Office for National Statistics

Article

UK financial accounts experimental statistics flow of funds matrices: 2019

Experimental UK flow of funds matrices showing progress in developing new data sources and methods to improve the quality, coverage and granularity (including counterparty information) of the UK Financial Accounts.

Correction

29 November 2019 15:24

A correction has been made to values in the bullet point stating the improvement in listed share liabilities of UK domiciled companies. This was due to a small error when drafting the bullet point. The underlying data in the tables and Sankey diagram were unaffected. You can see the original content in the superseded version. We apologise for any inconvenience.

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1 . A personal foreword to the Enhanced Financial Accounts

This publication is the first of a set of experimental Enhanced Financial Accounts. One of the architects of this project was David Matthews, a colleague here at ONS who sadly passed away earlier this year. While projects such as the Enhanced Financial Accounts are huge team efforts, David was key in shaping the project and securing the data and funding to deliver it. I would like to dedicate this first publication to David's memory.

Jonathan Athow, Deputy National Statistician for Economic Statistics

2 . UK Financial Account (flow of funds) experimental matrices

In late 2014, the Office for National Statistics (ONS) began working in partnership with the Bank of England to improve flow of funds statistics for the UK. We set out in our initial flow of funds article why improving the UK Financial Accounts is so important and our plans and ambitions to improve the quality, coverage and granularity of the UK Financial Accounts including better from-whom-to-whom statistics.

This article introduces the latest publication of our experimental UK Financial Account (flow of funds) matrices using new data sources to provide improved sector and instrument granularity including whom-to-whom statistics.

Important things to note about these statistics

It is important to emphasise these are Experimental Statistics, which have been produced in isolation from the normal national accounts production and quality assurance process. There are a number of caveats that users of the data should be aware of.

The data are not consistent with currently published UK Financial Account statistics, such as the UK Economic Accounts or the UK Quarterly or Annual National Accounts, for example, and should not be used in place of the regularly published official statistics. The data have been produced outside of current processing of the national accounts and the data will be revised before inclusion in any future annual national accounts. We will continue to evaluate and quality assure these experimental and other new data with the aim of incorporating them into the UK National Accounts over the coming years.

3 . Main points

Enhanced financial accounts experimental whom-to-whom estimates contain more than 10 new data sources, which improve the sector and instrument detail, and relationships within the financial matrices.

These additional data sources have improved matrix granularity with seven newly published sectors and increased breakdown of financial instruments.

New experimental data suggest an increase in the annual balance sheet estimates for assets and liabilities of the investment and other financial institutions sectors (S.123 to S.127) of approximately £3 trillion.

The new experimental statistics show that the UK's financial sector at the end of 2017 had financial assets approximately 15% larger than previously estimated. This could suggest that the UK's financial sector, when measured by the size of its financial balance sheet, is a larger contributor to the UK's balance sheet than previously estimated.

The main driver behind the approximate £3 trillion increase in the UK financial sector's assets has been the development of better data sources for the investment and other financial institutions sectors. These sectors capture the financial activities outside of banking, insurance and pension funds.

The use of commercially sourced data as a service has provided new experimental estimates for other financial intermediaries and financial auxiliaries lending to households, increasing household lending by these sectors to approximately £250 billion and £270 billion at the end of 2016 and 2017 respectively.

Using commercially sourced data we have also provided new experimental estimates for:

- UK domiciled companies listing on non-UK exchanges, increasing the listed share liabilities of UK domiciled companies by approximately £174 billion and £193 billion at the end of 2016 and 2017 respectively

- the allocation of listed share issuer sectorisation, including enhancements to the allocation of listed shares issued through holding companies

New experimental annual financial balance sheet data for 2016 and 2017 are being published today (26 November 2019) with other significant improvements due to be further developed and integrated into the national accounts from 2021 and beyond.

