

Article

# Economic Statistics Transformation Programme: enhanced financial accounts (UK flow of funds) – historic households and non-profit institutions serving households (NPISH) sectors data on currency and deposits

Focuses on Households and Non-profit Institutions Serving Households and presents a historical data series for Currency and Deposits.

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# 1 . Abstract

This article takes forward the work presented previously in [Reconciling the sources of historic data for the households and non-profit institutions serving households \(NPISH\) sectors](#). It constructs a historic time series for currency and deposits (AF.2), one of the financial assets categories within the households and NPISH sectors, highlighting some of the issues and difficulties faced in developing historic estimates and the way they were resolved. The work is part of a wider programme within Office for National Statistics (ONS) to reconstruct historical balance sheet data for the different institutional sectors of the economy.

We have mainly used the historical balance sheet data sources referenced in [Historical estimates of financial accounts and balance sheets](#), but also identify others that contributed to some of the previously published sources. We have explored the way these historical data have been compiled, trying to highlight and to resolve any emerging issues. We hope this will form the basis of an approach that can be used in future publications presenting historic data for the remaining financial assets categories within this institutional sector.

The estimates we have published for the financial assets held by the combined households and NPISH sectors go back to 1987. The historic time series data in this article provide users with data that go back to 1920. These are provisional estimates and should be evaluated in conjunction with other initiatives, such as the [Economic Statistics Centre of Excellence \(ESCOE\) project](#), which also constructs historic data, although looking at different aspects of the economy.

## 2 . Introduction

As noted in our previous article, [Historical estimates of financial accounts and balance sheets](#), the need to monitor the distribution of assets and liabilities throughout the economy has increased since the financial crisis in 2008, highlighting the need for the analysis of financial stocks and flows in the economy and for econometric-based policy work to be put in historical context. The study of infrequent financial events benefits from the availability of long historic time series data that span different government policies and that cover periods of structural change in the financial sector.

The Office for National Statistics' (ONS's) published financial balance sheet data cover only a relatively short period, back to 1987, on a European System of Accounts 2010: ESA 2010 basis. In this article, we focus on the AF.2 currency and deposits (see [Historical estimates of financial accounts and balance sheets](#) for more information about AF categories) part of the households and non-profit institutions serving households (NPISH) sectors, and propose a historical time series for use in future analyses.

The proposed series:

- contains data relating to periods prior to 1987
- addresses differences in the data between different sources for particular time periods
- is consistent with ESA 2010

We invite comments on this time series and on the general approach we have outlined and will make any subsequent adjustments as required. Our intention is to produce further articles presenting similar time series for the other AF instruments in the households and NPISH sectors.

It is worth noting that the content of the personal sector, the category used in our earlier data sources and which is sometimes referred to as being equivalent to the households and NPISH sectors is, in fact, slightly different. For example, in ESA 1995, partnerships moved out of the personal sector into private non-financial corporations.

A variety of challenges were faced in creating these historical time series, predominantly arising from attempting to reconcile different sources of data. The datasets used were constructed by a variety of authors, working in different sectors and sometimes using different methodologies. At the granular level, not all sources used the same content (instruments/sub-instruments/headings) when presenting data for a particular AF category. As is often the case with historical data, there were also periods when data were missing for a particular source. Missing data were dealt with on a case-by-case basis.

The time-series produced in this article is an initial step within a wider project which, in time and given resources, aims to achieve the reconstruction / restoration of historic data for all economic institutional sectors and for both balance sheet and financial transaction data.

### 3 . Data sources

A variety of data sources have been used and these were identified in the article [Historical estimates of financial accounts and balance sheets](#). One main difference between the AF.2 data in that article and the estimates presented in this article is that the former relates to all institutional sectors combined; this article relates specifically to the currency and deposits of the households and non-profit institutions serving households (NPISH) sectors. A number of the data sources were enhanced with additional data, derived from the Office for National Statistics (ONS) Central Shared Database (CSDB). For more details, please see our [previous article](#). A brief description of the sources for these datasets is given in this section.

Solomou and Weale's [Personal sector wealth in the United Kingdom, 1920 to 1956 \(1997\)](#), provides estimates for 1920 to 1956, the earliest data we have found for AF.2. These personal sector estimates were the only data we found covering this time period. They came from a number of sources, as described in Solomou and Weale's article. The dataset does not include all the necessary instruments nor is there a detailed instrument breakdown. Nevertheless, it is an impressive dataset that makes the most use of the balance sheet statistics that are available for this time period.

[Financial assets and liabilities by institutional sector \(Roe, 1971\)](#) is taken from Roe's "Financial Interdependence of the UK Economy" (1971a). This provides a highly detailed breakdown of financial assets and liabilities from 1957 to 1966, organised by both instrument and sector, which is rare for historical balance sheet data. The level of detail will be valuable for estimating the finer level of detail of instruments in other datasets.

[Balance sheet estimates \(Economic Trends, 1980 and 1981\)](#) contains miscellaneous official balance sheet estimates covering different parts of the period 1957 to 1985, for a range of sectors, mainly extracted from ONS Economic Trends and Financial Statistics publications. For the personal sector work in this article, only the non-bank private sector (NBPS) balance sheets from a CSO Economic Trends article (HM Treasury and Central Statistical Office, 1981) and a financial statistics (1987) dataset were used, providing data from 1966 to 1980 and 1976 to 1968 respectively.

An additional dataset was found in ONS's financial statistics publications and gives data from 1978 to 1985, for the households and NPISH sectors combined, previously referred to as the personal sector. It provides a slightly more detailed breakdown for some financial instruments, such as currency and deposits, but not all. This dataset will be referred to as the [FinStats](#) data in this article.

