

Measuring the General Level of Prices in the UK in the Long-Nineteenth Century: from Individual Innovation to State Production

PAUL A. SMITH & JEFF RALPH

ABSTRACT: We examine the trajectory of price measurement in the UK in the nineteenth century. The initial steps were taken by interested individuals, and were largely concerned with documenting changes in the value of money driven by increases in the availability of gold and silver. We focus on (a) the conceptual approaches to price measurement, particularly the move from producer (wholesale) prices towards consumer prices; (b) the practical problems of obtaining the information needed and calculating an index; and (c) the social and political pressures which eventually led to the introduction of an official index.

KEYWORDS: Wholesale Price Index; Inflation; Household Expenditure; Board of Trade; Commodity Prices; Consumer Prices



1. INTRODUCTION

THE FLUCTUATION OF prices resulting from great political and natural events has long been recognised as being greatly harmful to all but the wealthiest in society. In response, rulers and governments have tried to control prices, especially of essential goods, with little success. Today, while central banks attempt to limit price changes, we accept their inevitability and compensate for them using a statistical measure of the *overall* change in prices. We use the concept of a 'general level of prices' across all consumer goods and services and use statistical methods to estimate how it changes over time. A measure of the general level of prices is calculated in the UK by the Office for National Statistics each month – it is known as the Consumer Prices Index (CPI).¹ The percentage

¹ The current main measure produced by the Office for National Statistics is the CPI including housing costs, known as CPIH. It is a relatively recent development and hasn't yet been adopted by the

change in the CPI over the value for the equivalent month of the previous year is called the rate of inflation. The CPI was set to take the value 100 in 2015 and the CPI value in April 2020 had risen to 108.6, which means that overall prices rose by 8.6% between 2015 and April 2020. A price index is a means of converting the value of money from one time period to another.

Except in times of austerity, the government uses the CPI to uprate benefits, state and public sector pensions and tax thresholds, thereby maintaining their value. There are many other uses of this measure of the level of prices, and it is arguably the most important of all official statistics pertaining to the economy. This process of updating financial quantities with an inflation adjustment is called indexation.

The calculation of the general level of prices starts by choosing a basket of consumer goods and services to represent all the items that can be bought in the consumer marketplace. The current basket contains just over 700 items. Each month, prices for these items are collected from retail outlets across the country and the internet – in total about 180,000 price quotes are captured. There is another type of data that is also required. We don't spend an equal amount of money on the different items, and when we calculate an average price change over a period of time, we weight each item with the relative expenditure on it. To estimate these expenditure shares, data are captured in a survey of household expenditure, and combined with some additional data from other sources. The measure of the general level of prices is a weighted average of price changes.²

In practice, the collection of the data and the subsequent calculations are a substantial exercise. The detailed methodology is complex and has been developed over many years through international collaboration by generations of experts. Current practice is well established as a function of the state, and is carried out in a similar manner in almost all the countries in the world.

Such an influential measure as the general level of prices has a long history of development, from the first steps in the early years of the eighteenth century to the first

government. There is also an older measure – the Retail Prices Index (RPI). Some financial instruments, including government bonds, and some private pensions are indexed by this measure.

² ONS, *Consumer Prices Index technical manual* (2019)

<<https://www.ons.gov.uk/economy/inflationandpriceindices/methodologies/consumerpricesindicestech nicalmanual2019>> [Accessed 12/05/2020].

official measure at the start of the First World War. This article looks at the main phases of development in the long-nineteenth century (1789-1914). While the various elements now used to calculate the general level of prices arose independently and from differing motivations, they have a common characteristic in that they were all advanced in the first place by insightful and motivated individuals; we discuss some of these individuals and their contributions in more detail in sections 2 and 3.

The important developments made by these individuals included recognising the importance of such a measure and what benefits it would bring, establishing the conceptual basis, identifying the data required, specifying the elements of the required calculations, combining the data, and considering how such a measure could be applied to compensate for the changing value of money. As well as laying the foundations, a few individuals took on the significant challenge of capturing data themselves and demonstrating what could be produced. However, we show that towards the end of the nineteenth century, it became apparent that the scale of data collection required and the calculations were beyond individual efforts and could only be achieved by the state.