4 . Introduction

In late 2014, the Office for National Statistics (ONS) began working in partnership with the Bank of England to improve flow of funds statistics for the UK. We set out in our initial flow of funds article why improving the UK Financial Accounts is so important and our plans and ambitions to improve the quality, coverage and granularity of the UK Financial Accounts including better from-whom-to-whom statistics.

Now in 2019, we have published over 30 further articles and experimental statistics, sharing with stakeholders our progress and opportunities as we researched and evaluated new data sources from commercial providers and regulatory sources as well as improving existing financial surveys.

To date we have:

- improved the sectorisation of the banking sector using data from the Bank of England

- published additional experimental sector granularity for the investment and other financial institutions sectors, which has helped inform the Bank of England Financial Stability Report

- improved counterparty detail of the insurance sector using regulatory Solvency II data

- published historic time series for the household sector

- improved the from-whom-to-whom statistics, reducing the unknown sectors across the financial accounts

- additional granularity split for the pensions and insurance sectors

- evaluated regulatory data that could help improve our estimates of derivatives

- improved estimates for equity using a range of survey and commercial data as a service

- launched a new pensions survey (Financial Survey of Pension Schemes), which will provide more sector and instrument detail

Of course, there have been challenges along the way and we now know it will take longer than originally anticipated to fully exploit some of the new data sources, particularly the commercial data as a service, for example. Legal obstacles to data sharing also remain, which have impacted the pace and granularity of data we have been able to access. This means it will take longer to move away from our traditional surveys than we had estimated. However, we have made significant progress in many important areas of the financial accounts and we are publishing today (26 November 2019) for the first time:

- these experimental data in a flow of funds matrix

- additional supporting commentary

- an updated Sankey diagram showing the asset and liability holder of the financial instruments, by sector

Within these matrices we are publishing for the first time "whom-to-whom" data for the following sectors:

S.123 – Money market funds
S.124 – Non-money market investment funds
S.125 – Other financial intermediaries
S.126 – Financial auxiliaries
S.127 – Captive financial institutions and money lenders
S.128 – Insurance corporations
S.129 – Pension funds

A full list of the sectors published in this release can be found in List of Institutional Sectors published in the EFA experimental matrices.

This is a very important milestone in the development of the UK Financial Accounts for our domestic and international stakeholders and goes a long way to deliver on the aims of the flow of funds project. However, our work does not stop here and we now must, taking into account stakeholder feedback, consider the quality assurance and integration of these experimental data into the national accounts official statistics over future publications.

Alongside the integration of these new data into the national accounts, we will also continue to further improve the quality, coverage and granularity including improved counterparty detail of the financial accounts through the better and more widespread use of regulatory, administrative and commercial data as a service while reducing our reliance on surveys over the longer-term. Some enhancements to existing surveys are, however, planned to improve their outputs and reduce respondent burden.

5 . Visualising flow of funds statistics

In an article published in March 2016, the Office for National Statistics (ONS) introduced a new way to present flow of funds (FoF) statistics. Sankey diagrams were used to visualise the counterparty relationships between institutional sectors. These visualisations have a tooltip chart to show the two years of data for each interaction in the diagram and have been updated to include the latest data.

Figure 1: UK flow of funds Sankey diagram

Sector-to-sector interactions for financial balance sheets by financial instruments

Please note: the data behind the Sankey diagram differ slightly from the whom-to-whom matrix tables linked below. This is because the Sankey diagram cannot display negative values so data have been adjusted accordingly. The overall impact on the diagram is minimal. Please use the link below to view the data in full.

Interpreting a whom-to-whom matrix

In the national accounts, all financial instruments have an economic owner (the people or entities that are considered to hold the asset) and, with the exception of monetary gold, they all have counterparty relationships (the people or entities that are considered to be responsible for the liability).

