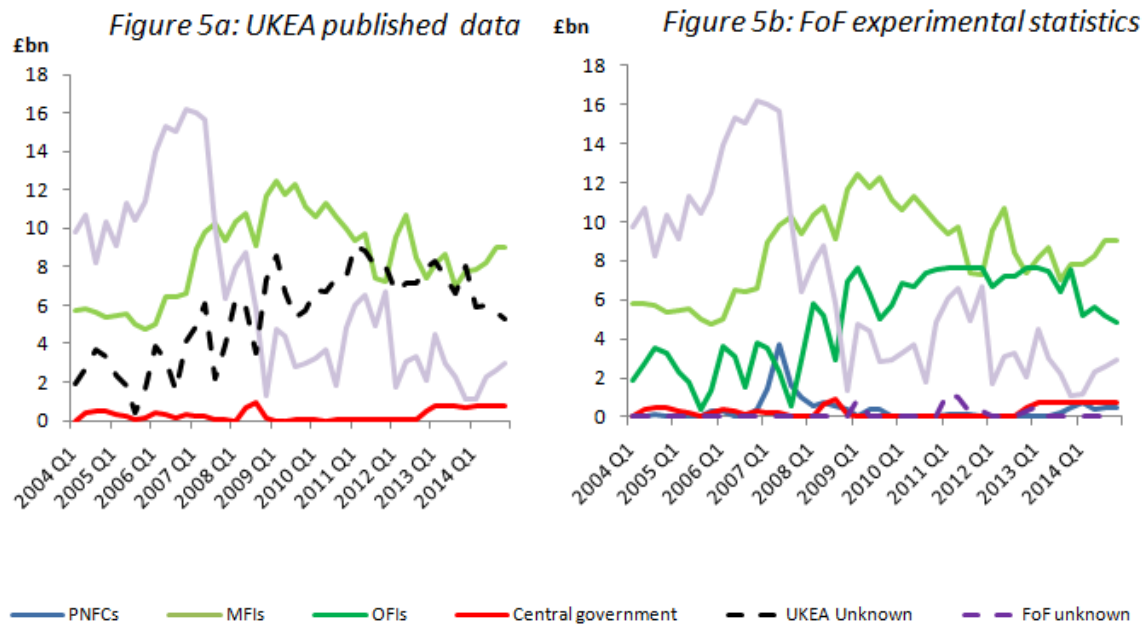
(a) PC = public corporations; PNFC = private non-financial corporations; MFI = monetary financial institutions; OFI = financial institutions other than MFIs and insurance corporations and pension funds; ICPF = insurance corporations and pension funds; CG = central government; LG = local government; HH+NPISH = households and non-profit institutions serving households; RoW = rest of the world.

**Key:**

- Estimate is already published in UKEA
- Estimate is not currently published in UKEA
- Cell could be allocated some (or all) of the unknown counterpart data
- No estimate is currently made for this cell, although theoretically data could exist here
- Not possible



**Figure 5: PNFC holdings of short-term debt securities by issuing sector 2004-2014 – comparison of FoF experimental statistics with UKEA estimates, amounts outstanding, £ billion**



As an example of the extra analytical information these FoF matrices provide we can consider PNFC holdings of short-term debt securities. Figure 5a shows the detail currently available in UKEA estimates, with a split of PNFC holdings into debt issued by MFIs, RoW, central government and 'other'. We can see that holdings increased sharply prior to the economic downturn in 2008, primarily due to the increased holding of commercial paper issued by the rest of the world, but subsequently fell as these holdings were considerably reduced in 2008. The estimates in UKEA show this decline in counterpart to RoW, but despite this fall the total level of holdings remained relatively stable. Where previously the reason behind this was unclear, the new estimates in Figure 5b show that this was mainly due to an increase in holdings of OFI issued short-term debt, where these holdings have been estimated as a proportion of total OFI issuance. The unknown counterpart line has therefore been reduced from the black dashed line in Figure 5a to the purple dashed line in Figure 5b.

