

## United Kingdom<sup>1</sup>

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Comprehensive official data on UK financial market prices and quantities typically begin in the early 1960s. That reflects the impetus for improved banking and financial data following the recommendations of the Radcliffe Report published in 1959. *The Bank of England Quarterly Bulletin* was launched in 1960, which contained a data appendix and various articles on statistics. This was supplemented by occasional *Bank of England Statistical Abstracts* containing long time series of data. The Central Statistics Office (CSO), the former name of the current Office for National Statistics (ONS), began producing the *Financial Statistics* periodical from May 1962.

Around the same time, Brian Mitchell and Phyllis Deane finished their landmark “Abstract of British Historical Statistics” (Mitchell and Deane (1962) and subsequently updated in Mitchell (1988)). Initially a by-product of their project on the long-run history of British growth they had started in 1954, the Abstract quickly turned into a significant research effort in itself. In their introduction, Mitchell and Deane lay out many of the challenges of historical statistics as discussed in the introductory chapter to this BIS Paper. Faced with a “bewildering variety of copying errors” and the lack of annotation in second-hand sources, they found that the “only way of obtaining a reliable and intelligible series for [their] own use was to go back to the original manuscript sources.” But “correct” statistics are not just a matter of avoiding transcription errors. It is key, as they continue, to understand the historic context and, therefore, “there is an evident need for an adequate text explaining the origins and coverage of the statistics selected for publication and indicating appropriate sources for further comment or detail.” While the Abstract’s main focus was on population, production, wages and prices, the volume included sections on public finance as well as on banking and insurance, where the authors assembled series on coinage, note circulation and bank balance sheets as well as the yield on Consols and the Bank Rate. Most of their data are derived from official statistical publications beginning in the mid-nineteenth century, others were reported in parliamentary reports, newspapers and periodicals such as *The Economist* and contemporary statistical compilations. The introductory pages to the section on banking and insurance provides an illuminating discussion of the historic context within which these data were produced and the associated limitations.

Until recently, few of the available historical data were accessible in the official statistics areas of the Bank of England or Office for National Statistics websites. However, in 2010, the Bank of England began an initiative to publish a wide range of available historical statistics as a “research data set” to be made available in a separate, dedicated area of its website. The first output of this initiative was a *Quarterly Bulletin* article by Hills et al (2010) focusing on historical recessions over three centuries in the United Kingdom and the role of real and monetary factors in

<sup>1</sup> Any views expressed are solely those of the author and so cannot be taken to represent those of the Bank of England or to state Bank of England policy. This paper should therefore not be reported as representing the views of the Bank of England or members of the Monetary Policy Committee, Financial Policy Committee or Prudential Regulation Committee.

driving them. Alongside this article, a spreadsheet that became known as “the three centuries data set” was produced and published on the bank’s website. This has been updated and extended several times by Dimsdale and Thomas since that point, with the help of many colleagues in academia and central banks. The work was motivated by the Bank of England’s one bank research agenda (OBRA) in 2014, which expressed an aim for the bank to act as a public good provider of historical statistics in areas relevant to its expertise and remit. The data have also been made available on FRED.<sup>2</sup> The spreadsheet was renamed the Millennium of Data spreadsheet<sup>3</sup> (henceforth BoEMoD), reflecting the addition of many medieval series, but most of the financial data available tend to start after the Bank of England was established in 1694. More recently, a historical data repository has been developed as a joint initiative between the Bank of England and the Office for National Statistics and the Economic Statistics Centre of Excellence (ESCoE). This contains a wide range of digitised historical statistical and methodological publications and acts a “sources and methods” resource for the Millennium of Data spreadsheet.

The following chapter provides a brief sketch of territorial and other structural developments in the UK financial system and how they affect the coverage and interpretation of historical monetary and financial statistics. We then proceed to describe the available series for credit, benchmark interest rates and house prices, and suggest how they can be improved given the sources available.

## 1. Territorial and other structural changes in the financial system

In references to British historical statistics, it is common to see the territorial unit “the United Kingdom” or “UK” used interchangeably with some of its constituent territories such as Great Britain and England. In part, that reflects an impression that the Kings and Queens of England (and later their parliaments) were able to extend their rule across the British Isles and achieve a high degree of territorial and administrative integrity at a relatively early stage, compared with some other European states whose territorial borders changed frequently. However, this impression is somewhat illusory and, for historical statistics in particular, it is often important to distinguish between the constituent parts of the United Kingdom, which for long periods had different laws, administrative regimes and banking systems as well as disparate economic characteristics. The economic history of England is not synonymous with that of the United Kingdom as a whole and this is a key consideration when constructing long time series of historical statistics.

The effective administrative unification of the countries of the United Kingdom only began in 1536 with the Act of Union between England and Wales, although England had effectively annexed the country during the late 13th century and created the principality of Wales, a title which is still carried by the heir to the throne today. Similar attempts to conquer Scotland had failed and it took the vagaries of dynastic marriage and succession to unite the two crowns in 1603 with the accession of James VI (of Scotland) and I of (England). However, administratively the two countries, and their respective parliaments, remained separate until a further Act of Union in 1707,

<sup>2</sup> <https://fred.stlouisfed.org/categories/33839>.

<sup>3</sup> Thomas and Dimsdale (2017), available at [www.bankofengland.co.uk/statistics/research-datasets#md](http://www.bankofengland.co.uk/statistics/research-datasets#md).

when the two countries became "United into one kingdom by the name of Great Britain".