For example, when a private individual deposits cash in a bank account, the national accounts balance sheets record several things simultaneously:

- a decrease in the amount of cash the person holds as a financial asset

- an increase in the amount of cash the bank holds as a financial asset

- an increase in the amount of deposits the person holds as a financial asset

- an increase in the amount of deposits the bank holds as a financial liability

While the national accounts record the counterparties' transactions separately, the "from-whom-to-whom" (W2W) accounts link the asset and liability holders.

Figure 1 illustrates this example, where the private individual appears in the HH (households) sector on the right-hand side and the bank appears in the DTC (deposit-taking corporations) sector on the left.

There are also bar charts embedded within the interactive, known as a tooltip, which show the underlying time series data of each thread.

The Sankey diagram also includes a filter, whereby you can select which financial instrument to view. For example, by filtering "transferable deposits and other deposits" we can see that most of the deposits made to the DTC sector are made by entities outside of the UK.

6 . New sources

The following four sections contain a brief overview of the sources used to compile the enhanced financial accounts experimental matrices published today (26 November 2019). Each section contains a link to more in-depth information that provide greater detail around the relevant source and method used.

Commercial data

The release of the experimental whom-to-whom matrix is a significant step towards our goal of improving the UK Financial Account in the important areas of quality, coverage and granularity. One new and exciting type of data source used within the matrix is commercial data as a service (CDAAS). Important sources of CDAAS used within the experimental release are Refinitiv (previously a division of Thomson Reuters), CREST, Equiniti and Equifax as described in the Enhanced financial accounts (UK flow of funds) – Using commercial data in experimental statistics article.

Solvency II

The UK Insurance sector (S.128) for experimental enhanced financial accounts was compiled using quarterly data collected under Solvency II (SII) - the EU-wide insurance regulatory framework. This pioneering work by the Office for National Statistics (ONS), in cooperation with the Bank of England, represents a significant step in using Solvency II data for an official statistical purpose.

Further detail on the creation of the S.128 estimates is provided in the article Experimental financial statistics for the UK insurance sector using Solvency II data .

Investment and other financial institutions (IOFIs)

The UK investment and other financial institutions (IOFIs) sub-sectors' (S.123-S.127) experimental statistics were compiled using a wide variety of sources, such as the ONS Financial Services Survey 266 (FSS 266), the ONS MQ5 Trusts surveys, investment industry sources, commercial data sources, Bank of England (BoE) and the Bank for International Settlements. The IOFIs experimental statistics should therefore be considered a mosaic created from multiple complementary and competing data sources, rather than reliance on a small number of sources.

More information about these data sources and their use in producing experimental statistics can be found in the article Investment and other financial institutions.

Deposit taking corporations

The ONS and the BoE have been working to transform the UK banking sector (S.12C) financial account statistics as part of the enhanced financial accounts initiative. This sector comprises the central bank (S.121) and other deposit taking corporations, more commonly known as banks and building societies (S.122).

We have compiled the banking sector accounts in this experimental release using these updated balance sheet data. While data from the BoE have always been a reliable source for the National Accounts and constitute over half the value of the UK balance sheet, a collaborative effort was needed to produce these data on a whom-to-whom basis.

More information on the progress in this area can be found in the banking sector update article.

7 . Financial instruments – sources used

The experimental flow of funds matrices have been derived from a combination of new data sources supplemented with existing National Accounts consistent balance sheet data. The following is a brief overview of the sources used within each financial instrument published in the experimental dataset.

AF.1 – Monetary gold and special drawing rights

Based on existing National Accounts sources.

AF.21 – Currency (notes and coins)

Total notes issued (liabilities of S.12C) are provided by the Bank of England (BoE). Assets of S.12C and S.128 are provided by Bank of England and Solvency II (SII), respectively. Assets for other sectors along with coins issued (liabilities of S.1311) are based on existing National Accounts sources.