As highlighted above, these new estimates do involve some assumptions about the proportional split across sectors where data are not explicitly available. There is currently no data source available to ONS that would provide comprehensive estimates of holdings of debt securities in the UK, and potential options for obtaining these data will therefore be investigated as part of the wider project. This could take a similar approach to that in the euro-area, whereby member states are required to report holdings on a security-by-security basis to the European Central Bank. If sufficient resources are available, ONS will assess the availability of similar sources in the UK, and their suitability for use in flow of funds statistics.



## Long-term debt securities

Long-term debt securities are the issuance and holdings of bonds and other debt instruments with an original maturity of more than one year. All institutional sectors can issue and hold long-term debt securities and there are currently estimates for all sectors issuance and holdings.

An example matrix for long-term debt securities is given in Figure 6. This includes several series for which the counterpart is unknown and no assumption has been made. The unknown counterpart data accounts for forty per cent of the total assets on average across the time period 1997-2014. These unknown holdings are securities issued by the financial and non-financial corporate sectors.

**Figure 6: A from-whom-to-whom balance sheet matrix for total long-term debt securities, 2014 unconsolidated current prices £billion**

|                        |  | Liabilities:      |       |       |       |      |         |     |              |         |         | Unknown<br>c/p |
|------------------------|--|-------------------|-------|-------|-------|------|---------|-----|--------------|---------|---------|----------------|
| Assets:                |  | PC <sup>(a)</sup> | PNFC  | MFI   | OFI   | ICPF | CG      | LG  | HH+<br>NPISH | RoW     | Total   |                |
| PC                     |  | -                 | -     | -     | -     | -    | 0.5     | 0.0 | -            | 0.1     | 0.6     | 0.0            |
| PNFC                   |  | -                 | -     | 1.2   | -     | -    | 2.8     | 0.0 | -            | 36.2    | 71.1    | 31.0           |
| MFI                    |  | 0.1               | -     | 18.9  | -     | -    | 562.9   | 0.0 | -            | 416.5   | 1,285.6 | 287.2          |
| OFI                    |  | 20.7              | 0.0   | 16.1  | -     | -    | 124.1   | 0.0 | -            | 583.6   | 1,025.5 | 281.0          |
| ICPF                   |  | 5.0               | -     | 44.8  | -     | -    | 476.0   | 2.7 | -            | 317.2   | 1,080.1 | 234.4          |
| CG                     |  | 0.0               | -     | 0.0   | -     | -    |         | 0.0 | -            | 45.3    | 46.1    | 0.8            |
| LG                     |  | -                 | -     | -     | -     | -    | 1.1     |     | -            |         | 1.3     | 0.2            |
| HH+NPISH               |  | 0.0               | -     | 0.0   | -     | -    | 76.0    | 1.5 | -            | 7.9     | 92.2    | 6.8            |
| RoW                    |  | -                 | 30.2  | -     | 13.6  | 3.0  | 441.3   | 0   | -            |         | 1,471.8 | 983.6          |
| <b>Total</b>           |  | 25.7              | 309.9 | 688.9 | 923.8 | 29.2 | 1,684.8 | 4.2 | 0.9          | 1,406.9 |         |                |
| <b>Unknown<br/>c/p</b> |  | 0.0               | 279.7 | 608.0 | 910.2 | 26.2 | 0.0     | 0.0 | 0.9          | 0.0     |         |                |

(a) PC = public corporations; PNFC = private non-financial corporations; MFI = monetary financial institutions; OFI = financial institutions other than MFIs and insurance corporations and pension funds; ICPF = insurance corporations and pension funds; CG = central government; LG = local government; HH+NPISH = households and non-profit institutions serving households; RoW = rest of the world

