Working Party on Financial Statistics

DEVELOPMENT OF UK EXTENDED FINANCIAL ACCOUNTS AND WHOM-TO-WHOM ACCOUNTS

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ABSTRACT

The UK Office for National Statistics (ONS) has ambitious plans to transform its economic statistics over the coming years with the aim of increasing the robustness and quality of UK economic statistics. Working in partnership with the Bank of England, a key element of our transformation work is the development of extended financial accounts to meet evolving user needs. Following the recent economic crisis, there was an urgent need to improve the quality, coverage and detail of financial statistics, in particular, the counter-party (‘whom-to-whom’ statistics) information on stocks and transactions (the ‘flow of funds’ analysis).

The key objectives of the UK extended financial accounts are to:

- improve the quality, coverage and granularity of the UK’s financial accounts, including whom-to-whom statistics;
- produce a fully integrated, enhanced set of stock and flow accounts;
- to deliver, in full, all ESA 2010 reporting requirements and UK derogations;
- meet the enhanced need for these data identified by the Bank, International Monetary Fund (IMF) and Financial Stability Board (FSB) in the wake of the economic crisis;
- deliver the IMF’s Special Data Dissemination Standard plus (SDDS+) and G20 Data Gaps Initiative (DGI) for the UK; and
- improve flexibility to meet new or ad hoc demands for financial statistics in the future improve access to data for researchers.

The ambition is that this can be obtained mainly from administrative, regulatory and commercial record-level data sources. However, it is likely that business surveys will continue to be required to complete the coverage of all financial instruments across the UK economy, where non-survey data are not available.

1. INTRODUCTION

The UK ONS has ambitious plans to transform its economic statistics over the coming years. Working in partnership with the Bank of England, a key element of our transformation work is the development of extended financial accounts – in particular more detailed “flow of funds” statistics – to meet evolving user needs.

Assessment of events leading to the last financial crisis drew attention to an urgent need to improve the quality, coverage and detail of financial statistics, to better support financial stability and prudential

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1 The author would like to acknowledge the significant input to this paper from Louisa Nolan (Head of Extended Financial Accounts Development Branch, ONS, UK).
analysis. Counterparty information (‘whom-to-whom’ statistics) on stocks and transactions in the financial accounts (the ‘flow of funds’) was identified as a particular need. This can help to assess the build-up of financial risks across economic sectors, and to better understand their interconnections. It is of particular importance to the UK, with its large and international financial sector, that good quality, detailed financial statistics are available to drive the robust analyses required by policy-makers, economists and market analysts. The development of extended financial statistics has become an increasing priority for the UK over the past few years. The National Statistics Quality Review of National Accounts and Balance of Payments (Barker, 2014) recommended the implementation of flow of funds matrices into the National Accounts. More recently, the Independent Review of UK Economic Statistics (Bean, 2016) articulated the need for more detailed and complete flow of funds statistics to address established statistical limitations.

This is supported by the International Monetary Fund’s (IMF) G20 Data Gaps Initiative Phase 2 (DGI) – a set of 20 recommendations on the enhancement of economic and financial statistics. The recommendations for the enhanced financial accounts for the UK are consistent with, and go further than, the recommendations of the G20 DGI.

This paper sets out what are the flow of funds is, and why they are important to the UK. It introduces the extended financial accounts, the proposed approach and progress so far, including visualisations of the UK financial system and sets out the priorities for development.

2. WHAT IS THE FLOW OF FUNDS?

The ‘flow of funds’ is the flow of money (financial investment) between various sectors of the economy. Financial flows have been published by both the Bank of England (the Bank) and ONS and its forerunners since the 1960s, as the UK financial accounts. At present, the financial accounts are published as total assets and total liabilities, by sector and instrument, with little counterparty information. One of the key aims of the extended financial accounts is to introduce full whom-to-whom information, so that for each instrument, both the sector holding the asset and the sector incurring the liability are presented. This should better assist policymakers to see when and where risk is beginning to build within the financial system.