In the modern economic world, a measure of the level of prices is considered essential for the management of the economy. However, a few individuals recognised how useful such a measure could be as long ago as the early part of the nineteenth century. Despite a growing recognition of its importance, we show that its development was slow and met with resistance. A combination of pressure from MPs, the Royal Statistical Society and political imperatives eventually ensured the resources for it were provided. We focus here on the evolution of the method and practice of a modern style index of prices, founded on the prices of goods and services and appropriate weighting information. Although wages formed one very important element of the costs of goods and services, we do not consider wage rates as prices themselves, and therefore do not discuss the substantial literature on the gathering and interpretation of wage series.³ We also focus on the nineteenth-century development of the index, and therefore only

³ For more on this topic see the extensive references in A.L. Bowley, *Wages and income in the United Kingdom since 1860* (London: Cambridge University Press, 1937).

mention later work to reconstruct series of prices and expenditures from original data when it is relevant to this narrative of nineteenth-century development.⁴

A few words on terms are also useful at this point. Today we use 'the general level of prices' or just the 'level of prices' for the abstract concept of an average of the prices of the goods and services in the consumer marketplace. We also use the term 'inflation' for the percentage change in the level of prices over a twelve month period. A related expression is the 'purchasing power of money' – that is, how much a unit of currency will buy, as prices rise and the purchasing power of money declines. The terms used in the nineteenth century were slightly different. The level of prices was sometimes called the 'monetary standard', and the effect of an increase in the level of prices was known as the 'depreciation in the value of money' or 'the decline in the power of purchase'.

We introduce a further, highly useful concept from economics and statistics – index numbers. When presenting a series of data items over a number of years, the degree of change can be made clearer by choosing one value and scaling it to be 100, and then applying the same scaling to all the other values. It is easier to gain an intuitive grasp of the change in the values when they are close to 100 in magnitude. This is called an index number representation of the data.

2. COLLECTING INFORMATION ON PRICE

2.1. EARLY SERIES OF PRICE MEASUREMENTS

Historical records of the prices of goods and wage rates exist in fragmentary form from the time of the Norman Conquest. From the thirteenth century onwards, manorial farming served the needs of both subsistence and profit, with many estates keeping detailed accounts of income and expenditure.⁵ These records, and others, provided important material for a few motivated individuals with an interest in collecting the prices of goods and rates of pay for labour. In 1707, William Fleetwood, the Bishop of Ely, wrote an account of his efforts to explore the course of prices over a period of 600 years, together with an application to estimate the change in the value of money

⁴ See for example Sir William Beveridge, *Prices and wages in England from the twelfth to the nineteenth century*, I (London: Longmans, Green & Co. Ltd., 1939).

⁵ John Burnett, *A history of the cost of living*. (Harmondsworth and Middlesex: Penguin Books Ltd, 1969), p.17.

between 1440 and 1700.⁶ A similar consideration motivated Nicholas Dutot in 1738 who took averages of prices of a collection of items to compare the incomes of two French kings.⁷

While both Fleetwood and Dutot recognised the value of collecting prices for a selection of goods and rates of labour—a kind of basic ‘basket of goods and services’ for a specific purpose—there is no indication that they considered the wider value of establishing a measure of the ‘level of prices’ and how it varied over time. The credit for the first attempt to do so is given to Sir George Shuckburgh Evelyn, who was the MP for Warwickshire from 1780 to 1804. His interests extended beyond parliamentary matters to scientific pursuits, particularly in trying to establish an ‘invariable and unperishable standard of weights and measures’.⁸ In 1798, he presented a paper to the Royal Society on this subject which contained a few pages at the end on a very different topic of interest – the value of money and its depreciation. He had collected prices for the ‘necessaries of life together with that of day labour, [...] at different periods, from the Conquest to the present time’.⁹ He then took the average of the prices across his ‘basket’ for each time period to create an estimate of the level of prices. To make the degree to which this price level had changed over time more clearly seen, he set the value in 1550 to be 100 and scaled all other values accordingly. This showed a small increase in the level of prices up to 1550, but a faster increase afterwards.¹⁰ This representation of change is strikingly modern – he created an index number data series, an approach which is very widely used today to highlight change, particularly for economic data.