From the Norman Conquest onwards, Ireland had resisted numerous attempts by the English crown to exert its authority. However, war and colonisation during the 16th and 17th centuries brought Ireland securely under the authority of the English crown and a further Act of Union in 1800 created the United Kingdom of Great Britain and Ireland, which became effective from 1 January 1801. The movement for Irish independence grew during the 19th century and the counties of Southern Ireland left the United Kingdom in 1922 to form the Irish Republic. Since this point, the United Kingdom has consisted of Great Britain and the counties of Northern Ireland.

The disparate territorial and administrative evolution of the United Kingdom has many implications for historical statistics. Prior to 1700, comprehensive economic statistics are only available for England. From 1700, aggregate statistics for Great Britain become feasible, especially after 1755 when customs data for Scotland become available. From the late 17th century, statistics for Ireland start to emerge, although trade and fiscal data were only consolidated with those of Great Britain after the end of the Napoleonic Wars. As a result of this it is common for many aggregate series to start (or have breaks) in key benchmark years such as 1700–55, 1801–16 and 1920–22.

The territorial evolution of the United Kingdom has particular implications for statistics on credit, interest rates and house prices. The Bank of England was founded in 1694, primarily as a result of the need to fund the wars of William III. In return for raising funds and managing the national debt, the Bank of England was given certain privileges, through a series of charters, such as the ability to issue notes and, more importantly, a monopoly on joint-stock banking in England. As a result, up until 1826 the rest of the banking system in England was restricted to small partnership banks. From the late 17th century, private banks had emerged in London, originating from scrivener and goldsmith businesses operating in the City of London. In the rest of the United Kingdom, private note-issuing "country banks" emerged from around the middle of the 18th century. The limited size of these private banks would have implications for the financial stability of England during the 18th and early 19th centuries. After the financial crisis of 1825, the Bank of England ceased to have a monopoly on joint-stock banking in England from 1826. The growth of the joint-stock banking system, initially in the provinces and from the 1830s in London, would lead to the banking system becoming an ever more important source of credit.

The privileges of the Bank of England did not carry across to Scotland, which was administered separately. The Bank of Scotland was founded in 1695, primarily as a commercial bank but with monopoly privileges. Competition, however, was introduced in 1727 and from then on Scotland developed its own joint-stock banking system independently from that of England. The Irish banking system effectively began with the opening of the first note-issuing bank, the Bank of Ireland, in 1783. In 1845, however, both the Scottish and Irish banking systems were brought within the realm of the Bank Charter Act of 1844 which restricted the note issuance of existing Scottish and Irish banks, and allowed no new note-issuing banks, cementing the effective monopoly of the Bank of England as the issuer of new notes.

As a result of extensive merger and takeover activity and the extension of branch banking, the UK banking system became increasingly concentrated in the 19th and early 20th centuries. At the beginning of the 19th century there were literally hundreds of banks, many of them small "country banks" operating outside London.

But by 1914 there were comparatively few and from then on, until the late 1960s, the banking system was dominated by a cartel of the “big five” clearing banks – Barclays, Lloyds, Midland, National Provincial and Westminster. They also had subsidiary interests in banks in Scotland and Ireland. This lack of competition was reflected more broadly in the financial system, which was highly compartmentalised with banks largely focused on short-term finance for companies, with little or no involvement in mortgage lending, which was the preserve of building societies and insurance companies. During the 1960s and 1970s, foreign banks began to expand their presence in the United Kingdom. They were predominantly engaged in wholesale lending and deposit activity, and in part this reflected the rise of the Eurocurrency market. This development began to undermine the cartel and in 1971 the government introduced competition and credit control (CCC), which led to the re-introduction of competition into the banking system and would also usher in a range of other financial liberalisation measures. However, to this day domestic lending and deposit markets are still dominated by the large UK banking groups.

Building societies first emerged at a local level in the late 18th century but would become much more important in the provision of housing finance after the First World War as home ownership developed. Like the banking system, the building societies operated as a cartel from this point and dominated the provision of mortgages prior to the financial liberalisation measures of the 1970s and 1980s. At the start of the 1980s, controls on banks’ balance sheets were relaxed, allowing them to compete more effectively in the mortgage market, and mortgage rationing by the building societies themselves ended in the early 1980s. They began to offer interest-bearing transactions accounts and entered wholesale funding markets in 1983. The Building Societies Act in 1986 removed the last remaining constraints and allowed them to offer the whole range of products and services provided by banks. As a result of these developments, banks entered the mortgage business and building societies began to operate more like banks. Beginning in 1989 with Abbey National, there was a wave of demutualisations whereby building societies turned themselves into banks, and the banking system became the predominant provider of mortgages. The other development in the 1990s and early 2000s was the development of securitisation – banks were able to package up mortgages and move them off-balance sheet to special purpose vehicles who would then issue securities to investors that were linked to the underlying mortgage repayments.