**Key:**

|  |   |
|--|---|
| <span style="background-color: #e0f0e0; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>  | Estimate is already published in UKEA   |
| <span style="background-color: #e0f0e0; border: 1px dashed black; display: inline-block; width: 15px; height: 10px;"></span> | Estimate is not currently published in UKEA   |
| <span style="border: 1px dashed black; display: inline-block; width: 15px; height: 10px;"></span>                            | Cell could be allocated some (or all) of the unknown counterpart data                     |
| -  | No estimate is currently made for this cell, although theoretically data could exist here |
| <span style="background-color: #cccccc; display: inline-block; width: 15px; height: 10px;"></span>                           | Not possible  |

Estimates of sectoral holdings of long-term debt securities issued by central government, local government and the RoW are published in the UKEA. The holdings of debt securities issued by other UK residents are all aggregated, however, and these new estimates therefore go some way to provide further information on the inter-sectoral relationships, albeit this is rather limited. These are based on a combination of data available from ONS surveys and external sources, as well as a series of assumptions for the sectoral split of MFI issued securities where these data are not currently explicitly available.

The increase in known counterparty information out of the level of total assets is four per cent; from 56 per cent in the UKEA to 60 per cent in these newly published matrices. As with short-term debt securities, producing a comprehensive set of estimates for this instrument would require new data sources and methodology.

### Equity and investment fund shares/units

Estimates for equity and investment fund shares/units relate to the issuance and holdings of listed and unlisted shares, other UK equity and mutual funds units/shares. All institutional sectors other than central and local government and the households and non-profit institutions serving households (HH+NPISH) sector can theoretically issue equity while all sectors can hold equity.





An example matrix for equity and investment fund shares/units is given in Figure 7. This includes several series for which the counterpart is unknown and no assumption has been made; the unknown counterpart data accounts for forty per cent of the total assets on average across the time period 1997-2014. These unknown holdings relate to securities issued by the private sector (PNFC, MFIs, OFIs, ICPFs and HH+NPISH), where the majority are expected to be issued by the PNFC sector.

**Figure 7: A from-whom-to-whom balance sheet matrix for total equity and investment fund shares/units, 2014 unconsolidated current prices £billion**

| Liabilities:           |                   |         |       |         |       |    |    |              |         |         |  | Unknown<br>c/p |
|------------------------|-------------------|---------|-------|---------|-------|----|----|--------------|---------|---------|--|----------------|
| Assets:                | PC <sup>(a)</sup> | PNFC    | MFI   | OFI     | ICPF  | CG | LG | HH+<br>NPISH | RoW     | Total   |  |                |
| PC                     | -                 | -       | -     | -       | -     |    |    |              | 1.4     | 1.7     |  | 0.3            |
| PNFC                   | 0.0               | 61.6    | -     | 0.6     | -     |    |    |              | 635.5   | 739.6   |  | 41.9           |
| MFI                    | -                 | 0.0     | 1.8   | 1.9     | -     |    |    |              | 176.6   | 296.1   |  | 115.8          |
| OFI                    | -                 | -       | 105.8 | 82.0    | -     |    |    |              | 498.6   | 1,260.2 |  | 573.7          |
| ICPF                   | -                 | -       | -     | 620.3   | -     |    |    |              | 650.8   | 1,405.3 |  | 134.2          |
| CG                     | 3.3               | 1.3     | 8.4   | 51.9    | 1.3   |    |    |              | 5.8     | 72.5    |  | 0.5            |
| LG                     | 123.9             | -       | -     | -       | -     |    |    |              |         | 127.4   |  | 3.5            |
| HH+NPISH               | 0.0               | 1.7     | 35.3  | 355.0   | -     |    |    |              | 53.2    | 660.3   |  | 215.2          |
| RoW                    | 0.0               | 694.9   | 85.7  | 229.0   | 41.1  |    |    |              |         | 1,931.9 |  | 881.3          |
| <b>Total</b>           | 127.2             | 2,287.2 | 235.1 | 1,698.9 | 124.6 |    |    |              | 2,022.0 |         |  |                |
| <b>Unknown<br/>c/p</b> | 0.0               | 1,527.8 | -1.8  | 358.3   | 82.1  |    |    |              | 0       |         |  |                |