Analysis following the last financial crisis highlighted the need for close monitoring of financial flows both within the UK economy and at the global level, and the requirement for improved statistics to address that need. These have a wide range of applications, including informing monetary and financial policy and the assessment of financial stability through the identification of the build-up of risks in specific areas of the financial sector. In particular, the crisis showed the importance of monitoring the composition of balance sheets with an eye on mismatches (maturity, currency, etc) as well as the interconnections between the different sectors and subsectors of the economy.

3. INTERNATIONAL SIGNIFICANCE

The UK financial system is large and has grown rapidly in recent decades to achieve a significant global importance.

Figure 1 shows the UK could be considered to have the largest financial system in the Group of Seven (G7) as measured by the size of total financial assets as a proportion of Gross Domestic Product (GDP). In 2014, total financial assets amounted to over 1600% of GDP, rising markedly compared to the early 2000s (under 600% of GDP) and the early 1990s (under 400% of GDP).
The UK financial system is also highly globalised. Around 40% of all global transactions of foreign exchange payments flow through London. Analysis by the Bank of England shows that foreign banks account for a large proportion of UK banking sector assets on a residency basis: there are 150 deposit-taking foreign branches and 98 deposit-taking foreign subsidiaries in the UK from 56 different countries.

4. UNDERSTANDING THE SIZE AND COMPOSITION OF THE UK SECTOR BALANCE SHEETS

A natural starting point to understanding the UK financial system and its counterparties is to assess the size of each sector.

Figure 2 shows the total value of financial liabilities in the household, financial and non-financial corporate sectors in the UK, represented as a proportion of whole economy nominal GDP. On this measure, the UK “non-government” sector was shown to have built up a large amount of debt, at a rate that far surpassed economic growth, throughout the 1980s and 1990s but especially just preceding the financial crisis (2003-2008). In addition, the rate at which this occurred was generally accepted to have been faster than most other economies (McKinsey Global Institute, 2015).

Figure 2 also highlights that most of the build-up came from the financial corporation sector, where debt rose from 383% of GDP in Q4 1987 to 1552% in Q4 2008. The rise in household debt was also sustained, but at a slower rate (from 62% of GDP in Q4 1987 to 106% in Q4 2008). In contrast, the Private Non-Financial Corporations (PNFC) sector has not shown a marked rise in liabilities as a proportion of GDP for over 20 years (liabilities rose to 304% of GDP in Q3 2000, but fell slightly and then remained under 300% for subsequent periods).
A KEY UK POLICY IMPERATIVE

Enhanced flow of funds statistics will be a very powerful tool for meeting existing and future policy demands. Traditionally, flow of funds statistics have been used largely to support macroeconomic policymaking and debate. However, since the financial crisis the range and detail required to meet policy demands has expanded.

One of the policy responses to the financial crisis around the world was to put greater emphasis on the importance of macro-prudential policy. Macro-prudential policy aims to reduce the risk and macroeconomic costs of financial instability. It seeks to fill a gap between macroeconomic policy and microeconomic regulation by looking beyond the safety and soundness of individual firms to risks to the financial system as a whole that might occur because of the combined behaviour of, and in particular the interconnections between, individual firms and markets. In the UK, the Bank of England’s Financial Policy Committee was set up to oversee the Bank’s objective for maintaining financial stability.

Developing high-quality UK flow of funds statistics is crucial to policy makers such as the Bank. These would enable a more effective analysis of financial stability risk, and would help to prepare more effective policy to alleviate these risks.

In addition to the assessment of financial stability, the UK flow of funds will have a wide range of other analytical applications. If suitable data sources are found, other uses of the extended financial accounts could include improving our understanding of:

- lending and market sectors, for example the size of the unsecured loans market;
- how businesses fund investment in financial and non-financial assets;
- the impact of changes in credit conditions;
- changes in sources of household financial wealth over time, and the impact on savings and consumption;
• trends in growth of alternative finance, for example, peer-to-peer lending and shadow banking;
• our interactions with the rest of the world;
• who owns government debt; and
• the types of bonds in which the different sectors invest.