Shuckburgh Evelyn’s work displays many of the basic attributes of modern measurement of the level of prices, and it attracted much attention from his contemporaries - his data for the depreciation of money were referenced widely.

⁶ William Fleetwood, *Chronicon precosium, or an account of English money, the price of cord and other commodities* (London: Charles Harper, 1707).

⁷ M.G. Kendall, ‘Studies in the history of probability and statistics, XXI. The early history of index numbers’, *Review of the International Statistical Institute*, 37 (1969), pp.1-12 (p.2).

⁸ *Ibid.*, p.4.

⁹ George Shuckburgh Evelyn, ‘An account of some endeavours to ascertain a standard of weight and measure’, *Philosophical Transactions of the Royal Society of London*, 88 (1798), pp.133-182, facing p.176.

¹⁰ *Ibid.*

However, it did attract criticism too: the agriculturalist Arthur Young questioned the items he had chosen and the validity of the price information he had collected, saying that he had not adequately specified the items he had chosen to price. Young also noted that some items should be counted more than once to reflect their relative importance – an early form of weighting. Young proceeded to collect his own data and apply his multiple counting for certain items. Young's resulting table of the depreciation of the value of money showed smaller changes over time than those of Shuckburgh Evelyn.¹¹

Though Young had built on the pioneering work of Shuckburgh Evelyn, in particular by applying an elementary form of weighting, the calculation of the level of prices was not yet fully developed. The individual who is credited with establishing a firm foundation for the measurement of the level of prices is the Scottish economist, Joseph Lowe. In his book, *The Present State of England in Regard to Agriculture, Trade and Finance* he explained the wider factors that led to fluctuations in the value of money, the unfortunate consequences and the need for a measure of 'the power of purchase' which could correct 'a long list of anomalies in regard to rents, salaries, wages etc. ...'. He also explained the need for the collection of prices for a wider range of items—'a standard of more comprehensive character'—and described the formula that should be used to calculate the level of prices from the collected prices and expenditures.¹² This formula, known as the Lowe formula, is used all round the world today. In recognition of his contribution to the field, he is known as the father of index numbers.

2.2. SYSTEMATIC PRICE COLLATIONS

Later in the nineteenth century, a few individuals took up the challenge of the regular collection of prices of a range of commodities, publishing them and attempting to use these data to calculate measures of the level of prices. Because price collection was the province of individual endeavour, it was natural to look for prices that were easily

¹¹ Robert O'Neill, Jeff Ralph & Paul A. Smith, *Inflation: History and Measurement* (Basingstoke: Palgrave Macmillan, 2017) pp.55-56.

¹² Joseph Lowe, *The present state of England in regard to agriculture, trade and finance: with a comparison of the prospects of England and France*, 2nd edn (London: Longman, Hurst, Rees, Orme & Brown, 1823) p.331; p.335; p.332.

abstracted and had the widest coverage. This generally meant obtaining published prices, most of which derived from price lists, trade bulletins and similar published sources. These were *wholesale* prices of commodities such as wool and precious metals, and were used to construct wholesale prices indices, which could be used to judge the changes in the value of money.¹³ Therefore the main task was one of collation rather than collection. Retail prices were not published regularly in the same way, so gathering them would have involved actually visiting retail outlets, and this was beyond the capacity of individual price compilers on anything more than a very local scale. Therefore, at this stage, wholesale price indices were the only way in which change in prices was measured.

By the mid-nineteenth century, wholesale prices were officially collated, because the Board of Trade published them for selected commodities for the period 1855-1879 in the *Miscellaneous Statistics of the United Kingdom*.¹⁴ They were derived from contract prices of commodities sold to the armed forces in different counties, and from returns made by a few London hospitals for the prices paid for certain goods. Vol. XI of *Miscellaneous Statistics of the United Kingdom*, published in 1883, was the last volume, after which official reporting of commodity prices stopped. It was picked up again in a small way in the *Abstract of Labour Statistics*, which included prices for coal and iron from the 1895-6 volume, supplemented gradually by corn prices from 1897-8 and bread from 1900-1, but there was no wider information in the form of a price index until 1903.¹⁵ Instead, the role was continued by resourceful individuals, although average values of imports and exports of some commodities were included in the annual *Abstract of Statistics*.¹⁶

¹³ These are still produced, but nowadays called Producer Price Indices.