(a) PC = public corporations; PNFC = private non-financial corporations; MFI = monetary financial institutions; OFI = financial institutions other than MFIs and insurance corporations and pension funds; ICPF = insurance corporations and pension funds; CG = central government; LG = local government; HH+NPISH = households and non-profit institutions serving households; RoW = rest of the world

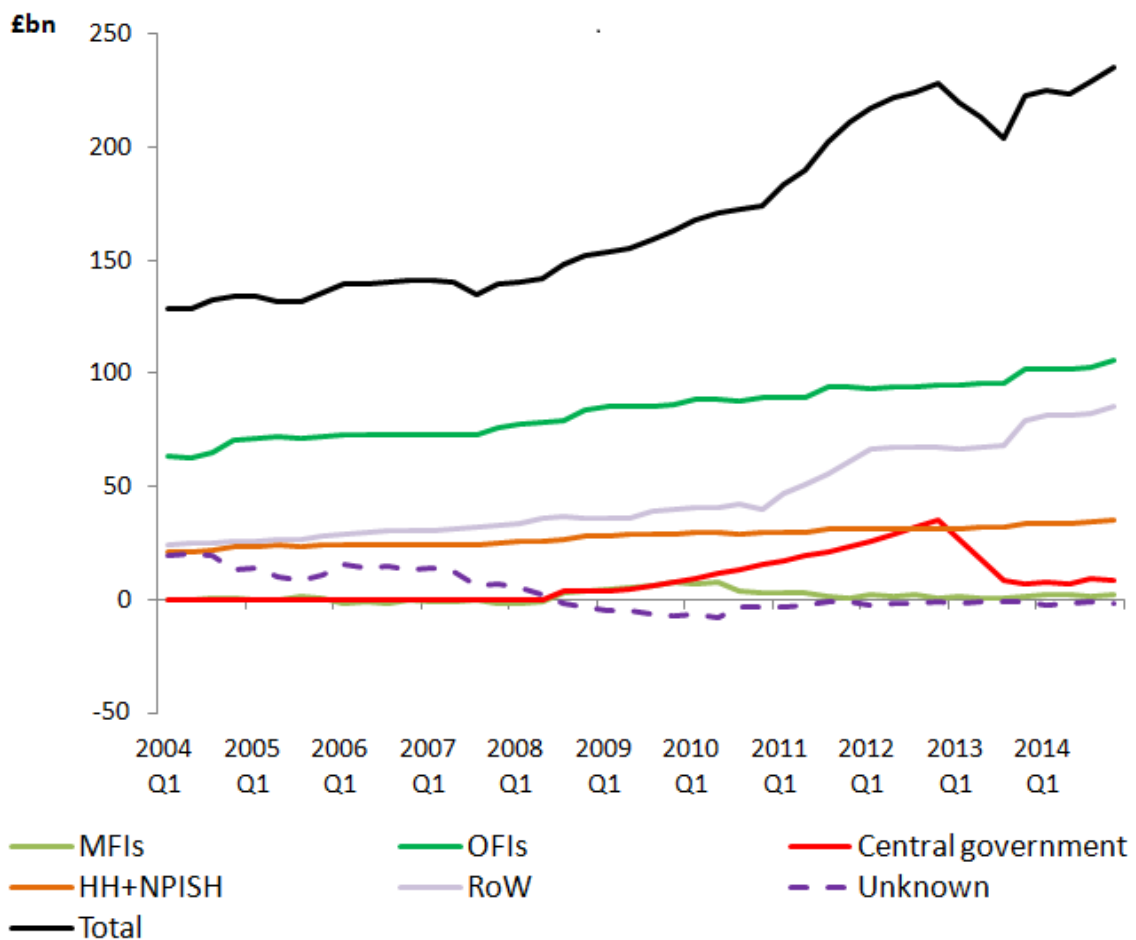
**Key:**

|   |   |
|---|---|
|  | Estimate is already published in UKEA   |
|  | Estimate is not currently published in UKEA   |
|  | Cell could be allocated some (or all) of the unknown counterpart data                     |
| -   | No estimate is currently made for this cell, although theoretically data could exist here |
|  | Not possible  |