[Pre-ESA 1995 financial accounts and balance sheets](#) is the last set of sector financial account and balance sheet estimates produced by ONS under the pre-European System of Accounts 1995: ESA 1995. This was recovered from the annual UK National Accounts (Blue Book) 1997 dataset and contains data as published in mid-1998, prior to the introduction of the ESA 1995 set of accounts. Balance sheet data, by sector, are available only as far back as 1982 for most detailed instruments. However, data for total financial assets and liabilities, by sector, is given back to 1975 for many sectors and in some cases back to 1966. As noted in the article [Historical estimates of financial accounts and balance sheets](#), there are some discrepancies between these totals and the sum of the individual assets and liabilities to which they relate. In this article, we try to find an approach for reconciling these differences.

The final, and important, sources are ONS's [Sector financial balance sheets 1987 to 2015 \(XLS, 394KB\)](#), and are consistent with ESA 2010. These data provide a benchmark for the historical series we are aiming to achieve. These datasets were particularly helpful in allocating pre-ESA 1995 balance sheet instruments to ESA 2010 categories.

Ad-hoc historic data obtained from the Bank of England on bank and building society deposits and currency held by the households and NPISH sectors were also used.

## 4 . Consideration of the sources of households and NPISH historical data

In our previous article, [Reconciling sources of historic data for the households and non-profit institutions serving households \(NPISH\) sectors](#), an instrument map was presented, showing the reconciled sources of data that contribute to the currency and deposits (AF.2) category.

### Instrument Map for Currency and Deposits (AF2)

		Report/Data Set												
		Solomou and Weale	Roe		CSO/DAE		Pettigrew 1975		NPBS 66-80	NPBS 76-86	Finstat 78-85	Pre-ESA95		ESA10
AF.2	Notes and coin	Cash and bank deposits in the U.K.		Cash and bank deposits in the UK		Notes and coin		Money		Sterling		Notes and coin		AF.21: Currency
	Bank deposits	Building society		Building society		Sight deposits at UK		Building Society		Building Society		Sight deposits at		AF.22N1: Deposits with UK MFIs
	Building Society	Cash and bank				Building society		Building Society		Building Society		SAYE account		AF.22N12: of which:
										Other currency		FC bank deposits		AF.22N9: Deposits
	Savings certificates, Defence Bonds, Premium bonds	ational savi	National savings certificates Premium bonds Defence and development bonds Tax reserve certificates	Other deposits and National Savings	Building society deposits	ational savi	National savings deposits National savings certificates and bonds Tax instruments	National savings	National savings	National Savings	National Savings	National Savings	National Savings (REYC) Tax instruments (ACSB)	AF.29: Other deposits (NNMX) QYMX = AQKD - QYMY

Although a number of [data sources](#) were identified, there are fewer with a significant amount of time series data for the households and NPISH sectors specifically, and fewer still with a good range of data for AF.2 (or for the sub-instrument components of AF.2) within the households and NPISH sectors.

For these reasons, the following were used as the main data sources for the purposes of this article:

- Solomou and Weale for 1920 to 1956 – this is a mostly complete source and contains detailed data at the sub-instrument level; it is the source containing the earliest, relevant data
- Roe's Financial Interdependence of the UK Economy (1971a) – this provides a detailed breakdown of financial assets and liabilities from 1957 to 1966
- miscellaneous official balance sheet estimates taken only from the non-bank private sector balance sheets for 1966 to 1980 and for 1976 to 1986
- the FinStats data for 1978 to 1985 provided a more detailed breakdown for the currency and deposits
- The pre-European System of Accounts 1995: ESA 1995 financial account balance sheet, as noted in the article [Historical estimates of financial accounts and balance sheets](#)
- ESA 2010 for the period 1987 to 2015 – these are the official, published national accounts figures and the AF.2 sub-instruments provide the basis for allocating data in other sources to ESA 2010
- CSDB-extended pre-ESA 1995 – this is the main new development in this article as it provides a large amount of granular data for earlier years that were not available in the pre-ESA 1995 source in the earlier article, Historical estimates of financial accounts and balance sheets; in the CSDB-extended pre-ESA 1995 dataset, sub-instrument data were generally available back to 1966 and, for some sub-instruments, back to 1957

Given its importance, the CSDB-extended pre-ESA 1995 source is considered in more detail in this section. See [Households and non-profit institutions serving households sector \(NPISH\) currency and deposits data available from the various sources](#) for the full set of households and NPISH currency and deposits data available from the various sources.

Our earlier article highlighted issues with the pre-ESA 1995 dataset, which we defined as the final vintage of sector financial account and balance sheet estimates produced by ONS under the pre-ESA 1995 system of accounts. The dataset was not complete in terms of component sub-instruments and many balance sheet instruments did not go back far enough to allow an overlap with other published data sources.