6. INTRODUCING THE EXTENDED FINANCIAL ACCOUNTS

Figure 3 presents a visual representation of the proposal for extended financial accounts for the UK based on a sectoral breakdown. It highlights where these data are already published by ONS in the recently introduced flow of funds chapter of the Blue Book (the UK ONS annual National Accounts publication). Where the data are not already published, they will be extended to 11 sectors in 2017.

Figure 3: Proposed sector breakdown with comparison against current publications, and improvements planned for 2017

In terms of the extended financial accounts, ONS and the Bank of England are proposing a substantial expansion of the financial corporation sub-sectors, particularly with respect to non-money market investment funds. The additional granularity here is essential in identifying the build-up of risks in the financial sector (it should be noted that this detail will only exist outside of the core accounts and will be based on the UK expansion of the institutional sector classification).

A split of private non-financial corporations into commercial and non-commercial real estate companies is also proposed, including a further breakdown of these corporations by size into small and medium-sized, and large companies.
Delivering the extended financial accounts sector breakdowns listed in Figure 2 across the 37 financial assets and liabilities required in ESA 2010 is an ambitious aim. Our ability to deliver the full breakdown will depend on the availability of suitable source data.

7. PROPOSED APPROACH

ONS’s preferred approach is to achieve full whom-to-whom financial accounts and balance sheets from record level (ideally non-survey) data. This allows much greater flexibility to evolving requirements for granularity than surveys, as new breakdowns can be created from different cuts of the same data.

Experimental statistics will be released at the earliest opportunity, on an incremental basis before full implementation into the National Accounts. This will give users early sight of developments and an opportunity to offer feedback, but it means there are likely to be inconsistencies between experimental and official statistics until the changes are fully implemented.

Although surveys, which have traditionally been used by ONS, have the advantage that information on the exact concept required can be asked on questionnaires, the use of non-survey data has five key advantages:

1. It reduces the burden on businesses.
2. It often covers the population more completely than sampled surveys, allowing robust estimates of much more fine-grained (but still non-disclosive) aggregates.
3. In the case of regulatory data already used by the Bank of England, Prudential Regulatory Authority and Financial Conduct Authority for supervisory purposes, aggregates can be created from the same underlying data. This means that supervisory approaches can be based on the same data as macro prudential policy.
4. Higher-level aggregates will be based on the same data source as lower-level data, improving the consistency of estimates across all levels of aggregation.
5. Flexibility to new requirements and ad hoc demands, which are likely as the financial sector changes and continue to innovate, can be much improved, by allowing different cuts of the same data to meet new demands, rather than requiring the lengthy process of survey (questionnaire) development.

Where non-survey data are not available, surveys will continue to be used to complete any gaps. This approach, of predominantly using non-survey data, should allow more fine-detailed financial statistics to be produced. For example, the ambition is to produce:

- More detailed breakdowns of the financial sector by activity.
- More detailed splits of bonds and loans by maturity, and the publication of these by residual maturity in addition to original maturity.
- The private non-financial corporations (PNFC) sector split by industry and business size.
- Information on the size of the unsecured loans market.

8. PROGRESS SO FAR

Since December 2014, the ONS and the Bank have been working in partnership to progress the development of extended financial accounts statistics for the UK.

Progress to date has been very positive. In July 2015, an article providing an introduction to UK flow of funds was published on the ONS and Bank of England websites. The article included the publication of counterparty estimates for balance sheet levels of loans as experimental statistics.
This was followed by a second article in November 2015, which completed the first stage of the project. The article presented, for the first time, a set of experimental statistics covering the currently available whom-to-whom statistics for the UK and an assessment of their quality. This quality assessment represented the most comprehensive review of the financial accounts for many years.

Since then the project has been responsible for the publication of improved historical financial accounts data in January 2016, and also for a series of improvements that were implemented in the UK Economic Accounts (UKEA) in June 2016, and were described in articles published in February, April and June 2016.

An article identifying sectoral interconnectedness in the UK economy was published in March 2016. This article included innovative interactive visualisations of the UK sector-to-sector interactions for financial balance sheets by financial instrument, based on the experimental statistics published in November 2015.