Estimates are currently published for sectoral holdings of equity and investment fund units issued by the RoW, while the holdings of equity issued by UK residents are aggregated. These new estimates therefore provide considerable additional information on the inter-sectoral relationships; these are primarily based on external data sources such as administrative data, published accounts and BoE surveys of MFIs. ONS survey data are also used to provide new estimates of insurance companies and pensions funds (ICPF) and RoW holdings as well as some modelled data for certain splits. This is outlined in detail within the explanatory notes for equity.

The increase in known counterparty information with respect to total assets is 29 percentage points; from 31 per cent in UKEA to 60 per cent in these newly developed matrices. There is now a full breakdown of holdings of PC issued equity, an almost complete breakdown of holdings of MFI issued equity, and considerable additional information on holdings of equity issued by PNFCs, OFIs and ICPFs. As highlighted

**Figure 8: Holdings by sector of MFI issued equity 2004-2014, amounts outstanding, £ billion**



above, this does however involve some assumptions about the proportional split across sectors.

As noted above, one area where the new counterpart information adds particular value is for equity issued by MFIs. Figure 8 shows the detail available in the new experimental statistics where currently in UKEA no counterpart information is available. There has been an increase in total equity issued since end-2003, with particularly strong growth in 2011 and 2012, but there is currently no detail available in UKEA on the sectoral holdings of this increased equity issuance. These new experimental statistics, however, provide an almost complete counterpart breakdown by sector, showing that the increased equity was primarily held by the rest of the world. This relates to an increase in inward foreign direct investment, whereby foreign parent companies increased the equity held in UK resident subsidiaries. There was also an increase in central government holdings over this time relating to the purchase of shares in specific banks in the aftermath of the financial crisis. These have since declined as the government has sold the majority of its shares in these banks.

While the new estimates clearly enhance the level of detail previously available, providing comprehensive estimates will again require new data sources and methodology to be developed.

### **Insurance, pension and standardised guarantee schemes**

Insurance, pension and standardised guarantee schemes are split into non-life insurance technical reserves, life insurance and annuity entitlements, pension entitlements, claims of pension funds on pension managers and entitlements to non-pension benefits. This instrument also includes provisions for calls under standardised guarantee schemes but there are currently no data available for these.

The majority of the counterpart relationships are with the ICPF sector. This sector holds the liability for non-life insurance technical reserves, life insurance and annuity entitlements and pension entitlements, and holds the asset in the case of claims of pension funds on pension managers. Other relationships between sectors relate to pension entitlements and entitlements to non-pension benefits, although these have historically been zero series where ICPF is not on the asset or liability side.




An example matrix for insurance, pension and standardised guarantee schemes is given in Figure 9. Full counterpart information is available for this instrument, although the sectoral split across assets and liabilities is primarily based on a series of assumptions and modelling techniques. There is currently no breakdown by counterpart sector published in UKEA, although in some instances the counterpart relationships would have been evident due to the ICPF sector being the only possible asset or liability holder. The new experimental statistics therefore constitute an increase from no counterpart information available to one hundred percent available counterpart information.