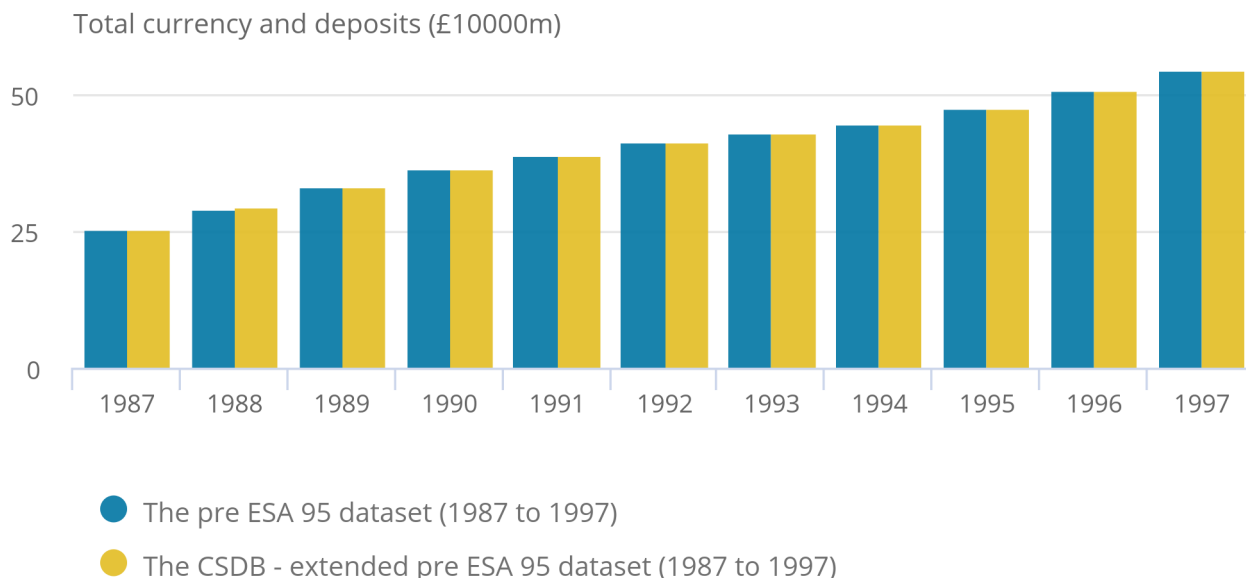
Using the ONS CSDB (database), we were able to extract a greatly expanded pre-ESA 1995 set of data. An extract of pre-ESA 1995 instruments containing 160,000 data series was downloaded. It was then sifted to separate out final datasets from earlier versions. Although these data already existed in CSDB, they had not previously been identified and sorted into relevant years, sectors and instruments. This CSDB work required substantial resources but has made these data accessible to stakeholders who are now able to undertake new analyses. In this article, it is used to identify currency and deposits (AF.2) historic data for periods earlier than were previously thought to be available.

Although, for the majority of the pre-ESA 1995 currency and deposits sub-instrument series, CSDB-extended data were recovered back to 1966 (see [Households and non-profit institutions serving households sector \(NPISH\) currency and deposits data available from the various sources](#)), for other sub-instruments such as sterling bank deposits and sterling building society deposits, comparative earlier data could not be found prior to 1974 and 1983 respectively.

As our new work, using CSDB, was undertaken separately from and outside the main national accounts production processes, we wanted to assess the validity of the newly identified data. Estimates relating to a 10-year period (1987 to 1997), where households and NPISH currency and deposits instruments data were available from both the main pre-ESA 1995 source and our CSDB-extended pre-ESA 1995 data, were examined, by comparing the totals, that is, the sum of all the AF.2 sub-instruments, from both sources (Figure 1).

**Figure 1: Households and NPISH Currency and Deposits data 1987 to 1997**

Figure 1: Households and NPISH Currency and Deposits data 1987 to 1997



Source: Office for National Statistics

As can be seen in Figure 1, the data from the two datasets were highly consistent. It was, consequently, decided that we would use our new, CSDB-extended pre-ESA 1995 data wherever available in preference to alternative sources, with the exception of the ESA 2010 source.

## 5 . Issues arising and approach taken in developing a currency and deposits (AF.2) historical series

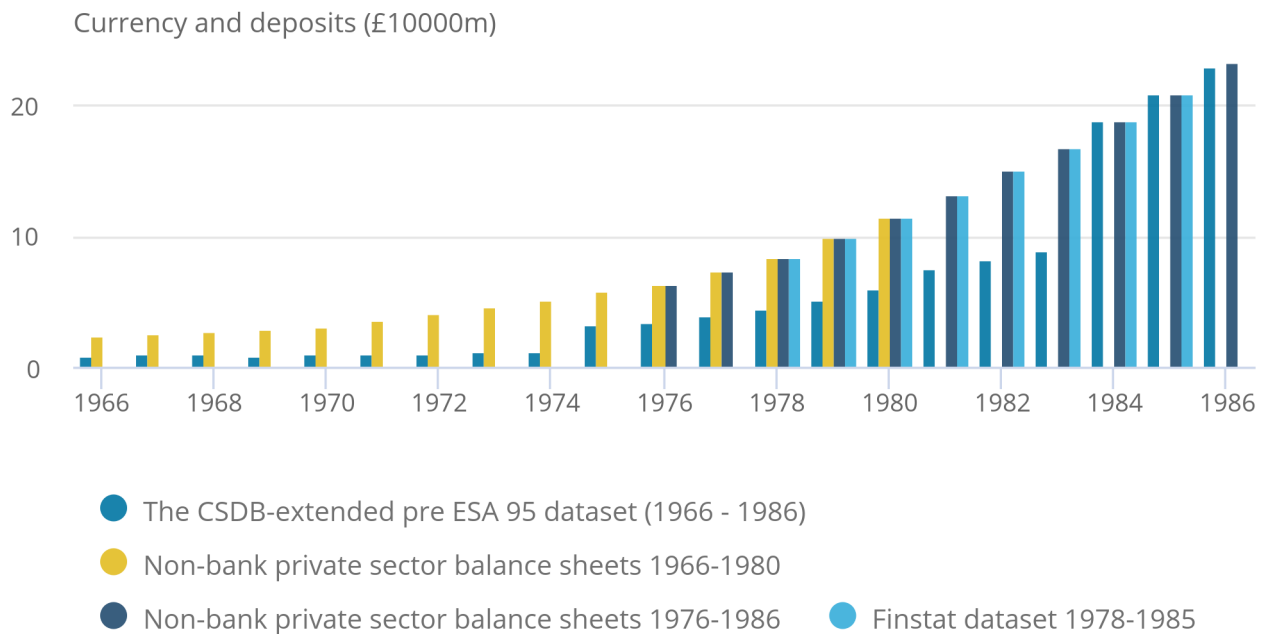
The general method used previously for reconciling the households and non-profit institutions serving households (NPISH) sector AF.2 currency and deposits estimates with the European System of Accounts 2010: ESA 2010 classification is set out in our [previous publication](#) and presented in the instrument map. As will become apparent in subsequent articles, the matching is possibly easier for AF.2 than for other AF categories. This is partly because the sub-instrument components do not differ very much between the different sources of AF.2 data and because the available sources contain a more detailed breakdown for AF.2 than for other AF categories. Also, as a category and compared with other AF categories, AF.2 has not changed much over time.