Savings bank institutions aimed at the working classes were first formed in Britain in the late 18th century with the express aim of encouraging the poor to exercise thrift in order to protect themselves in old age and against illness. They were required to invest in safe assets, largely UK government bonds. Savings banks of this type developed rapidly and in a wide variety of locations, but their growth in the later 19th century stalled in part due to the introduction in 1860 of the Post Office Savings Bank, which operated from a high proportion of Post Office branches, which were more accessible and offered facilities for transferring money between branches. The 19th century ended with savings bank provision centred on a smaller number of large, generally metropolitan banks that were much more closely regulated and offered a wider range of products. Those that survived, known as trustee savings banks, did so well into the 20th century and operated on this model until they were gradually amalgamated into regional institutions in the 1970s and would ultimately form the TSB Group, which became a public limited company in 1986.

Other important financial institutions and credit providers in the United Kingdom have included insurance companies, discount houses, merchant banks, finance

houses and retailers. Insurance companies have historically been providers of mortgages on both commercial and residential property, although these are now largely provided by banks and building societies. Discount houses and merchant banks played an important role in money markets, especially in the 19th and 20th centuries, as purchasers and acceptors of bills of exchange – the key instrument for raising working capital finance that underpinned both domestic and international trade prior to 1914. In the 20th century, the commercial bill market declined and discount houses largely focused on treasury bills, although they remained the conduit through which the Bank of England operated monetary policy until the late 1990s. Finance houses and retailers became increasingly important in the 20th century as providers of consumer credit for cars and other durable goods purchases, initially operating through instruments such as hire-purchase agreements, a form of instalment credit.

## 2. Credit

### Modern credit data since the 1960s

Today, data on credit aggregates provided by monetary financial institutions (MFIs), which in the United Kingdom consists of both banks and building societies, are published on the Bank of England website,<sup>4</sup> along with credit provided to individuals from additional specialist lenders. Data reported to the Bank of England also feed into the national accounts produced by the Office for National Statistics (ONS), which produce broader data by sector on financial accounts, balance sheets and, more recently, “to whom, from whom” flow of funds data<sup>5</sup>. These statistics follow the current European System of Accounts 2010 (ESA10) classification of instruments and sectors. The Bank of England data begin in 1963 on a quarterly basis for total MFI credit and several sub-aggregates. Monthly data typically begin in 1982 following a redefinition of the banking system and reporting requirements in 1981. The MFI data are typically seasonally adjusted where significant seasonality has been detected. Flows of credit are adjusted for specific breaks in classification and allow break-adjusted stocks for credit aggregates to be constructed. The current official ESA10 financial accounts and balance sheet data on the ONS website only begin in 1987 and the series are not seasonally adjusted. However, these data cover a broader set of credit instruments and cover all sectors including lending from the overseas sector and trade credit within and across sectors. The ESCoE historical data repository<sup>6</sup> provides financial accounts and balance sheet data based on earlier systems of national accounts, which go back to 1963 but using a different classification of instruments and sectors (see Thomas and Nolan (2016)). The Bank of England *Statistical Abstract* volumes from the 1970s provide detailed monthly data on the assets and liabilities of the various UK resident banks, much of which is also available in the *Financial Statistics* volume produced by the CSO between 1962 and 2011.

### Credit data 1920–1960s

Between 1920 and the 1960s, the most comprehensive high-frequency data are those of the main London clearing banks, who voluntarily agreed to provide monthly

<sup>4</sup> [www.bankofengland.co.uk/statistics](http://www.bankofengland.co.uk/statistics).

<sup>5</sup> [www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts#publications](http://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts#publications).

<sup>6</sup> [www.escoe.ac.uk/research/historical-data/](http://www.escoe.ac.uk/research/historical-data/).

returns on their balance sheets from 1919. The returns provide data on the total advances, and holdings of private bills and investments (securities) from which credit aggregates can be constructed. As noted, the big five clearing banks dominated lending and also owned or had subsidiary holdings in Scottish and Irish banks. Other UK banks typically reported their balance sheets every six months and these were reported in *The Economist's Banking Supplement* or *Banking Number* and in both the *Bankers' Magazine* and *Bankers' Almanac*. Sheppard (1971) has collected these and produced credit aggregates for the UK banking system as a whole up to the 1960s. From 1920, banks in Southern Ireland are excluded from Sheppard's credit aggregates, although overlapping figures allow for break adjustments. A comprehensive breakdown by industry is only available after the Second World War, although a high-level breakdown is available in the late 1930s.

Sheppard (1971) also covers the available data from other credit providers such as building societies and insurance companies (chiefly mortgage credit) and creates broader credit aggregates based on these. Sheppard's data does not cover institutions such as overseas banks resident in the United Kingdom, investment trusts, unit trusts, private trusts, superannuation funds and merchant banks (accepting houses). They were omitted because of the deficiencies in the published statistics. Data for merchant banks (accepting houses) and overseas banks operating in the United Kingdom only generally start in the early 1950s and were published in the *Bank of England Statistical Abstract Volume 1*, although for most of the 1920-1960s subperiod their contribution to aggregate domestic credit is likely to be small. Separate balance sheet estimates of the discount houses are also available. The *Statistical Abstract* from 1970 provided detailed monthly data on the assets and liabilities of the various groups of UK resident banks to the extent they are available from the early 1950s.

Data on short-term commercial bills based on estimates provided by private discount houses are also available from 1920, which give some indication of short-term credit provision by the money market more generally. This series can be carried through with a few gaps to the present day although the use of inland commercial bills went into decline from around the second half of the 19th century and bills more generally declined after the First World War when they were replaced by treasury bills as the short-term liquid asset of choice. Many of these were held by banks and discount houses and so, to avoid double counting, those holdings may need netting off when constructing a measure of aggregate credit.