¹⁴ Parliamentary Papers, 2427 (1857) pp.234-245 to C. 3423 (1883) pp.365-375.

¹⁵ Board of Trade, *Third annual report of the Labour Department of the Board of Trade (1895-96) with abstract of labour statistics* (London: Her Majesty's Stationery Office, 1896) p.84; Board of Trade (Labour Department), *Fifth annual abstract of labour statistics of the United Kingdom, 1897-98* (London: Her Majesty's Stationery Office, 1898) pp.88-89; Board of Trade (Labour Department), *Eighth annual abstract of labour statistics of the United Kingdom, 1900-1901* (London: His Majesty's Stationery Office, 1902) pp.74-76.

¹⁶ O'Neill et al., *Inflation*, pp.334-344; Board of Trade, *Report on wholesale and retail prices in the United Kingdom in 1902, with comparative statistical tables for a series of years*, Report no. 321. (London: His Majesty's Stationery Office, 1903a) p.426.

The English economist Thomas Tooke, latterly with the assistance of William Newmarch, produced a series of comprehensive volumes called *The History of Prices*, which compiled and analysed a large amount of price information.¹⁷ In 1861, Newmarch, then the editor of the *Journal of the Statistical Society of London*, published a paper on the course of prices for nineteen commodities from 1851 to 1861 as a continuation of that work, expressing the average price for each commodity in each year as an index of the average price in 1845-50.¹⁸ This effectively produced a set of price indices for each commodity, compiled without the use of weighting information. Newmarch didn't, however, combine his commodity price indices to produce an overall index number for the average course of wholesale prices. Newmarch's series were derived from prices published in the *Economist* by averaging over commodities. The *Economist* adopted Newmarch's approach and published prices for these commodities from 1864, creating an overall index number for the wholesale price level from 1869. The *Economist* still publishes a commodity price index, with the set of commodities updated periodically to ensure the index stays relevant to the prominent items in the commercial marketplace.¹⁹

However, it was William Jevons who first made sense of the vast quantities of information in the *History of Prices*. Jevons published two essays on commodity prices

¹⁷ Thomas Tooke, *A history of prices and of the state of the circulation from 1793 to 1837, preceded by a brief sketch of the state of the corn trade in the last two centuries*, 2 Vols (London: Longman, Orme, Brown, Green & Longmans, 1838a,b); Thomas Tooke, *A history of prices and of the state of the circulation in 1838 and 1839, with remarks on the Corn Laws and on some of the alterations proposed in our banking system*, III [of *The History of Prices*] (London: Longman, Orme, Brown, Green & Longmans, 1840); Thomas Tooke, *A history of prices and of the state of the circulation in 1839 to 1847 inclusive with a general review of the currency question and remarks on the operation of the Act 7 & 8 Vict. c.32*, IV [of *The History of Prices*] (Longman, Brown, Green & Longmans, 1848); Thomas Tooke & William Newmarch, *A history of prices and of the state of the circulation, during the nine years 1848-1856*, V & VI [of *The History of Prices*] (Longman, Brown, Green, Longmans & Roberts, 1857a,b).

¹⁸ The Statistical Society of London became the Royal Statistical Society in 1887; William Newmarch, 'Results of the trade of the United Kingdom during the year 1860; with statements and observations relative to the course of prices since the year 1844', *Journal of the Statistical Society of London*, 24 (1861) pp.74-124.