One of the main issues faced when attempting to produce a single, historical data series consistent with ESA 2010 for AF.2 was that we were unable to find sub-instrument estimates overlapping in time to validate the data for earlier years contained in the Solomou and Weale and Roe sources. As Solomou and Weale and Roe were mapped to ESA 2010 for households and NPISH in our previous instrument mapping work, and as there is no other data source for these earlier years, the broad approach taken was to use the figures as presented in those sources.

A further issue was the unavailability of AF.2 data for some sub-instruments for some years, although AF.2 data were recovered back to 1966 for many sub-instruments. We have tried to find data for any missing sub-instruments, rather than just using AF.2 totals, as this may lead to more accurate totals overall. For sterling bank deposits and foreign currency bank deposits, data could not be found for 1966 to 1974; for sterling building society deposits, data could not be found for 1966 to 1983. The impact of these missing data on AF2 totals, when compared with other sources, can be seen in Figure 2.

**Figure 2: Currency and Deposits (AF.2) assets for the Households and NPISH sector from 1966 to 1986**

Figure 2: Currency and Deposits (AF.2) assets for the Households and NPISH sector from 1966 to 1986



Source: Office for National Statistics, Bank of England, and Expert Studies

Figure 2 shows that AF.2 totals for sources other than the CSDB-extended pre-ESA 1995 dataset agree very well for the periods where they overlap. The CSDB-extended data do compare well with these other sources for the period 1984 to 1986, but not for earlier years. Prior to 1984, significant differences in AF.2 totals can be observed between the CSDB-extended data and the other sources. The CSDB-extended AF.2 totals are an average of 58% lower.

As mentioned earlier, this difference is mostly, but not entirely, caused by missing data for some sub-instruments. To improve the CSDB-extended total AF.2 estimates for the periods prior to 1984, the approach adopted was to approximate the missing data for the CSDB-extended AF.2 instruments by replacing it with data from similar instruments in the other sources. The most useful sources for this were the two NBPS series, for 1976 to 1986 and for 1966 to 1980 (see [Households and non-profit institutions serving households sector \(NPISH\) currency and deposits data available from the various sources](#) for more information).

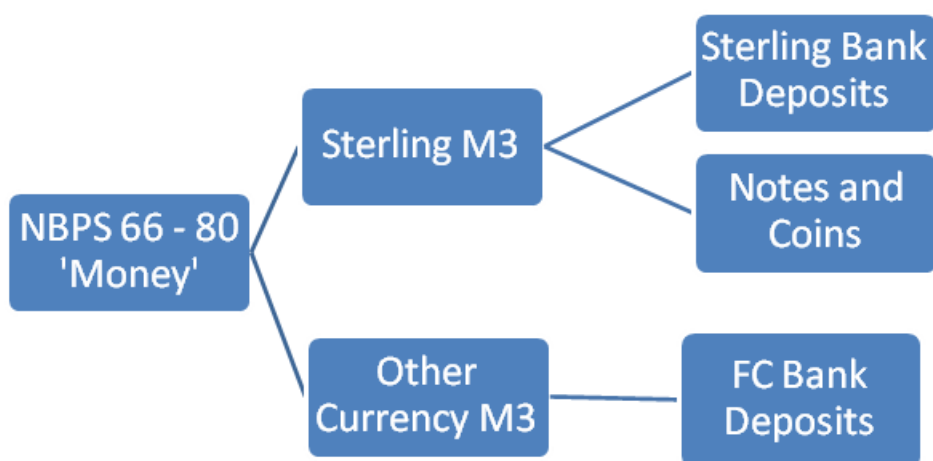
## Sterling bank deposits and foreign currency bank deposits

These sub-instruments were not available from the CSDB-extended pre-ESA 1995 source before 1975. The only reliable source found to cover earlier years (1966 to 1974) was “non-bank private sector (NBPS) 1966 to 1980” in an instrument called “money”. Further investigation showed that this “money” sub-instrument is equivalent to two sub-instruments, labelled “sterling M3” and “other currency M3” in the NBPS (1976 to 1986) dataset. This split reflected the government’s money supply targets of the time where sterling M3 was the main monetary aggregate underpinning monetary policy. In the pre-ESA 1995 dataset, “other currency M3” is labelled as “FC bank deposits” while “sterling M3” is further split into the sub-instruments “sterling bank deposits” and “notes and coins”.

In light of these various relationships, to estimate “sterling bank deposits” for the earlier years in the CSDB-extended pre-ESA 1995 dataset (these years are blank in the pre-ESA 1995 source) and to avoid duplication, the approach detailed in this section was adopted. The instrument “money”, in the NBPS 1966 to 1980 dataset, prior to 1975, was split into “sterling M3” and “other currency M3”, maintaining the overall growth trend during this period. To make this split, we used an average ratio estimated using the data for “sterling M3” and “other currency M3” taken from the NBPS (1976 to 1986) dataset over the five-year (1976 to 1980) period when both NBPS sources overlapped (using the overlap to increase confidence in the ratio). Over these five years, “currency M3” is, in fact, only about 1% of the “money” total. Using this 1% as the basis for the ratio, “money” within the NBPS (1966 to 1980) dataset was split for the period prior to 1975 into “sterling M3” and “other currency M3”.