9. VISUALISING THE UK SECTOR-TO-SECTOR INTERACTIONS

The counterparty relationships of the UK financial system can be visualised using Sankey diagrams (also referred to as ribbon diagrams). Figure 4 and Figure 5 present Sankey diagrams for the UK flow of funds experimental statistics.
Figure 4: Sector-to-sector interactions for financial balance sheets

Box 1: Interpreting Figure 4

Each sector’s total financial liabilities are represented on the left hand side, where the coloured bars (indicating each sector) represent the relative level of total financial liabilities (for example, Monetary Financial Institutions have more financial liabilities than Households, hence the bar being taller).

The counterparty sectors (on the asset side) are presented in the right hand bars, where the size of the bars reflects the relative level of one sector’s financial assets to another. The “thread” from left hand bar (liability) to right hand bar (asset) reflects the counterparty relationship between each sector. The static diagram is therefore designed to be read from left (liability) to right (asset).

By hovering over each thread on the interactive diagram, it is possible to see the liability levels in the box at the top of the diagram. For example, in the interactive visualisation, it can be observed that for 2014, the Rest of the World is the counterparty to £4,779 billion of total Monetary Financial Institutions liabilities.
10. SECTOR-TO-SECTOR COUNTERPARTY RELATIONSHIPS BY INSTRUMENT

Figure 5 combines both financial instrument and counterparty relationships. Not only does this illustrate what instrument each sector holds their financial liabilities in, but it also shows to whom they owe that instrument liability. These more complex Sankey diagrams represent a more detailed picture of sectoral interconnectedness.

Figure 5: Sector-to-sector interactions for financial balance sheets by instrument
Box 2: Interpreting Figure 5

As in Figure 4, the left hand bars represents each sector (on the financial liability side), the middle bars represents the instruments in which financial liabilities are held, and the right hand bars represent the counterparty sector (on the asset side). The thread between sector liability (left hand bar) and instrument (centre bar) represents the level of financial liabilities in a specific instrument. The thread between instrument (centre bar) and counterparty sector (right hand bar) represents the holding (in level terms) of a particular financial liability instrument by the counterparty sector (as an asset).

By hovering over each thread on the interactive diagram, it is possible to see the liability/instrument/asset levels in the box at the top of the diagram. For example, in the interactive visualisation the turquoise thread between “MFI liability” and “deposits” illustrates the level of MFI liabilities held in deposits, which for 2014 was £5,961 billion. The turquoise highlighted thread between “Deposits” and “MFI asset” illustrates the counterparty level of that deposit liability (as an asset) for other UK MFIs. So, of total MFI deposit liabilities of £5,960 billion, £917 billion is held by other UK MFIs.

11. PRIORITIES FOR FLOW OF FUNDS DEVELOPMENT

The following questions and areas have so far been identified as priorities by the Bank of England, wider users of ONS financial statistics and the IMF’s Special Data Dissemination Standard plus (SDDS+) and G20 Data Gaps Initiative (DGI). These cover not only domestic flows and balance sheets but also the UK’s interaction with the rest of the world:

- Whom-to-whom statistics for debt securities, equity and investment fund shares and units.
- Other financial corporations (SDDS+ and G20 DGI-2), i.e. financial corporations except monetary financial institutions, insurance corporations and pension funds, and their sub-sectors, including whom-to-whom statistics – the sub-sectors to be more detailed than the ESA 2010 sectors, and to include in particular, venture capital, private equity funds, shadow banking and mutual funds (see Figure 2).
- Private non-financial corporations – improvements to data sources and methodology; breakdown by commercial real estate, and non-commercial real estate; large enterprises and small and medium enterprises (SMEs); breakdown of loans by use, especially commercial real estate.
- Households – to replace, where feasible, residual-based estimates with reported data.
- Breakdowns by income quintile; and a breakdown of loans by use or type (for example, mortgages, consumer goods, other, unsecured or secured) breakdown of bank lending to the rest of the world by country.
- Money market funds – separation from other sectors, whom-to-whom statistics and instrument maturities (note: this sector may be insignificant in the UK).
- Peer-to-peer lending.