¹⁹ 'The Economist's commodity price index – 160 years on', *The Economist*, 10 February 2005, <<https://www.economist.com/finance-and-economics/2005/02/10/160-years-on>> [Accessed: 12 May 2020].

in the 1860s. In the first, he investigated the social effects of gold discoveries by comparing prices for thirty-nine commodities (mostly derived from the *Economist* and trade sources) between the years 1845-50 and 1860-62.²⁰ He took the average market prices of each commodity and calculated the percentage change between the two sets of years. He then combined these thirty-nine percentages using a geometric mean, an approach that is still associated with his name. In his second paper, he summarised the price data from Tooke & Newmarch's work into an index for the annual level of prices for each year from 1782 to 1865, again using the geometric mean.²¹ We do not deal here with the methodological development of index numbers, which is well documented elsewhere.²²

Like William Jevons, Augustus Sauerbeck, a London wool merchant, was interested in the effects of precious metals on commodity prices and the course of these prices over time. He was active towards the end of the nineteenth century, and extracted prices for forty-five imported and home produced commodities from records of business activity and from The *Economist* and other publications, and calculated index numbers for the overall average price for the years 1848-85.²³ In his calculation he used an arithmetic formula (unlike Jevons), and was aware of the fact that he hadn't included any weighting factors. He noted that he would need to identify quantities of commodities in order to estimate weights and it would be too much effort for him to do.²⁴

These individual efforts were admirable and provided useful (unofficial) statistics, but ultimately, the effort of producing them limited their extent and duration. Nonetheless, the chain from Tooke and Newmarch through Jevons and on to Sauerbeck provided a set of information which could be used to produce a long run of

²⁰ W. Stanley Jevons, *A serious fall in the value of gold ascertained, and its social effects set forth* (London: Edward Stanford, 1863).

²¹ W. Stanley Jevons, 'On the variation of prices and the value of the currency since 1782', *Journal of the Statistical Society of London*, 28 (1865), pp.294-320.

²² W. Erwin Diewert, 'The early history of price index research', *NBER Working Paper No. 2713* (Cambridge, Massachusetts: National Bureau of Economic Research, 1988).

²³ Augustus Sauerbeck, 'Prices of commodities and the precious metals', *Journal of the Statistical Society of London*, 49 (1886) pp.581-648.

²⁴ Bert M. Balk, *Price and quantity index numbers* (Cambridge: Cambridge University Press, 2008) pp.10-11.

index numbers covering most of the nineteenth century, though with some differences in methodology and data sources. It would have to be a function of the state to take over their production, and to expand and improve both price series for individual commodities and an overall wholesale price index. For retail prices, which are an essential element of a consumer price index, fewer records were available and it would take a greater effort to find and record them – this would also be a future task for an organisation of the state.

3. COLLECTING INFORMATION ON EXPENDITURE

We turn now to the historical development of capturing information on household expenditure, which forms the basis for the weighting information needed to produce a robust measure of the level of prices. Its origins were not in measuring price change, but arose from investigating the extent and causes of poverty.

3.1. MEASURING HOUSEHOLD BUDGETS

The investigation into household budgets as a means of gaining insight into standards of living for families began in the seventeenth century with the work of William Petty, an English polymath and politician who proposed that society could be studied numerically. He is considered the founder of 'Political Arithmetick', or what we would now call social statistics, for his work on living standards in England and France.²⁵

At the end of the eighteenth century, David Davies and Frederick Morton Eden both conducted surveys of household budgets. They were motivated by concern for the extent of rural poverty, and were the first researchers to collect data directly from families. Davies was a Welsh clergyman who collected detailed income and expenditure data from families in his parish. He encouraged others to do the same, and 127 budgets were collected in total. Frederick Morton Eden was the son of the Governor of Maryland, and he funded the collection of data from sixty agricultural and twenty-six urban families across England. In both cases, the reports they published contained detailed data which enabled later researchers to construct long-run series on living standards.²⁶

²⁵ Christopher Deeming, 'The historical development of family budget standards in Britain, from the 17th century to the present', *Social Policy and Administration*, 44 (2010) pp.765-788 (p.767).

²⁶ Ian Gazeley & Nicola Verdon, 'The first poverty line? Davies' and Eden's investigation of rural poverty in late 18-century England', *Exploration in Economic History*, 51 (2014) pp.94-108.