The newly estimated “sterling M3” and “other currency M3” sub-instruments were then used to complete the empty cells in earlier years for “foreign currency bank deposits” and “sterling bank deposits” respectively. This was done using “other currency M3”, to replace the empty cells for “foreign currency bank deposits”, then estimating “sterling bank deposits” by subtracting “notes and coins” from the newly estimated “sterling M3”. (“Notes and coins” is directly available from the CSDB-extended series for the earlier years.), see figure 3.

**Figure 3: Breakdown of how the non-bank private sector (NBPS) 1966 to 1980 “money” instrument was split**



For relevant data see [Estimates for Sterling M3, other currency M3 and sterling bank deposits prior to 1975](#)

## Building society deposits

These data are not available from the CSDB-extended pre-ESA 1995 source prior to 1984. They are available before 1984 from some of the other sources (see [Households and non-profit institutions serving households sector \(NPISH\) currency and deposits data available from the various sources](#)). There is no difference between the estimates for overlapping years in these other sources. Consequently, our approach was to:

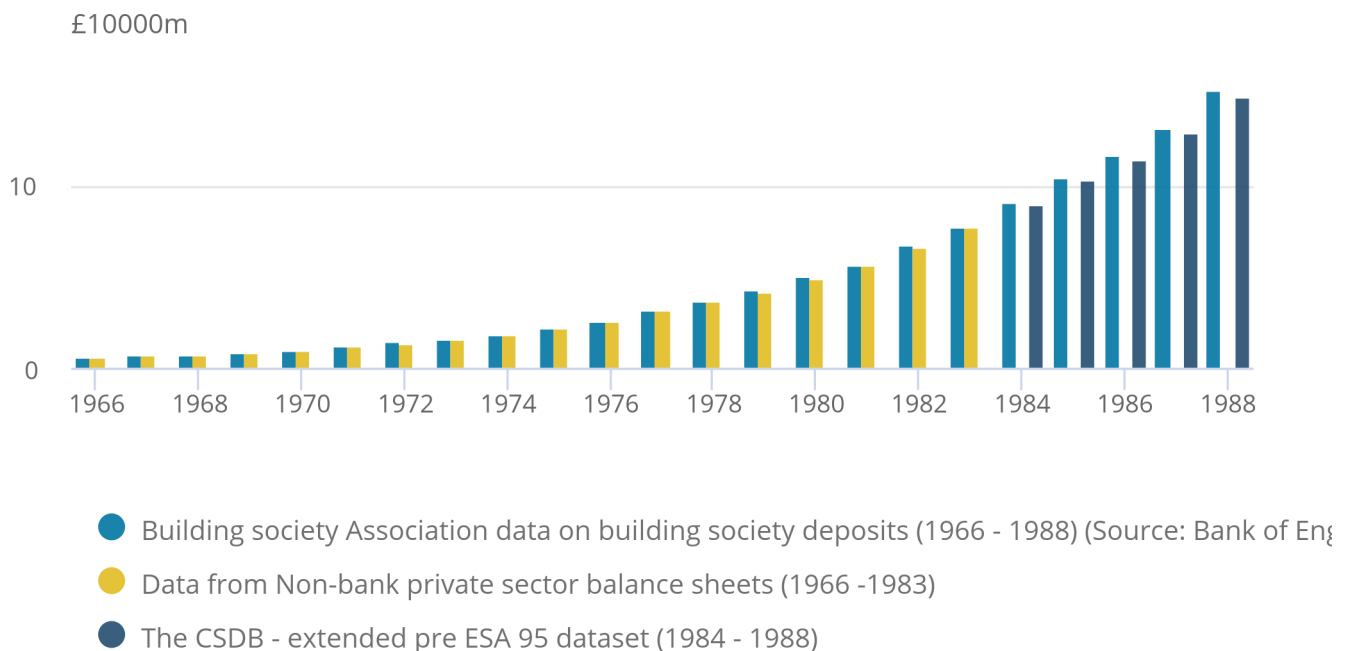


- use the source “total NBPS 1976 to 1986” for the years 1976 to 1983, partly guided by the very similar estimates for this instrument in this source and in the CSBD-extended pre-ESA 1995 source for the three overlapping years after to 1983
- use the source “NBPS 1966 to 1980” for the years 1966 to 1975, again guided by the very similar estimates for these two sources, in this case for overlapping years 1978 to 1980

As a quality check, this newly added building society deposits data (1966 to 1983) and data from the CSBD-extended pre-ESA 1995 building society deposits (1984 to 1988), were compared against Building Society Association data on deposit and shared liabilities, sourced from the Bank of England (Figure 4).

**Figure 4: Building Society Deposits: comparison of sources**

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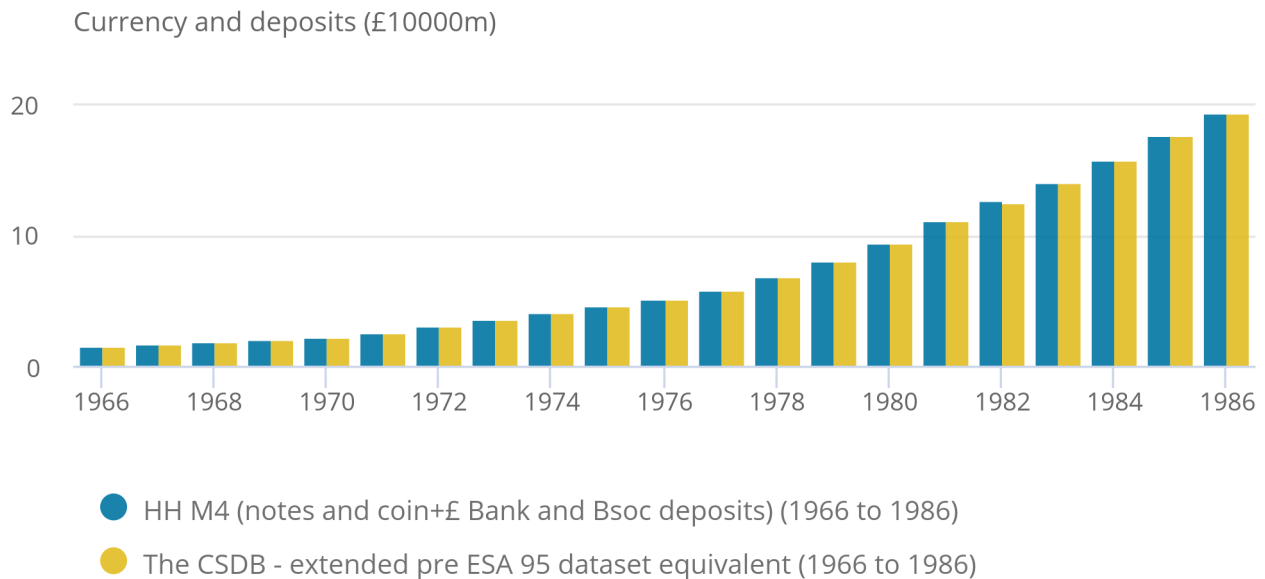
**Source: Bank of England**