### Credit data 1880–1920

In the late 19th century, an increasing number of banks began to publish balance sheets on either an annual, semi-annual and, in some cases, a monthly basis. There was no legal or regulatory requirement to do so other than for joint-stock banks to provide data on share capital and dividends. Publishing a sound balance sheet was done out of self-interest, because it provided confidence, although window-dressing on reporting days was a problem, largely affecting liquid assets such as bills rather than longer-term loans. *The Economist* began producing a *Banking Supplement* in 1877 covering the available balance sheets and Sheppard (1971) constructs credit aggregates for this period from the totals that appeared in these. However, because not all banks reported, the sample of banks covered was not comprehensive to begin with but grew larger over time. Capie and Webber (1985) estimate that *The Economist* series covered 79% of UK deposits in 1880, rising gradually to 98% in 1910 – giving a misleading guide to the trend (although not perhaps the cycle) in bank balance

sheets. Also, the large number of mergers coupled with different reporting data frequently led to problems of under-counting and double-counting. A particular issue is that private banks were only included in *The Economist's Banking Supplement* after 1890 and even then it covered only half of the private banking population. Before 1890 there is relatively little information on the private banks other than the representative balance sheets of one or two private banks. This means care must be taken when using Sheppard's series. The best approach to estimating aggregate bank credit would be to apply the methods used by Nishimura (1976) and Capie and Webber (1985) to estimate total bank deposits. This approach divides banks into different classes based on their location and branch structure. It then takes estimates of credit or assets per branch from the reported balance sheets available in each class and scales this up using data on the total branch numbers of each class of bank from the *Banking Almanac*, to get an aggregate measure. A second-best approach here would be just to take estimates of deposits from Capie and Webber (1985), who use the branch scaling method, and then use estimates of balance sheet ratios from a sample of banks to back out a series for total credit (such as the ratios constructed by Collins and Baker (2003)).

Between 1880 and 1920, data on credit provided by building societies and other institutions can also be found in Sheppard (1971). Savings banks invested almost exclusively in government debt but building societies and insurance companies together provided the bulk of mortgage finance and therefore need to be included in the total.

Total credit includes credit not provided by banks and other financial institutions, and one has to rely on estimates of credit instruments, especially on bills of exchange. From the early 19th century, a time series on *the stock of inland and foreign bills of exchange* can be obtained from stamp duty data. The pioneer of this method was Newmarch (1851) followed by Nishimura (1971) for the period 1855 to 1913. However, many of these bills were held by banks. So to avoid double-counting, estimates of bank holdings must be removed from total bills, using the methods available for bank credit.

### Credit data 1780–1880

Data on the aggregate quantity of credit are limited before the late 19th century. Few joint-stock banks produced balance sheets in the first few decades once the Bank of England lost its monopoly on joint-stock banking in 1826. And, as noted, private banks' balance sheets are particularly scarce as there was no requirement for them to be published. Those that are available are found in archival records. From the 1840s, sufficient balance sheet data are available to make an attempt at creating credit aggregates using the branch-scaling method and this approach is followed by Collins (1983) and by Dimsdale et al (2017) although the resulting series are much more tentative than later estimates given the limited balance sheet coverage.

Before the 1840s the only continuous time series available are those on private sector assets (securities, discounts and advances) held by the Bank of England. However, guesstimates for the size of private banks' assets and liabilities for England and Scotland at particular benchmark dates during the 18th century were made by Cameron (1967). Recent work by Gent (2016) at LSE has made a start constructing estimates of *private London and country bank assets* over the period between the 1790s and 1830s which can be used to improve the estimates of Cameron (1967). For the country banks, he combines information from the balance sheets of "survivor"

country banks over the period and combines that with the available information on the births and deaths of country banks to construct an aggregate series. For the London private banks, he uses relative usage of the Bank of England discount window to determine a scaling factor to convert the aggregation of the known balance sheets into an aggregate measure, distinguishing between those banks that followed a “discounter” business model and those that followed a “goldsmith” model. This allows annual time series for the total of country and London private banks to be constructed up to around the 1840s. The key difficulty is creating a measure of credit during the transition period of the 1820s and 1830s when the joint-stock banks begin to emerge and expand at the expense of the smaller private country banks.

### Pre-1780

The main data on bank credit available prior to 1780 are those of the Bank of England’s private business from 1696, and individual bank studies such as those of Temin and Voth (2013) on Hoare’s Bank (a London private bank) from 1702. While these provide useful information, they can only shed a limited amount of light on the provision of credit by banks over this period and much remains in the shadows.

Estimates of the amount of bills of exchange in circulation are necessarily based on conjecture before the reliable estimates by Newmarch (1851) and others, based on the stamp duty data that became available in the early 19th century. Bills had certainly been circulating in England since the middle ages for foreign trade and increasingly in internal trade in the early modern period. Kerridge (1988) argues that the second half of the 16th century saw a marked rise in inland bills to compensate for the coin shortage arising from the Elizabethan reforms. Mayhew (2013) estimates a circulation of inland bills and other paper of around £1 million in 1600, based on Cameron’s estimates of around £2 million of private inland bills for 1688. The growth of private inland bills after 1688 is largely guesswork until the stamp duty returns provide hard evidence on their quantity from 1815 onwards. Contemporaries estimated the stock to be between £100 million and £200 million in 1800. Cameron (1967) opts for the lower figure and makes a guess of £15 million for 1750 and £30 million for 1775. Whether these guesstimates can be improved with future research is highly uncertain.