AF.22 – Transferable deposits and AF.29 – Other deposits

Total S.1/UK liabilities and corresponding assets for S.11001, S.1100P, S.12C, S.1311, S.1313, S.14, S.15 and S. 2 (see table at the end of this section for description) are provided by the Bank of England along with assets for S. 12C with Rest of the World. Other sectors' deposits with UK banks are derived from a combination of Bank of England, Financial Services Survey (FSS), bank holding companies (BHC) and Solvency II data constrained to the Bank of England total. Liability values for S.1311 are consistent with those published in the latest Blue Book

Deposits with Rest of the World (RoW banks are based on totals provided by the Bank of International Settlements (BIS), with underlying data contributions from BoE, FSS, SII and existing NA sources.

AF.31 – Short-term debt securities

New asset data are supplied by BoE (S.12C), money market fund (MMF) source data (S.123), Financial Services Survey (S.125 to S.127) and Solvency II (S.128). Liabilities are provided by BoE (S.12C), FSS and BHC (S.125 to S.127). The remaining sectors are based on existing National Accounts data sources.

AF.32 – Long-term debt securities

New asset data are supplied by BoE (S.12C), money market fund (MMF) source data (S.123), Financial Services Survey (FSS) , BHC (S.125 to S.127) and Solvency II (S.128). Liabilities are provided by BoE (S.12C), FSS, BHC, independent industry data (S.125 to S.127) and SII (S.128). The remaining sectors are based on existing National Accounts data sources.

AF.41 – Short-term loans

S.12C assets and corresponding liabilities for S.11001, S.1100P, S.12C, S.1311, S.1313, S.14, S.15 and S.2 are provided by the BoE. Other sectors' liabilities to UK banks are derived from a combination of BoE, FSS and BHC constrained to the BoE total.

S.125 to S.127 assets are derived from a combination of FSS, BHC and Equifax data; the latter providing the data for household borrowing. S.125 to S.127 liabilities are derived from FSS, BHC, BoE and BIS data.

S.128 asset and liability data are sourced from SII.

Loans by RoW banks are based on contributions from BIS, FSS, SII and existing National Accounts sources.

AF.42 – Long-term loans

S.12C assets and corresponding liabilities for S.11001, S.1100P, S.12C, S.1311, S.1313, S.14, S.15 and S.2 are provided by the BoE. Other sectors' liabilities to UK banks are derived from a combination of BoE, FSS and BHC and constrained to the BoE total.

S.125 to S.127 assets are derived from a combination of FSS, BHC and Equifax data; the latter providing the data for household borrowing. S.125 to S.127 liabilities are derived from FSS, BHC, BoE and BIS data.

S.128 asset and liability data, other than liabilities with UK banks, are sourced from SII.

Loans by RoW banks are based on contributions from BIS, FSS, SII and existing National Accounts sources Sectors not mentioned above are based on existing National Accounts data sources.

AF.511 – Listed shares

S.12C assets are provided by the BoE. S.125 to S.127 asset totals are provided by FSS and BHC. S.128 asset totals are provided by SII.

Domestic sector (S.1) liability totals are based on new Refintitiv data with the corresponding asset holders based on a combination of BoE, FSS, Refinitiv, Equiniti and Crest.

RoW (S.2) liabilities are taken from existing Office for National Statistics (ONS) data sources and supplemented with FSS and BHC data for S.125 to S.127.

AF.512 – Unlisted shares

S.12C assets and liabilities are provided by the Bank of England. S.125 to S.127 assets and liabilities are now provided by FSS and BHC. Additionally, Refinitiv data were used to improve the estimates of S.126.

RoW (S.2) liabilities are taken from existing ONS data sources and supplemented with FSS, BHC (S.125 to S.127) and SII. The remaining sectors are based on existing sources.

AF.519 – Other equity

S.125 to S.127 liabilities are based on FSS. The remaining sectors are based on existing data sources.

AF.521 –MMF shares or units

Liability totals for S.123 and S.2 are sourced from Independent Industry data with asset sector breakdowns for S.12C from BoE and S.125 to S.127 from FSS. Total assets for S.128 are provided by SII.