Figure 4 suggests our building society deposits estimates are plausible and consistent with the building society association data on shared liabilities sourced from the Bank of England data.

We also made a further check of the levels of our newly extended sterling bank deposits and building society deposits figures, and of the notes and coins figures available in the CSDB-extended pre-ESA 1995 data. The sum of these data for the period (1966 to 1986) was compared with household M4 data (household notes and coin, household £ deposits with UK MFIs, and building society deposits), sourced from the Bank of England (Figure 5).

**Figure 5: Comparing the sum of sterling bank deposits, building society deposits and notes and coins with equivalent historic household M4 estimates**

Figure 5: Comparing the sum of sterling bank deposits, building society deposits and notes and coins with equivalent historic household M4 estimates



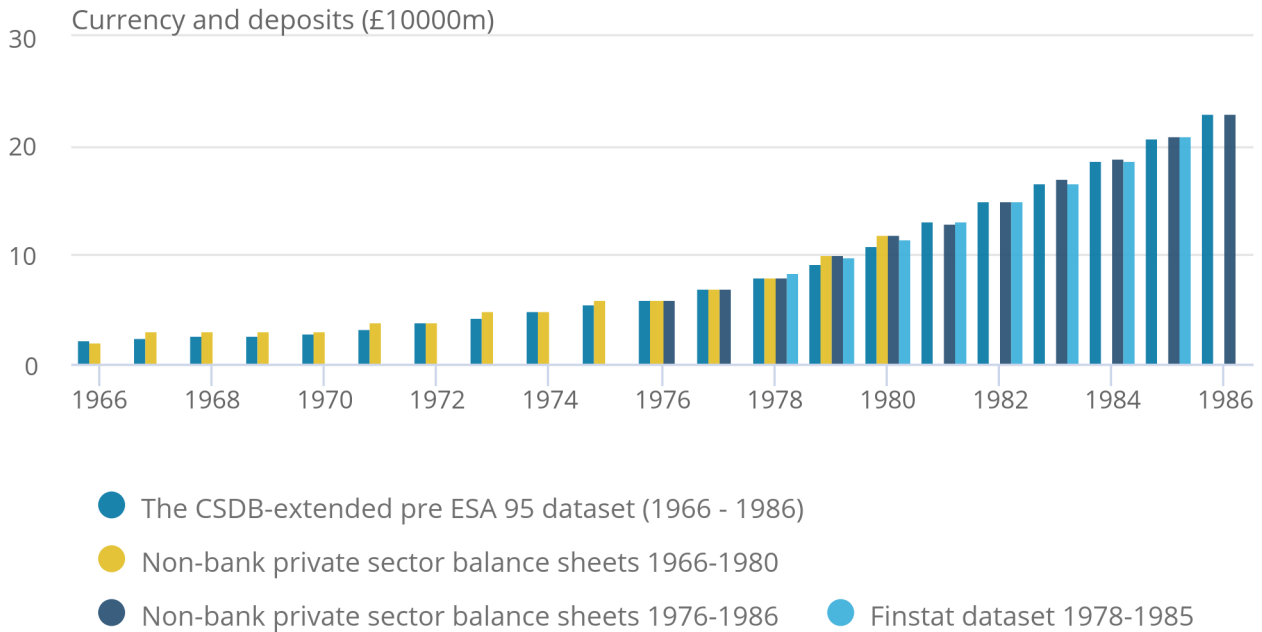
**Source: Bank of England**

Again, the closeness of the figures from the two sources suggests that our extended estimates are plausible.

Figure 6 shows the considerable improvement, compared with the starting position in Figure 2, that the previous estimation process has on the total AF.2 estimates for the period prior to 1984 (as noted earlier, for 1984 onwards, the bank and building society data are available).

**Figure 6: Currency and Deposits (AF.2) assets for households and NPISH from 1966 to 1986**

Figure 6: Currency and Deposits (AF.2) assets for households and NPISH from 1966 to 1986