### Credit across different borrowing sectors and categories

Sheppard (1971) provides data on mortgage borrowing from building societies and insurance companies. Banks themselves did very little mortgage provision before the 1980s. Industrial breakdowns of bank lending began in the 1930s. The industrial breakdown of lending is very uncertain before the 1930s, although Braggion et al (2017) have shown that there is potentially a large amount of information at the individual loan level in commercial bank archives. Their data set covers the period 1885–1925 and is a promising untapped source. Data on lending to commercial property companies begin in the 1950s. Data on lending to the construction sector more generally are available back to the 1930s. For unsecured lending by non-banks it is possible to construct estimates of the provision by finance houses and retailers back to around 1920 and, with some assumptions, it can be pushed back a little earlier using data on the durable household goods this type of credit was used to purchase.



### 3. Interest rates

#### Benchmark government bond yields

The Bank of England currently produces comprehensive yield curve data back to 1970 on a monthly basis. This includes both nominal and real yield curves given the introduction of index-linked bonds in the early 1980s. The rates produced are essentially zero coupon yields (or the yields on pure discount bonds) and typically the five-, 10- and 20-year zero coupon spot yields are used as benchmark reference yields. The Debt Management Office no longer produces reference prices for individual gilts, these are now produced and administered by FTSE-Tradeweb and are made available without charge to the wider public.

Historical redemption yields for the period after the First World War are available in a number of sources. The First World War and its aftermath led to a dramatic change in the composition of the UK national debt, with a range of short-, medium- and long-term bonds issued by the government after this point. Many of these yields start to appear in secondary sources and official publications such as the UK *Annual Abstract of Statistics* and, later, *Financial Statistics*. These are available in BoEMoD. Annual data on the yields of each bond issued between 1900 and 1974 were initially collated by the stockbroker Pember and Boyle in several volumes titled *British government securities in the twentieth century* (Pember and Boyle (1950) and (1976)). Work by Ellison and Scott (2017) has also collected this data monthly on a bond-by-bond basis using published data in the *Financial Times*, building on work by Heriot-Watt University, and the Institute and Faculty of Actuaries (see Wilkie and Cairns (2017)).<sup>7</sup>

From the mid-18th century up to the First World War, the dominant reference rate for long-term yields was the “consol yield”, a perpetual annuity issued by the British government. Perpetual annuities began to be issued from the 1720s onwards, most of which were consolidated into a single issue with a 3% coupon in the early 1750s. The famous “consols”, as they became known, were the key long-term debt instrument issued by the government for the next 150 years and were used by both contemporaries and historians as a key indicator of long-term yields in the period up to the First World War. These perpetual securities paid a fixed coupon but the government retained an option to redeem them at par. This meant that, when market yields approached the coupon rate, the likelihood of the government exercising its option increased and this option value distorted its ability to act as an indicator of long-term yields. For this reason, a number of adjustments need to be made to the headline consol yield series, particularly in the late 19th century when market rates began to fall. BoEMoD includes several adjusted consol yield series from the literature, but the preferred series is that of Klovland (1994) which makes the most comprehensive set of adjustments and, combined with earlier data, allows a monthly series of benchmark yields on perpetual government securities to be constructed back to 1753.

Prior to the introduction of consols, a range of different instruments were issued by the British government. The establishment of a national debt in the United Kingdom is conventionally said to have begun with the foundation of the Bank of England in 1694 and its initial loan to the government. Alongside the loans provided by the bank (and other joint-stock monopolies such as the East India Company), a

<sup>7</sup> The data are available at <http://users.ox.ac.uk/~exet2581/data/data.html>.

wide range of other more exotic instruments were also issued by the government, which were designed to attract investment in government securities, and consisted of tontines, lotteries, and life and term annuities (see Dickson (1967)). Periodicals of the time such as the *Course of the Exchange* and the *Gentleman's Magazine* recorded returns on some of these instruments and these have been used in various studies (eg Clark (2001)).

### Benchmark money market rates

The sterling overnight index average (Sonia) is now the key sterling interest rate benchmark for overnight rates. It is based on actual transactions and reflects the average of the interest rates that banks pay to borrow sterling overnight from other financial institutions and other institutional investors on an unsecured basis. It has replaced the previous benchmark, the London interbank offered rate (Libor), which was not transactions-based but derived from a panel of reporting banks, each of which were asked how much they would charge other banks for short-term loans of different maturities. However, it was subject to manipulation and a transition process has been under way to move to Sonia as the key reference rate in sterling markets. Historical data for both Sonia (back to 1997) and Libor rates at different maturities (back to 1970) are available on the Bank of England's interactive database. The Bank of England also produces yield curves derived from Sonia and Libor-based swap rates, forward rate agreements and futures contracts which allow reference money market rates at different maturities to be derived. These go back to 1990. General collateral gilt repo rates are also available as a secured money market rate benchmark from 1996 to 2018 and are available in the Bank of England's interactive database.<sup>8</sup>

From the end of the First World War up until the introduction of CCC in the early 1970s, the key money market reference rate was the treasury bill rate (introduced in 1877), having replaced prime commercial bills as the key instrument in the money market in the immediate aftermath of the war. Monthly data are available on Treasury bill discount rates and yields from 1915 and are available in BoEMoD. Commercial bill rates made a brief comeback in the mid-1980s in the years when the government was running a surplus. Rates on short-term local authority deposits and sterling certificates of deposit with commercial banks also act as alternative benchmark rates from the 1950s and late 1960s, respectively.