AF.522 – Non-MMF investment fund shares or units

Liability totals for S.124 are sourced from Independent Industry data and the individual asset holders are sourced from BoE (S.12C), FSS (S.125 to S.127), Solvency II (S.128) and existing National Accounts data sources.

The RoW liability total represents the sum of the known asset sector holdings from BoE, FSS, SII and other existing sources.

AF.61 to AF.66 – Insurance, pensions and standardised guarantee schemes

The sole source of data for AF.61 to AF.62 is Solvency II. AF.63 is based on existing data sources for S.129 liabilities and SII for S.128 liabilities. AF.64 to AF.66 are based on existing sources

AF.71 – Financial derivatives

Assets and liabilities for S.12C are sourced from BoE with additional detail with the S.124 – S.127 counterparties sourced from FSS, BHC and other existing National Accounts data. FSS data provide a detailed breakdown of a number of asset or liability relationships within the matrix.

Providing all the asset data for S.125 and S.126 it is used in conjunction with BHC data in S.127. Asset and liability totals for S.128 are provided by SII. The remaining data are based on current National Accounts sources.

AF.72 – Employee stock options

Data are based on existing National Accounts methodology although the total for S.124 to S.127 has been split using FSS data.

AF.8 – Other accounts receivable and payable

At aggregate level, AF.8 asset and liability totals are provided by BoE (S.12C), FSS (S.125 to S.127), Solvency II (S.128) and other existing National Accounts data sources.

Table 1: Institutional sectors published in the experimental matrices
Sectors and sub-sectors

Public non-financial corporations	S.11001
Private non-financial corporations	S.1100P
Central Bank	S.121
Deposit taking corporations except the central bank	S.122
Deposit taking corporations	S.12C
Money market funds	S.123
Non-money market funds investment funds	S.124
Other financial intermediaries, except insurance corporations and pension funds	S.125
Financial auxiliaries	S.126
Captive financial institutions and money lenders	S.127
Insurance corporations	S.128
Pension funds	S.129
Central government	S.1311
Local government	S.1313
Households	S.14
Non-profit institutions serving households	S.15
Rest of the World	S.2
Not sectorised	SN
Unknown financial sector	SN.S12
Unknown UK sector	SN.S1
Unknown any sector	SN.UNK

Source: Office for National Statistics

8 . Economic overview

Balance sheets are important indicators of the resilience of the economy in response to adverse economic events. They are valuable to understanding how the real economy may adjust to such economic shocks. Detailed breakdown by counterparty and instrument in the experimental statistics should also support analysing and managing financial risks in an increasingly complex and interconnected financial system.