**Source: Office for National Statistics, Bank of England, and Expert Studies**

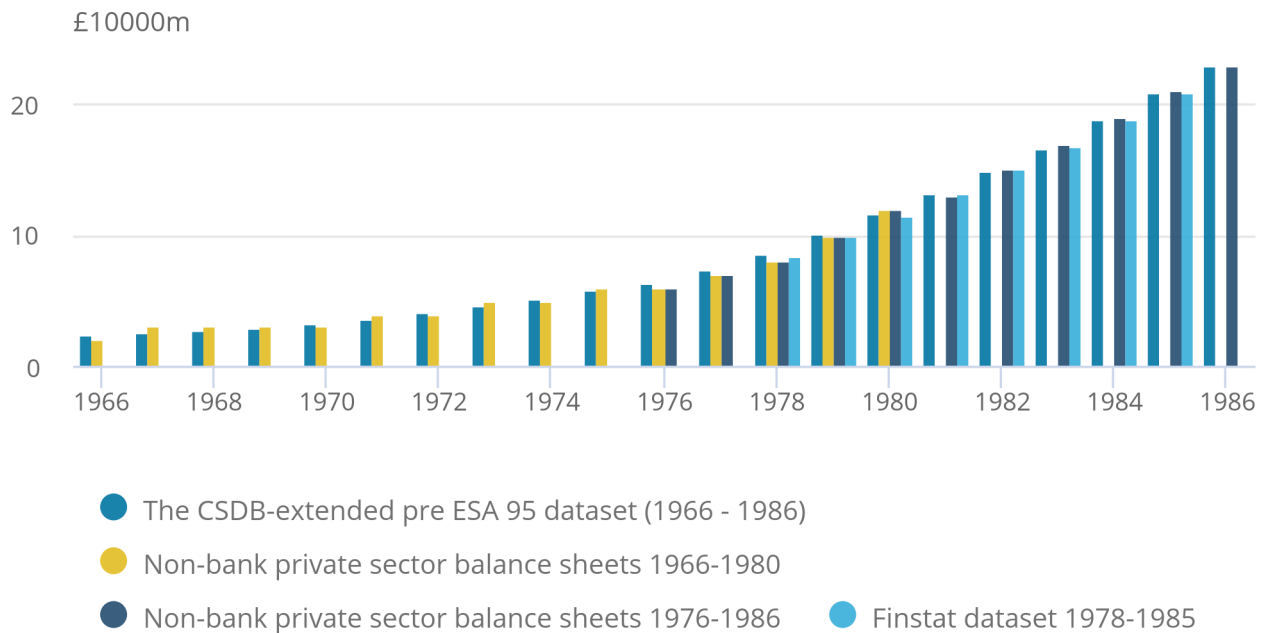
As can be seen in Figure 6, after 1980 there were negligible differences, less than 1%, between CSDB-extended AF.2 estimates and the other sources. However, prior to 1980, some larger differences start to emerge. The CSDB-extended AF.2 figures are, on average, around 6% lower (between 1966 to 1980) than the other historic sources.

Investigation of the 6% difference, comparing the CSDB-extended and the NBPS data sources, suggests that figures for two of the NBPS sub-instruments, “national savings” and “saving bank deposits”, are higher than what we have taken to be the equivalent content in the CSDB-extended dataset. Only one of these two sub-instruments, “national savings”, can be seen as an explicit heading in the CSDB-extended dataset. “National savings” in the CSDB-extended data are somewhat lower than the “national savings” heading in the NBPS data.

Further investigation has identified that the previous pre-ESA 1995 dataset excluded “trustee savings bank and post office deposits” from 1966 to 1980. Figures for these have been obtained and added in, with the result that the 6% difference almost entirely disappears. See figure 7.

**Figure 7: Comparison of sources after Trustee Savings Bank and Post Office deposits are added in for years 1966 to 1980**

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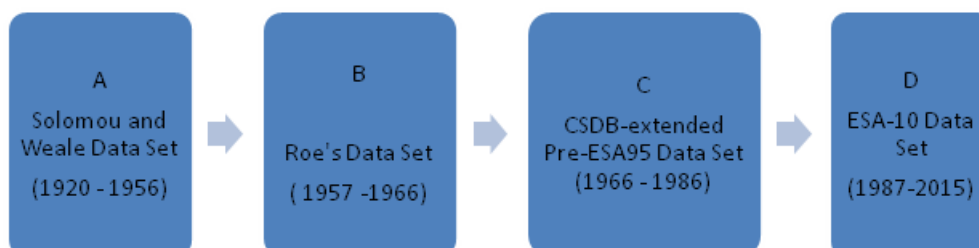


Source: Office for National Statistics, Bank of England, and Expert Studies

## 6 . Constructing the households and NPISH AF.2 historical series

Having set out issues and methods previously, Figure 8 shows the building blocks to be used for this historical time series.

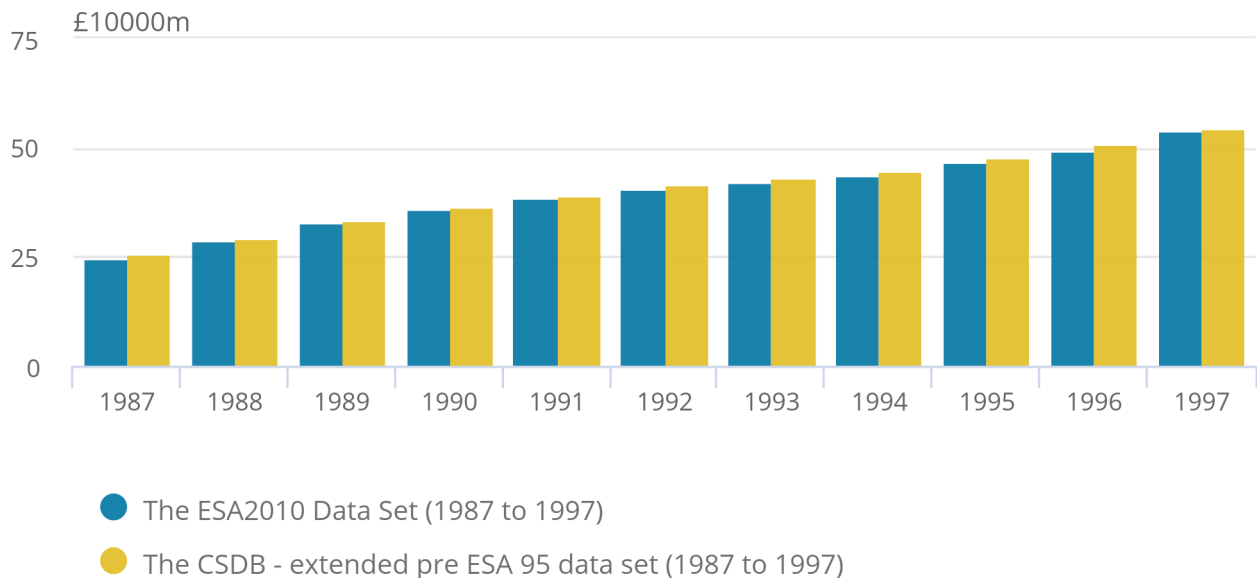
**Figure 8: The datasets forming the households and non-profit institutions serving households (NPISH) (AF.2 currency and deposits) historic series**