The work of both these pioneering individuals showed the fragile existence of labouring families, who struggled to make ends meet even when in full time work. Both Davies and Eden argued that wages should be aligned with costs.²⁷

In the first half of the nineteenth century, further systematic studies were carried out including one by William Neild, the mayor of Manchester. He organised the collection of nineteen household budgets in and around Manchester. His subsequent analysis showed that fluctuations in the prices of essentials such as bread left families struggling to afford food, and many were in debt to shopkeepers.²⁸

The effects of the American Civil War in limiting the supply of raw cotton to Lancashire, the centre of cotton milling at the time, led the government's Medical Officer of Health, Sir John Simon, to ask the social reformer and physician, Dr Edward Smith, to investigate the impact on Lancashire families in 1861. Specifically, he was asked to ascertain the 'least outlay of money to procure food enough for life'.²⁹ Smith formulated a 'minimum dietary standard' and explored whether the food purchased by families was sufficient to meet this standard. As well as collecting data in Lancashire, over the following two years, Smith supervised a wider collection of income and expenditure data for 370 households. He found that the average diet fell below the minimum dietary standard and provided evidence for widespread poverty among the poorer working class.³⁰

Despite the growing evidence for poverty at the lower end of the income scale, there was also evidence of improvements in the average income of households when the prices of essential items were taken into account. In the years 1882-1899, money wage rates grew at an estimated 0.92% per year; however, prices also fell in this period, as a result of increased imports, particularly wheat from North America.³¹ This led to sharp reductions in the price of bread, which halved over this period. The result for

²⁷ Deeming, p.769.

²⁸ Wm. Neild, 'Comparative statement of the income and expenditure of certain families of the working class in Manchester and Dukinfield, in the years 1836 and 1841', *Journal of the Statistical Society of London*, 4 (1842) pp.320-334.

²⁹ Carleton B. Chapman, 'Edward Smith (?1818-1874) - physiologist, human ecologist, reformer', *Journal of the History of Medicine and Allied Sciences*, 22 (1967) pp.1-26.

³⁰ Deeming, p.770.

³¹ Charles Feinstein, 'What really happened to real wages?: trends in wages, prices, and productivity in the United Kingdom, 1880-1913', *The Economic History Review*, 43 (1990) pp.329-355, Table 4.

average real wages—that is, wages adjusted for the change in prices—was an estimated increase of 1.58% per year.³²

Although there was advancement in the overall standard of living for many working people in the latter decades of the nineteenth century, the state of the poorest was of increasing concern to social reformers. In the Victorian state, there were three approaches for dealing with poverty: self-help, charity and the provisions of the Poor Law. All three were considered by many to be inadequate.³³ The limited official figures of the time indicated that 2-3% of the population were classified as paupers, a percentage which had declined from 5% in 1850.³⁴ While some believed that the rising real wages and the decline in pauperism indicated that poverty was no longer a major issue, others did not accept this, and believed the pauperism figure to considerably underestimate the true extent of poverty. To resolve this conflict, it was recognised that comprehensive, empirical studies would be the best way of deciding between what were largely impressionistic views.³⁵

The work of the social reformers Charles Booth and Seebohm Rowntree contributed to building this empirical evidence base. Charles Booth was a businessman with a deep interest in social issues; he undertook his famous survey of households in London employing a team of social investigators. Booth's investigations used existing information and the opinions of officials who knew families as well as data collected by his researchers to determine a classification of degrees of want. The results were published in four editions. The first edition comprised two volumes and was entitled: *Life and Labour of the People*, published in 1889.³⁶ The fourth edition extended to seventeen volumes and was entitled: *Life and Labour of the People in London*, published in 1902-3.³⁷ Charles Booth's inquiry is perhaps best known for the maps of London showing levels of poverty and wealth street by street. The study indicated that about 30% of the studied population in London was living in poverty. This was a

³² *Ibid.*

³³ Martin Pugh, *State and society – a social and political history of Britain 1870-1997*, 2nd edn (London: Arnold Publishers, 1999) p.48.

³⁴ George R. Boyer & Timothy P. Schmidle, 'Poverty among the elderly in late Victorian England', *The Economic History Review*, 62 (2009) pp.249-278.

³⁵ Ian Gazeley, *Poverty in Britain, 1900-1965* (Basingstoke: Palgrave MacMaillan, 2003).

³⁶ Charles Booth (ed.), *Life and Labour of the People*, 1st edn (London: Williams & Norgate, 1889).