We present economic insights that the latest experimental flow of funds balance sheets data for 2017 provide to users. We focus our flow of funds analysis on three important sectors of the economy: households (consumers of goods and services), private non-financial companies (producer of most goods and services), and the banking sector and investment and other financial institution (financial intermediaries).
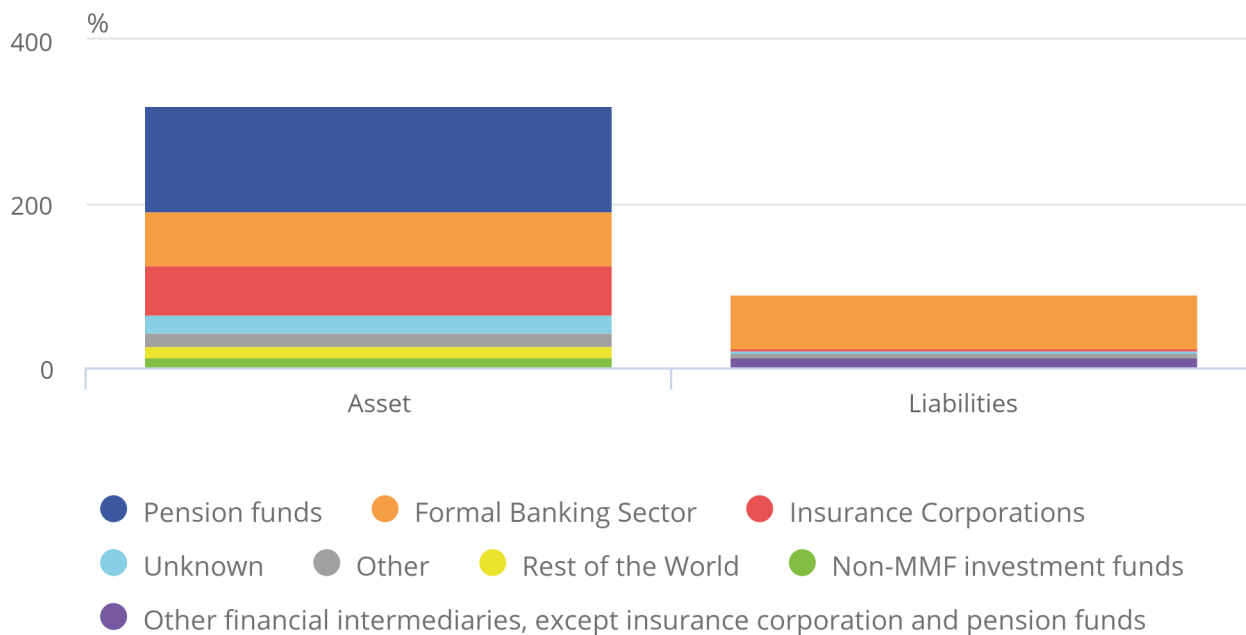
Households

Figure 2: Household assets outweigh household liabilities

Household financial balance sheet as a proportion of nominal gross domestic product (GDP), UK, 2017

Figure 2: Household assets outweigh household liabilities

Household financial balance sheet as a proportion of nominal gross domestic product (GDP), UK, 2017

Legend:
- Pension funds
- Formal Banking Sector
- Insurance Corporations
- Unknown
- Other
- Rest of the World
- Non-MMF investment funds
- Other financial intermediaries, except insurance corporation and pension funds

Source: Office For National Statistics- Household data are consistent with experimental flow of funds statistics for 2017, adjusted using Blue Book-consistent nominal gross domestic product (GDP) for 2017

Households' expenditure takes up about 60% of gross domestic product (GDP) . Households are an important contributor to economic growth and as a result, indicators about their spending intentions such as consumer confidence, savings ratio, and the net borrowing and lending position are closely monitored by the market. The experimental flow of funds data can add value by providing granular information on the finances of households, such as how and with whom the households are borrowing and investing.

Using 2017 experimental statistics for the household sector, Figure 2 shows that its net asset position is positive and large[1] . Most of the assets are held against pension funds, banks and building societies and insurance corporations in the form of pension entitlements, deposits and insurance schemes respectively.

Overall, the flow of funds statistics show that households assets far outweigh liabilities, and the assets portfolio is diverse and largely low risk. As a sector, it could robustly respond to economic uncertainty or adversity by running down the net asset position in order to smooth consumption. This prediction is consistent with the recent trend observed in the savings and consumption data.
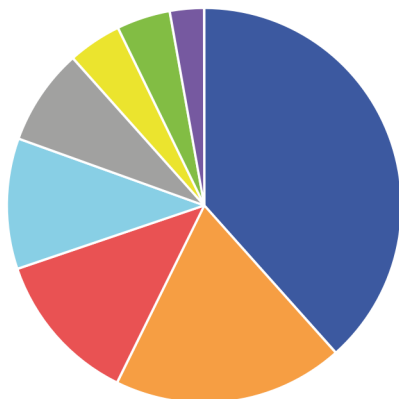
Private non-financial corporations

Figure 3: Rest of the World is the main lender for businesses across the country

Composition of private non-financial corporation liabilities, UK, 2017

Figure 3: Rest of the World is the main lender for businesses across the country

Composition of private non-financial corporation liabilities, UK, 2017

Source: Office For National Statistics- Data consistent with experimental flow of funds statistics for 2017

Analysing the finances of private non-financial corporations (PNFC) is useful for understanding and predicting the behaviour of the sector that largely represents the supply side of the real economy.