Development of these statistics would answer the following questions:

- What proportions of UK assets are foreign-controlled?
- Who holds the assets issued by UK securitisation vehicles?
- Who owns UK shares?
- How big is the UK hedge fund sector?
- How big is the UK’s unsecured loans market?
Table 1 presents a prioritisation matrix for the issues listed above, with an assessment by policy and user interest (both national and international).

**Table 1: Priority matrix for extended financial accounts, by sector and policy interest, UK**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Sector(s)</th>
<th>Instrument(s)</th>
<th>User Interest</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private non-financial corporations (PNFCs) - data quality improvement and breakdowns</td>
<td>Private non-financial corporations</td>
<td>All - especially securities (‘bonds and shares’)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Households (H): breakdown by income quintile, and breakdown of loans by use</td>
<td>Households</td>
<td>All</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Who owns UK government debt?</td>
<td>Government</td>
<td>Securities (i.e. debt and equity), loans</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Residency - what proportion of UK assets are foreign-controlled?</td>
<td>All</td>
<td>All</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Securities whom-to-whom statistics, including share ownership</td>
<td>All</td>
<td>Securities</td>
<td>3</td>
<td>SDGS + / G20 DGI-2 requirement</td>
</tr>
<tr>
<td>How big is the UK hedge fund sector?</td>
<td>Other financial institutions</td>
<td>Securities, financial derivatives</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Other financial corporations, including shadow banking</td>
<td>Other financial institutions</td>
<td>Securities, loans, financial derivatives</td>
<td>3</td>
<td>SDGS + / G20 DGI-2 requirement</td>
</tr>
<tr>
<td>Breakdown of bank lending to the rest of the world by country</td>
<td>Monetary financial institutions</td>
<td>Loans</td>
<td>2</td>
<td>SDGS + / G20 DGI-2 requirement</td>
</tr>
<tr>
<td>Money market funds (SDGS+ and G20 DGI-2)</td>
<td>Monetary financial institutions</td>
<td>Debt securities</td>
<td>1</td>
<td>Small sector in UK, SDGS+ / G20 DGI-2 requirement</td>
</tr>
<tr>
<td>More detailed sector breakdowns</td>
<td>All, especially other financial institutions</td>
<td>All</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Peer-to-peer lending</td>
<td>Households, private non-financial corporations, other financial institutions</td>
<td>Loans</td>
<td>2</td>
<td>Small at present, but growing rapidly</td>
</tr>
</tbody>
</table>

**Figure 6** represents these priority areas by sector and instrument.

**Figure 6: Summary of priority areas for the extended financial accounts, by sector and instrument – priorities are in the green cells, marked with an x**
12. **HIGH-LEVEL TIMETABLE FOR DELIVERY**

The aim is to deliver the extended financial accounts in five years, with implementation of flow of funds into the National Accounts in 2020.

The key deliverables of the project in the first two years will be as follows.

In 2016 and 2017:

- A list of data requirements, including consultation with user groups.
- Further exploration of potential data source.
- Publications of experimental statistics as new data become available.
- Publication of articles and technical papers detailing work undertaken on this project.
- Incremental improvements to the sector and financial accounts.

In 2017 and 2018:

- Further improvements to the sector and financial accounts.
- Further exploration of potential data sources.
- Possible survey redevelopment to fill gaps not covered by non-survey data.
- Further publications of experimental statistics as new data become available.
- Further publication of articles and technical papers detailing work undertaken on this project.

ONS will continue to publish further experimental statistics and articles after 2018, with a full set of experimental flow of funds statistics anticipated in 2019, and full implementation into the National Accounts to take place in 2020. An indicative timeline for development, showing the development phases and the incremental approach to data acquisition, is shown in **Figure 7**. This timeline will be continually reviewed and refined.

**Figure 7: Indicative timeline for the development and implementation of the extended financial accounts based on record-level data**
References

8 August 2016 Update to the experimental flow of funds statistics


10 March 2016 Identifying Sectoral Interconnectedness in the UK Economy

24 February 2016 Improvements to the Sector & Financial Accounts


6 November 2015 Comprehensive Review of the UK Financial Accounts including explanatory notes for each financial instrument covered in the article

13 July 2015 Introduction Progress & Future Work