In comparing European System of Accounts 2010: ESA 2010 with the CSDB-extended pre-ESA 1995 data, our analysis benefitted from a data overlap for the years 1987 to 1997.

**Figure 9: Comparison of ESA 2010 and CSDB-extended pre-ESA 1995 datasets, UK, 1987 to 1997**

Figure 9: Comparison of ESA 2010 and CSDB-extended pre-ESA 1995 datasets, UK, 1987 to 1997



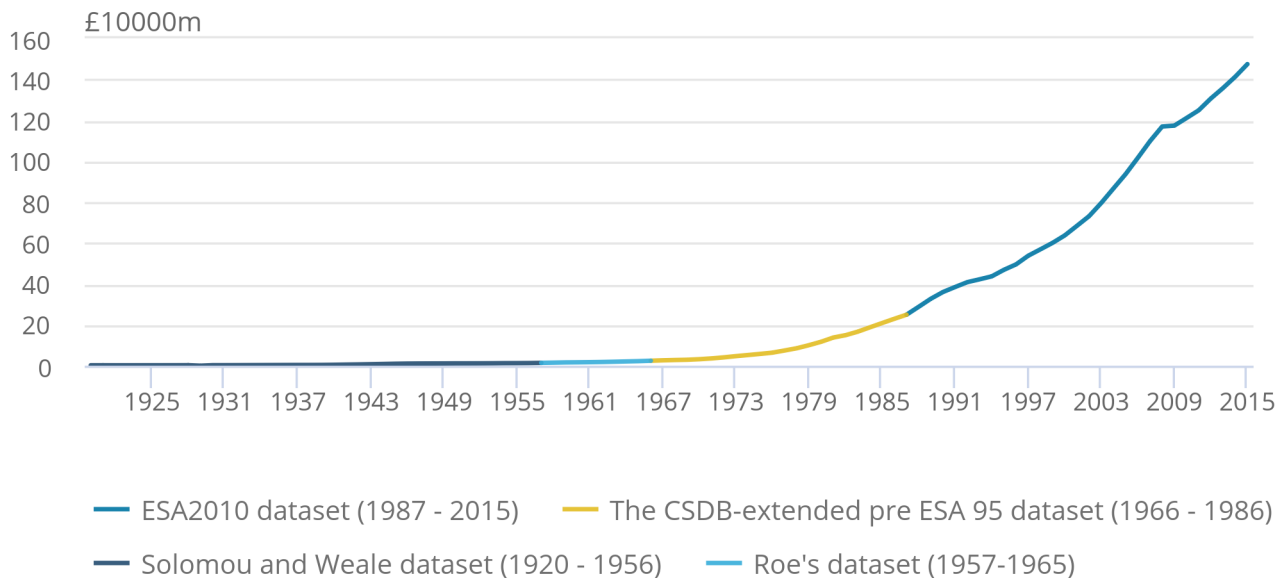
**Source: Office for National Statistics**

In Figure 9, the ESA 2010 figures are about 2% lower than those in the CSDB-extended pre-ESA 1995 overlapped data. This seems to be accounted for by reclassification with the introduction of ESA 1995. Partnerships, for example, moved out of the personal sector and into private non-financial Corporations. Although classification change occurred in the mid-1990s, with the introduction of ESA 1995, the effect is seen between 1986 and 1987 as figures on the new classification basis were taken back to 1987.

In light of these various issues, we present a currency and deposits (AF.2), households and non-profit institutions serving households (NPISH) time series (Figure 10). However, our feeling is that it will be better to try to finalise this AF.2 time series when the analysis has, in future, been extended to other instruments and sectors. This will also provide an opportunity to take the future development of work in other areas on historical time series into account. Ultimately, we will want to ensure that assets match liabilities across the institutional sectors as a whole, although that will not be possible until the end of this major programme of historical time series work.

**Figure 10: Total currency and deposits (AF.2) time series, UK, 1920 to 2013**

Figure 10: Total currency and deposits (AF.2) time series, UK, 1920 to 2013



Source: Office for National Statistics and Expert Studies

## 7 . Conclusion and next steps

This article further develops our previous work [Reconciling the sources of historic data for the households and non-profit institutions serving households \(NPISH\) sectors](#). It proposes a time series extending back to 1920 for currency and deposits (AF.2) for the households and NPISH sectors, although recommending that work on other households and NPISH instruments, and on other institutional sectors, should be completed before finalising the AF.2 time series.

The intention is to use the approach presented in this article, for example, the instrument mapping approach to harmonising data from different sources, to produce further articles that will cover assets and liabilities for the other households and NPISH AF categories. We hope to publish the next article around the middle of 2018.

As resources permit, we hope to move on to produce instrument mappings and historical time series for all the institutional sectors. This would be a sizeable research programme, however, expected to take number of years.

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## 9 . Relevant links

[Flow of Funds archived background information](#)

12 September 2017 Article – [Economic Statistics Transformation Programme: Enhanced financial accounts \(UK flow of funds\) – A flow of funds approach to understanding financial crises](#)

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