³⁷ Charles Booth (ed.), *Life and Labour of the People in London* (London: Macmillan & Co., 1902-3).

startling result and led to speculation as to whether similar results would be found elsewhere.³⁸

Seebom Rowntree was the second son of Joseph Rowntree and went into the Rowntree confectionery business. As well as his business interests, he was also concerned about the state of the poorest in society. Rowntree set out to investigate the question of whether Booth's figure for the extent of poverty applied elsewhere by examining the situation in his home city of York in 1899. His method differed to Booth's – he went to considerable effort to rely less on impressions and more on directly captured data on household finances. Rowntree's researchers carried out a house-to-house survey of all working class households, but excluded households which kept servants. In total, data was captured from 11,560 households and 46,754 people – a significant proportion of the whole population of York, which stood at 75,812.³⁹ From this data, he also produced a classification of the degree of want of households. The results were published in *Poverty, A Study of Town Life* and showed that 28% of households in York were living in poverty - a similar number to Booth's figure for London.⁴⁰

As well as the social and political implications of their work, the approach taken by Booth and Rowntree was highly influential in other ways, advancing the systematic study of household budgets and the field of social science research in general. Taken together, the work of Booth and Rowntree not only established figures for households in poverty in two different areas of England, but also indicated that the causes of poverty mainly lay outside the control of the individuals affected. Rowntree established the concept of a 'poverty line', a major development in the understanding of poverty that still influences policy today.⁴¹

While the work of Booth and Rowntree was highly influential, it was also difficult to extend it further to other towns and cities. The sheer effort involved in capturing data from every household in a location made wider investigations impractical.

³⁸ E.P. Hennock, 'The measurement of urban poverty: from the metropolis to the nation, 1880-1920', *Economic History Review*, 40 (1987) pp.208-227.

³⁹ Gazeley, *Poverty*, p.25.

⁴⁰ B. Seebom Rowntree, *Poverty: a study of town life* (London: Macmillan & Co. Ltd., 1901); Hennock.

⁴¹ Pugh pp.47-48.

3.2. WEIGHTS AND BASKETS

The developments in the collection and analysis of data on household budgets in most of the nineteenth century reflected the process of the compilation of prices. This work was undertaken by individuals with a particular interest in the topic, and although some of the datasets were quite substantial, they were ultimately limited by the energy and resources which those individuals could bring to bear on the problem. The publication of the information made data about household budgets accessible by the standards of the day. But it would require a leap of understanding to use these data to provide the weights from which a *weighted* price index could be calculated. The need for weights in a price index had been acknowledged by Young, Sauerbeck and particularly Lowe, but it was not accepted practice that a price index needed to use weights, and nearly all the series produced during the nineteenth century were unweighted. Only Sauerbeck undertook some limited analysis of the effects of weights in his index.⁴²

Similarly, only rudimentary thought had been given to what items should be included. Some choices such as corn and bread were self-evident and straightforward because of their great economic importance, but in many cases the indices were constructed more on the basis of what prices were available than on a critical choice of prices to assemble. Sauerbeck however gave a rationale for the commodities included in his index, though also noting that not all the data which he would have liked to include were available:

Only such commodities have been included in the tables the value of which in the United Kingdom (production and imports) of late amounted to about a million £ or more; smaller articles have been excluded, but a few important ones like wine, spirits, and tobacco, had to be left out, as no reliable data were obtainable.⁴³

This was an early recognition of the need for a defined basket of commodities representing the majority of the transactions in the economy.

⁴² O'Neill et al., *Inflation*, p.335.

⁴³ Sauerbeck, p.632.