For most of the 19th century, the rate on prime bills of exchange was the key reference money market rate. For the period 1824–57, a market discount rate for first-class bills was supplied by the famous bill broking firm of Overend Gurney in their submission to a parliamentary committee investigating the 1857 financial crisis. After the mid-19th century, money market rates on bills were increasingly reported in the famous periodicals of the day, such as *The Economist*, in their weekly intelligence reports on the money market. Secondary sources that draw on this data include Nishimura (1971) and Capie and Webber (1985), and BoEMoD contains the monthly data.

Before the early 19th century, evidence on market rates (other than the yields on longer-term government securities) is relatively scant. Because the usury laws were still in force during the 18th and early 19th centuries, short-term private loans could not charge in excess of the legal rate, and lenders often resorted to hidden charges and other forms of concealment, especially in periods of credit stringencies, making

<sup>8</sup> [www.bankofengland.co.uk/statistics](http://www.bankofengland.co.uk/statistics).

observations of the effective rate difficult. Rates on short-term public sector bills (Exchequer and Navy victualling bills) are available but it is unclear how representative they were of the rates available to the private sector bill market. In the empirical literature, the rate on six-month<sup>9</sup> bonds of the East India Company (a “quasi-private” company) has often been used as the preferred indicator of short-term market rates for the private sector, given that the East India Company (along with the South Sea Company) was one of the biggest users of short-term credit (see Weiller and Mirowski (1990)). And this is what is used as representative of short-term rates for the 18th century in BoEMoD. But the use of this has been challenged by Nogués-Marco and Vam Malle-Sabouret (2007) who argue East India bonds should be thought of as longer-term securities with embedded put and call options. The foreign exchange market offers an alternative possibility of deriving short-term interest rates for Great Britain by comparing the exchange rates on bills of different “usance” or effective maturity (Flandreau et al (2009)). However, whether these are good indicators of the rates on domestic or inland bills is unclear, especially for bills circulating outside London.

### Central bank rates since 1694

The *Bank of England's official rate* is available daily from 1694 on the Bank of England's website<sup>10</sup> and in BoEMoD. Up until 1971 and from 2006 it has generally been known as “the Bank rate” or, more recently, just “Bank Rate”. It has taken several forms over its life: a discount rate on bills, a rate on secured advances (or repo rate) and, since 2006, a deposit rate on commercial banks' balances at the Bank of England. It has also acted as both a ceiling and a floor on market rates as well as the central rate in a corridor system. That has reflected the different role of the Bank of England over time and changes in its operational procedures and interventions in the money market.

Bank Rate was a constant rate for much of the first century or so of its life, and was effectively kept at the maximum 5% allowed by usury laws from 1719 until 1822.<sup>11</sup> As a result, Bank Rate typically acted as a ceiling on money market rates for much of the 18th century (and would do so again at various points during the 19th and 20th centuries). The bank would typically discount very little when market rates were low but would increasingly do so during financial crises as market rates rose towards Bank Rate (Lovell (1957)).

After the Bank Charter Act of 1844, Bank Rate became a much more active instrument of policy. Initially, the Act allowed the Banking Department of the Bank of England to compete with other banks and bill brokers for discount business, and the bank rate actually undercut those in the market. But as a result of successive financial crises in 1847, 1857 and 1866, the Bank of England increasingly used its instrument as a public policy instrument, influencing market rates of interest to manage financial crises and the exchanges under the gold standard. This was famously discussed in

<sup>9</sup> In 1708, the Bank of England was able to prevent borrowers issuing securities of less than six months maturity in order to avoid competition with Bank of England notes. However, the bank did offer short-term overdrafts to the East India Company and to the South Sea Company to make up for this.

<sup>10</sup> [www.bankofengland.co.uk/statistics](http://www.bankofengland.co.uk/statistics).

<sup>11</sup> Before 1545, lending at interest was effectively illegal. From 1545 to 1552, a maximum rate of 10% applied to all transactions. Under Queen Mary, the taking of interest was once more outlawed. It was reinstated in 1571 at the maximum, which was lowered to 8% under James I, to 6% in 1660 and to 5% in 1714.

Bagehot's Lombard Street publication of 1873. The Bank also began to discount at rates other than its official discount rate. Although the Bank's official rate is often described as a "minimum" discount rate, the evidence from the Bank's ledgers showed the Bank typically discounted bills at a range of rates, with longer maturity bills discounted at higher rates and other factors, such as the quality of the acceptors and other endorsers, possibly having an influence (see Bignon et al (2012) and Anson et al (2017)). In 1847, some discounts were even undertaken at rates below the minimum discount rate. Later in the 19th century, discounts for customers were often made at market rates, although clearing banks increasingly used the Bank Rate as a benchmark for their loan and deposit rates.