Figure 3, using the 2017 experimental statistics, presents the composition of the liabilities of PNFC. There is a large contribution of about 38% from overseas for the financing of UK businesses. The banking and investment and other financial institutions (IOFI) sectors are also important contributors (32% in total). Overseas investors play a particularly important role in financing UK businesses through listed shares and long-term loans, while the majority of the unlisted shares are held by holding companies (S.127 – Captive financial institutions and money lenders). The relatively large exposure of UK business to overseas investment through a range of financial instruments suggests that the supply side of the UK economy is closely related with developments in the global economy.
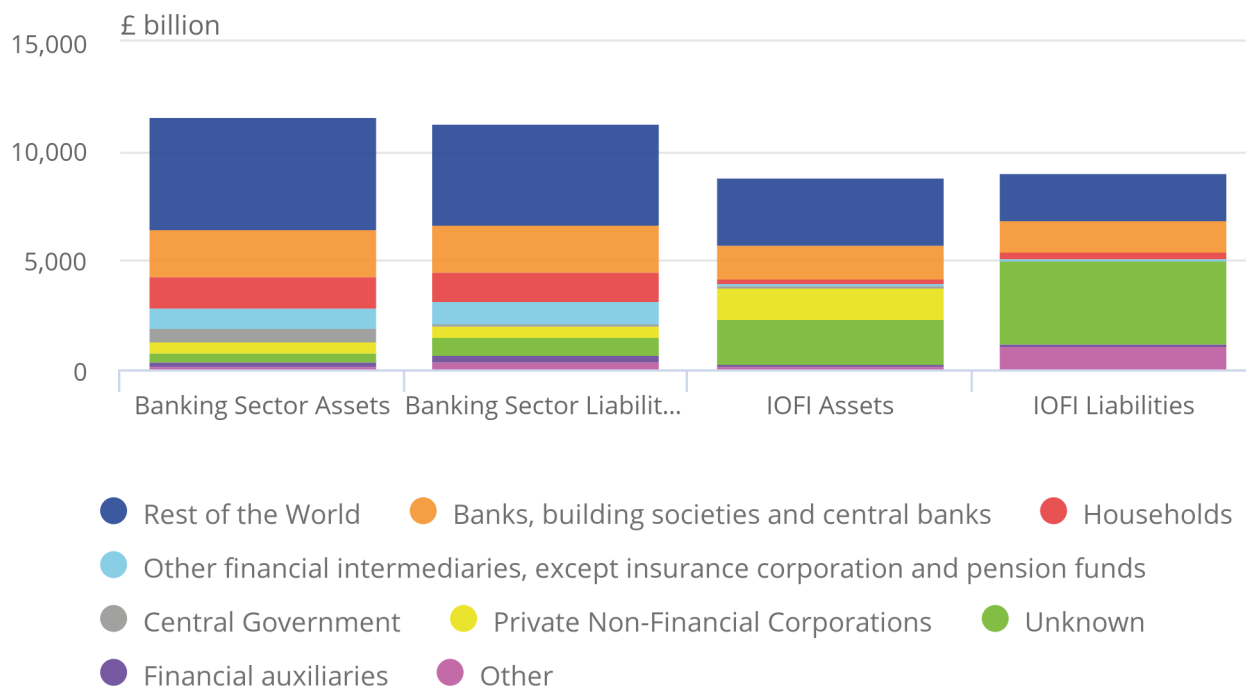
Banking and investment and other financial institutions sector

Figure 4: Rest of the World has a strong relationship with the banking sector and investment and other financial institutions (IOFIs)