**Figure 9: A from-whom-to-whom balance sheet matrix for total insurance, pension and standardised guarantee schemes, 2014, unconsolidated, current prices, £billion**

|              |  | Liabilities:      |       |      |      |        |    |      |              |     |        |
|--------------|--|-------------------|-------|------|------|--------|----|------|--------------|-----|--------|
| Assets:      |  | PC <sup>(a)</sup> | PNFC  | MFI  | OFI  | ICPF   | CG | LG   | HH+<br>NPISH | RoW | Total  |
| PC           |  |                   |       |      |      | 0.0    |    |      |              | -   | 0.0    |
| PNFC         |  |                   |       |      |      | 4.0    |    |      |              | -   | 4.0    |
| MFI          |  |                   |       |      |      | 0.1    |    |      |              | -   | 0.1    |
| OFI          |  |                   |       |      |      | 0.1    |    |      |              | -   | 0.1    |
| ICPF         |  | -                 | 655.7 | 37.5 | 22.6 | 10.3   | -  | 56.9 | 42.8         | 0.0 | 826.0  |
| CG           |  |                   |       |      |      | -      |    |      |              | -   | -      |
| LG           |  |                   |       |      |      | 0.7    |    |      |              | -   | 0.7    |
| HH+NPISH     |  |                   |       |      | 0.0  | 3510.2 |    |      | 0.0          | -   | 3510.2 |
| RoW          |  | -                 | -     | -    | -    | 15.0   | -  | -    | -            |     | 15.0   |
| <b>Total</b> |  | -                 | 655.7 | 37.5 | 22.6 | 3540.4 | -  | 56.9 | 42.8         | 0.0 |        |

(a) PC = public corporations; PNFC = private non-financial corporations; MFI = monetary financial institutions; OFI = financial institutions other than MFIs and insurance corporations and pension funds; ICPF = insurance corporations and pension funds; CG = central government; LG = local government; HH+NPISH = households and non-profit institutions serving households; RoW = rest of the world

**Key:**

|   |   |
|---|---|
|    | Estimate is already published in UKEA   |
|   | Estimate is not currently published in UKEA   |
| -   | No estimate is currently made for this cell, although theoretically data could exist here |
|  | Not possible  |

## Financial derivatives

These estimates relate to the asset and liability positions on financial derivatives, including options, forwards and credit derivatives. All derivatives are counterpart to the MFI, OFI or RoW sector on one side of the trade. All institutional sectors are able to hold financial derivatives but it is currently assumed that financial derivatives with public corporations and local government will be zero; this assumption will be reviewed as part of the project.

An example matrix for financial derivatives is given in Figure 10. Full counterparty information is available for this instrument, although there are likely derivatives with RoW not captured here due to a lack of available data sources. Estimates of total assets and liabilities by sector are currently published in UKEA, but no counterparty split is provided. These new estimates therefore represent a move from no counterparty information to full counterparty information. This shows the full sectoral split of derivative positions into those which are counterpart to the MFI, OFI and RoW sectors respectively. These data are all explicitly reported on ONS and BoE surveys.

**Figure 10: A from-whom-to-whom balance sheet matrix for total financial derivatives, 2014 unconsolidated current prices £billion**

|              |                   | Liabilities: |         |         |       |     |     |          |         |         |
|--------------|-------------------|--------------|---------|---------|-------|-----|-----|----------|---------|---------|
| Assets:      | PC <sup>(a)</sup> | PNFC         | MFI     | OFI     | ICPF  | CG  | LG  | HH+NPISH | RoW     | Total   |
| PC           |                   |              | 0.3     | -       |       |     |     |          | -       | 0.3     |
| PNFC         |                   |              | 25.9    | 4.1     |       |     |     |          | -       | 30.0    |
| MFI          | 0.1               | 39.8         | 641.7   | 1,061.2 | 131.6 | 2.9 | -   | 2.8      | 1,900.3 | 3,780.5 |
| OFI          | 0.0               | 6.4          | 1,085.2 | 112.9   | 11.9  | 0.2 | -   | 0.0      | 928.3   | 2,144.8 |
| ICPF         |                   |              | 134.6   | 11.8    |       |     |     |          | -       | 146.4   |
| CG           |                   |              | 3.6     | 0.2     |       |     |     |          | 0.1     | 3.8     |
| LG           |                   |              | -       | -       |       |     |     |          | -       | 0.0     |
| HH+NPISH     |                   |              | 1.7     | 0.0     |       |     |     |          | -       | 1.7     |
| RoW          | -                 | -            | 1,883.1 | 923.4   | -     | -   | -   | 0.0      |         | 2,806.5 |
| <b>Total</b> | 0.1               | 46.2         | 3,775.9 | 2,113.6 | 143.5 | 3.0 | 0.0 | 2.8      | 2,828.7 |         |