Advances to the market (temporary loans secured on bills and other securities), became increasingly important during the 19th and early 20th centuries, and the bank rate increasingly became the basis for lending to the market via a "repo" rather than discount facility, although unfortunately there is little information on the securities offered as collateral and the haircuts applied. King (1936) discusses these developments in more detail. For most of the 20th century, up to 1971, Bank Rate had a direct influence on interest rates in the domestic banking system, given that it was the rate at which the Bank of England, acting as lender of last resort, would normally lend to members of the London discount market against security. It was also a conventional reference point for the rates which the London clearing banks paid on deposits and charged on advances.

The monetary reforms which became effective in September 1971 led to the replacement of Bank Rate on 13 October 1972 by the minimum lending rate (MLR). It was introduced to avoid the appearance that official rates were "frozen" by the government. Bank rate changes, following the Radcliffe Report of 1959, were formally made with the approval of the Chancellor of the Exchequer and there had been a reluctance by the government to increase official rates in the early 1970s despite the advice of the Bank.<sup>12</sup> MLR represented the minimum rate at which the bank, acting as lender of last resort, normally lent to members of the discount market against specific security. But it was intended as a "floating" Bank Rate, with the rate linked to market rates. Until 24 May 1978, the rate was normally set ½% higher than the average rate of discount for Treasury bills established at the weekly tender, rounded to the nearest ¼% above and effective, for lending by the bank, from the following working day. However, the Bank retained the right to administer a change in the rate, with the approval of the Chancellor.

On 25 May 1978, it was announced that the rate would in future be determined entirely by administrative decision, and on 20 August 1981, MLR was suspended and ceased to be continuously posted. The Bank's new aim was to keep very short-term interest rates within an unpublished band, set by the authorities, to establish a specific level of interest rates. Any lending to the market would normally be at a rate above comparable market rates, but within the band. There were four dealing bands ranging from Band 1 to Band 4 with maturities of one to 14 days; 15 to 33 days; 34 to 63 days; and 64 to 91 days. Most typically the Bank dealt in Band 1, and the Band 1 dealing rate is now treated as the official policy rate over the period up to 1996. However, the London clearing banks' "base rates" are often used as an alternative measure of short-term official rates. Following the cessation of the continuous posting of the minimum lending rate, the base rates of the clearing banks were widely used as an indicator of

<sup>12</sup> See the discussion in Capie (2009).

the broad level of short-term interest rates by contemporaries and it is often used as a proxy for official rates over this period.

During 1996, further changes to the Bank's open money market operations were announced. The gilt repo market began in January 1996 and by February 1997 had developed sufficient scale and depth to be included in the Bank's open market operations. The Bank continued to use Treasury bills and eligible bank and local government bills, both for repo alongside gilts, and for outright sale to the Bank. The bank ceased to deal exclusively with members of the London Discount Market Association (LDMA) in its daily operations, dealing instead with a wide range of financial institutions active in the gilt repo and/or bill markets who met the necessary functional requirements for its operations. Between 1997 and 2006 the official two-week "repo rate" became the key short-term policy rate benchmark.

On 18 May 2006, the Bank introduced further wide-ranging reforms to the framework for its operations in the sterling money markets. The most important change with regard to interest rates was the introduction of remunerated reserve accounts (deposits held by commercial banks at the Bank of England). Bank Rate was re-introduced as the rate paid on a target amount of voluntary reserve holdings by the commercial banks. The banks would specify the target amount of reserves that they wanted to hold on average over a monthly maintenance period. All reserves would be remunerated at the bank rate so long as they fell within a specified range of the target. Overnight standing facilities (OSFs) were made available for banks that were unable to meet the target and these allowed unlimited usage, setting an upper and lower limit for market rates of  $\pm 100$  basis points around Bank Rate and 25 basis points on the final day of the maintenance period. So the system operated as a "corridor system", placing limits on the fluctuation of market rates. Following the introduction of quantitative easing in March 2009, which entailed a large increase in the quantity of reserves well beyond that which the commercial banks wanted to hold at the official policy rate, the Bank of England switched to a "floor system". Bank Rate was paid on all reserve accounts which thus acted as an effective floor on money market rates. So since 2006, Bank Rate has been a deposit rate on commercial bank accounts at the Bank of England.

#### 4. Housing and commercial property prices

Current official data from 1968

A new official UK house price index (HPI) was introduced in June 2016 and is available on the ONS and GOV.UK websites.<sup>13</sup> The UK HPI has a wide coverage of both cash and mortgage transactions and a large data source (land registers such as that maintained by HM Land Registry) allowing data to be published down to a regional local authority level, with further breakdowns available by property type, buyer status, funding status and property status. The UK HPI applies a hedonic regression model that utilises the various sources of data on property price and attributes to produce up-to-date estimates of the change in house prices each period. The UK HPI is not as timely as other house price index measures published in the United Kingdom because it is based on completed sales at the end of the conveyancing process, rather than on advertised or approved prices. The UK HPI also only starts in 2005 and is primarily a flow-based measure that reflects residential properties purchased during a particular

<sup>13</sup> <https://landregistry.data.gov.uk/app/ukhpi>.

period. But data for England and Wales go back further, to 1995, and the UK Office for National Statistics (ONS) is also developing estimates for a weighted stock measure of house prices to complement the flow measure.

A derived series using the historic path of the older official HPI goes back to 1968. This series was based on a mix-adjusted index derived from the Building Societies Mortgage Survey and later, from 1993, the broader-based Survey of Mortgages based on completions. The Nationwide and Halifax building societies also produce their own indices, which begin in 1957 and 1983 and continue up to the present. Both lenders now apply hedonic regression methods to their indices, although they cover only mortgage-based transactions and exclude cash sales.