Banking sector and investment and other financial institution balance sheet, UK, 2017

£ billion

Legend:
- Rest of the World
- Banks, building societies and central banks
- Households
- Other financial intermediaries, except insurance corporation and pension funds
- Central Government
- Private Non-Financial Corporations
- Unknown
- Financial auxiliaries
- Other

Categories: Banking Sector Assets, Banking Sector Liabilit..., IOFI Assets, IOFI Liabilities

Source: Office For National Statistics- Data consistent with experimental flow of funds statistics for 2017

Detecting financial risks in the UK economy is important to avoiding the next financial crisis. The banking sector, which includes banks and building societies, is the financial engine of the economy and its balance sheet can indicate the type and scale of financial risks that may exist. Currently in the experimental statistics, the most accurate measure that reflects the banking sector is the balance sheet of the S.12C sector (banks, building societies and the central bank).

Prior to the financial crisis between 1997 and 2006, Rest of World banks acted as counterparty to about 41% to 43% of the UK banking sector's liabilities. This peaked at 49% in Quarter 1 (Jan to Mar) 2008 in the run-up to the crisis. Increased exposure to overseas investors increases how susceptible a banking system is to foreign economic conditions and sharp withdrawal of foreign funds, and during the crisis we saw increased financial uncertainty and spriraling funding costs.

Although the experimental data in this article are not fully comparable with those in the previous article, which were produced in line with the Blue Book, it is still insightful to see that the Rest of World banks were counterparty to around 41% of banking liabilities in 2017 (Figure 4). This suggests that the recent level of overseasbanking -related risk in the banking sector has returned to the pre-crisis level, which is much lower than the peak.

With the granularity available in the experimental statistics, we can define the Investment and Other Financial Institutions (IOFIs) sector as the sum of money market funds (S.123), non-money market funds investment funds (S.124), other financial intermediaries except insurance companies and pension funds (S.125), financial auxiliaries (S.126) and captive financial institutions and money lenders (S.127).

In the UK, market-based finance has become increasingly important. Non-bank financial institutions (including insurance companies and pension funds) account for almost 50% of the UK financial system's total assets, up by 13 percentage points since 2008. This intensifies the need for granular flow of funds statistics to identify risks in the IOFIs sector.

The experimental data show that, in 2017, the Rest of the World banks acted counterparty to around 24% of the IOFI liabilities and 35% of assets. This is in comparison with lower levels seen at height of the financial crisis, at 20% and 34% respectively, using previous best estimates produced on a different and Blue Book-consistent basis . This reinforces the importance of flow of funds statistics in the ongoing monitoring of the this developing sector.

Notes for: Economic overview

1. Imbalances should not be taken as final figures. Non-financial assets have not been added to the figures.

9 . Conclusion

The flow of funds statistics provide a framework that has multiple analytical uses, which can be particularly relevant for the purpose of looking at financial stability. The financial accounts provide a way to understand financial risks, helping to provide policy insights is particularly relevant for the UK, and understanding the financial system and its links to borrowers and savers in the real economy is important in considering a wide range of policy questions. In response to this increased demand for enhanced financial information, we have looked to develop "whom-to-whom" matrices for the first time in the UK.

In line with the strategy "Better Statistics, Better Decisions", the original ambition was to improve the quality, coverage and granularity of the UK financial accounts, including counterparty information on all financial transactions. Where possible, we will incorporate administrative, regulatory and commercial information.

In collaboration with the Bank of England, we have made considerable progress in recent years. Our experimental estimates provide our most granular experimental information to date for the UK financial accounts, incorporating over new 10 new data sources, which provide greater insight into the sector and instrument relationships within the financial matrices. Further work is planned to increase the granularity and improve the quality and coverage of counterparties relationships ahead of the implementation of the flow of funds in the UK National Accounts in 2021 and beyond.

10 . Related links

Flow of funds background information

31 May 2017 Improving the Economic Sector Breakdown