(a) PC = public corporations; PNFC = private non-financial corporations; MFI = monetary financial institutions; OFI = financial institutions other than MFIs and insurance corporations and pension funds; ICPF = insurance corporations and pension funds; CG = central government; LG = local government; HH+NPISH = households and non-profit institutions serving households; RoW = rest of the world

**Key:**

|   |   |
|---|---|
| <span style="background-color: #e0f0ff; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> | Estimate is already published in UKEA   |
| <span style="background-color: #e0ffe0; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> | Estimate is not currently published in UKEA   |
| -   | No estimate is currently made for this cell, although theoretically data could exist here |
| <span style="background-color: #cccccc; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> | Not possible  |

## 4 Future programme of work

The review of currently available ‘from-whom-to-whom’ statistics outlined above marks the completion of the first stage of the joint project, and represents substantial progress made since the project began in late 2014. Plans are in place to continue this work over the next year but the long-run future programme of work is still to be fully determined.

Over the next year, the main focus of the project will be on the further investigation of identified improvements and initial work on identifying potential new and alternative data sources. As aforementioned, the project has identified a series of improvements as part of the assessment of existing data sources for the financial account and balance sheet series. ONS and the Bank will work in conjunction to further review and prioritise these. This, and investigation into new data sources, should help to both improve the current estimates and begin to fill in the unknown counterparty lines.

As has been touched on within the results for each instrument there are several different approaches that could be taken to produce a comprehensive set of matrices, ranging from the modelling of missing data to the use of data available from administrative sources or private data providers and the potential development of new data collections. It is likely that any newly developed estimates will involve a combination of all of these. As new sources are introduced, improved estimates will be implemented incrementally into the experimental statistics, and ultimately the National Accounts.

Investigations are continuing with a focus on the potential use of regulatory data, for example those collected by the Financial Conduct Authority and the Prudential Regulation Authority. Work is also underway on comparing the FCA register and corresponding classifications with the ONS inter-departmental business register (IDBR) to identify areas where coverage or sector classification could be improved in the future.

As noted in the July 2015 article, it is hoped that a full set of matrices in line with National Accounts will be published in Blue Book 2019. This is dependent on available funding and resource, and access to suitable data sources. It should be noted, however, that the development of from-whom-to-whom data is only a recommendation under international statistical standards and is not a legal requirement; meeting legal requirements must therefore take priority over this work. Future updates on work plans and progress of the project will be published on the ONS website and links to other articles can be found in the Further Information section below.

## 5 Associated Tables and Information

[Whom-to-whom Chord Diagram](#) of total financial assets and liabilities

[Reference tables](#)

Explanatory notes for each financial instrument covered in the article can be found below;

[Currency and deposits](#)

[Debt securities](#)

[Loans](#)

[Equity and investment fund shares units](#)

[Insurance, pension and standardised guarantee schemes](#)

[Financial derivatives](#)

## 6 Further Information

[Flow of Funds archived background information](#)

10 March 2016 Article – [Identifying Sectoral Interconnectedness in the UK Economy](#)

24 February 2016 Article – [Improvements to the Sector & Financial Accounts](#)

12 January 2016 Article – [Historical Estimates of Financial Accounts & Balance Sheets](#)

13 July 2015 Article – [Introduction Progress & Future Work](#)



Financial Statistical Statistics Group Minutes

[22 July 2015](#)

[22 January 2015](#)

[21 October 2015](#)

7 December 2015 can be requested from [FoFDevelopment@ons.gov.uk](mailto:FoFDevelopment@ons.gov.uk)