### 1930s to the 1960s

There are three sources of information about house prices between the late 1930s and 1970 that can be used to construct indices:

- The average prices of new houses purchased with building society mortgages from 1956 onwards, produced by the Ministry of Housing and Local Government and then the Department of the Environment.
- An index of prices of second-hand houses compiled by the Department of the Environment from information from the Valuation Office of the Inland Revenue covering the period 1943 to 1970, with an index value for 1934–39.
- Indices of prices of second-hand houses from 1946 and of new houses from 1952 produced by the Co-Operative Permanent Building Society (later to become the Nationwide Building Society). The series are linked to 1939 values.

All of these are based on simple average prices without any adjustment for any changes in the mix of dwellings purchased or for changes in the quality of the dwellings. So these are imperfect indices but remain all that is currently available. Holmans (2005) chooses the second series for his price index over the period 1934 to 1970. There is scope to improve these indices but it would require investigation of the underlying sources available.

### 1895–1939

Recent work by Samy (2015) is the first to construct indices based on actual transactional data that cover the period from the late Victorian era up to the start of the Second World War. His indices start in 1895 and end in 1939. Samy (2015) uses auction data from the annual yearbooks of the London Auction Mart for 1895–1922, and for 1919–1939 the mortgage registers of the Co-operative Permanent Building Society (which, as discussed above, would later become the Nationwide building society and was one of the largest building societies in the United Kingdom at the time) for 1919–39. Samy uses hedonic methods to adjust for quality changes over time, however the indices cover only London and the South East. These indices are available in BoEMoD.

Samy's estimates are likely to be superior to other "second-best" indices constructed over this period:

- Knoll et al (2017) use an index obtained from the UK Land Registry for the period 1898–1920. During this period, price data were registered by the Land Registry when registrations were first made or when there were transfers of already registered commercial and residential land. It has information on the value and

the number of buildings for both freehold and leasehold property. Prior to 1897 registering ownership of land had been voluntary but the Land Transfer Act of 1897 tried to bring an element of compulsion into the registration system. To satisfy the demands of the legal profession, the option of a county veto was offered and only London County Council was attracted to the idea of compulsory registration and so voted in favour of it. It was introduced in stages between 1899 and 1902. So the Land Registry source is rather concentrated on London and the South East prior to 1920 until it was extended to other areas in the interwar period, and is unlikely to be representative of the housing stock even for this area given its phased introduction.

- Holmans (2005) uses a series for rents derived from valuations for house duty, which was a tax brought in to replace the infamous window tax in 1851. He combines this with “years purchase”<sup>14</sup> information from a separate tax – estate duty – to convert these into capital values for the period 1895–1913.
- Braae (1960) uses a cost function method for the period 1920–39, in which house prices are derived from construction costs and land prices. From 1928 to 1939 his source was estimated average construction costs for private dwellings for which plans were approved by local authorities. This information was collated centrally and published in the annual *Statistical Abstract of the United Kingdom*. For years before 1928, values were estimated from contract prices for new houses for local authorities by means of a regression for 1928 to 1939, for which period both sets of data are available. On account of land and profit margins, 25% was added to the figures for construction costs. Braae did use quotations from people knowledgeable about the building trade and housing development to support this figure, but undoubtedly there are many assumptions underlying this index.

Although Samy’s methods are more in line with modern methods of house price index construction, these second-best estimates remain good crosschecks of the pre-Second World War data, given that Samy’s coverage is confined to London and the South East.

### Before 1895

Before 1895, there is a range of information on rents, years purchase, building costs and land prices which, in principle, can be used to construct “second-best” estimates for land and property prices:

- Jones (1933) and Maywald (1954) both estimate a construction cost index back to the mid-19th century based on wage rates in the construction sector and various materials prices. Data on both wages and materials prices are available that would allow these estimates to be pushed back further although assumptions about the weights applied to labour costs and materials would need to be made.
- Feinstein (1998) and Clark (2002) are both able to construct data on rents back to the industrial revolution (and Clark back to the 16th century). Clark’s estimates of rent derive from properties owned and managed by charities, whereas Feinstein’s data are primarily tax-based and so interpolation and extrapolation

<sup>14</sup> As discussed in Chapter 4 of Volume I of this paper, the price of rented property was typically quoted in terms of “years purchase”, ie how many years of rent it would take to purchase the house.

assumptions are required prior to 1845. Both Feinstein and Clark attempt to quality adjust their estimates where possible.

- Estimates of years purchase on dwellings are hard to come by prior to the start of estates duty data in the late 19th century. Cairncross (1953) quotes years purchase information on properties in Glasgow back to 1870 but only at selected intervals. Allen (1988) produces estimates of years purchase and prices on farmland back to the 17th century, which, in principle, could be used with some modification and assumptions either with rentals data or data on construction costs. Clark's data on charities also include actual values for some properties, and to map those on to rental values for his rents index, he uses the rate of return on land in the period, adding 1.9% to the land return to account for the higher rate of depreciation on housing. This estimated rate of return could, in principle, be used to capitalise the values derived from Clark's broader rentals index.

So far no attempt has been made to exploit this information to create an aggregate house price index which could extend the current series back in time. This could be attempted in future work, with academic collaboration.

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