4. THE IMPORTANCE OF DATA

4.1. INCREASED POLITICAL PRESSURE

The late-Victorian period saw a drive for better statistics on both the labour market and the level of prices. The breakdown of industrial relations, the decline in the competitive performance of the British economy, and the rate of unemployment all drove the need for better data on the labour market. The debate on the extent of poverty, partly driven by the early findings of Booth and Rowntree, put pressure on the government to improve data on household income and expenditure and the retail prices of items purchased by working-class families.⁴⁴

Before 1886, official statistics on prices and the labour market were spread out in the evidence for Royal Commissions and Select Committees and the annual reports of official organisations. Some were brought together in abstracts and compendia by the Board of Trade, but it was still challenging to locate data, and a number of influential individuals campaigned for better statistics.⁴⁵ The trade unionist, George Howell, made representations to the government in 1869 and wrote of the need for reliable statistics 'where the statesman, philanthropist, author, journalist or citizen can at all times obtain authentic information'.⁴⁶ He called for a comparison of the cost of living with wage rates over a number of years.⁴⁷ The Board of Trade also pointed out the defects in its own statistics.⁴⁸ The Treasury appointed an Official Statistics Committee to examine the issues in 1879, which endorsed the need for significant improvements. However, its tentative recommendations didn't result in any changes.⁴⁹ The Royal Statistical Society also applied pressure when its President, Sir Rawson Rawson, used his opening address

⁴⁴ Roger Davidson, 'Official labour statistics: a historical perspective', *Journal of the Royal Statistical Society, Series A*, 158 (1995) pp.165-173 (p.165-166).

⁴⁵ For more on the history of statistics at the Board of Trade see Hubert Llewellyn Smith, *The Board of Trade* (London: G.P. Putnam's Sons, 1928).

⁴⁶ Roger Davidson, *Whitehall and the labour problem in late-Victorian and Edwardian Britain* (Kent: Croom Helm Ltd., 1985) p.80.

⁴⁷ J.F. Wright, 'Real wage resistance: Eighty years of the British cost of living', *Oxford Economic Papers*, 36 (1984), pp.152-167 (p.167).

⁴⁸ Davidson, *Whitehall*, p.86.

⁴⁹ Davidson, *Whitehall*, ch.3.

at the Jubilee Meeting of the Society to call for better statistics in line with developments made in the US and other countries.⁵⁰

The Liberal MP for Northampton, Charles Bradlaugh, advocated the call for improved official statistics. In parliament, he proposed a resolution to 'ensure in this country a full and accurate collection and publishing of Labour Statistics' on 2nd March 1886.⁵¹ Bradlaugh suggested that the work could be carried out by a central statistical department. The resolution was adopted. During the debate, the President of the Board of Trade, Anthony Mundella, reported that he had approached the Treasury for funding to improve labour statistics.⁵²

The efforts to improve the provision of official statistics on labour and prices were ultimately successful, and the formation of a new Labour Bureau in the Board of Trade was announced in September 1886. The Board of Trade accepted the call from Parliament for 'information on prices, production and the cost of living'. In August 1886, they published a note setting out what they had committed to in five categories, which included bringing together relevant statistics from the past fifty years of reports, fuller statistics on wages and hours of working, and details of prices and the cost of living – it was a substantial commitment.⁵³

4.2. THE BOARD OF TRADE EXPENDITURE REPORT (1889)

After the resolution of the Commons (see section 4.1), the Board of Trade turned its attention to expenditure patterns with a preliminary study published in 1889.⁵⁴ The Memorandum which opens this report says the importance of this topic 'is manifest', but the Board of Trade noted that competing priorities had meant that this line of research was at an early stage, and even suggested that 'a special investigation is

⁵⁰ Rawson W. Rawson, 'Opening Address, Jubilee Meeting of the Statistical Society', *Journal of the Statistical Society of London, Jubilee Volume* (1885) pp.1-13 (p.10-11).

⁵¹ *Hansard*, vol. 302, 2 Mar 1886 <https://api.parliament.uk/historic-hansard/commons/1886/mar/02/resolution-1#S3V0302P0_18860302_HOC_161> [Accessed: 17 April 2020].

⁵² *Ibid.*

⁵³ 'Labour statistics. Copy of memorandum explaining the arrangements made by the Board of Trade for collecting and publishing statistics relating to labour', *House of Commons papers*, 48.2, (1886).

⁵⁴ Board of Trade, *Labour statistics: returns of expenditure by working men*, C.-5861 (London: Her Majesty's Stationery Office, 1889).

unnecessary' because (wholesale) prices and index numbers derived from them were widely published.

Nonetheless, they attempted to gather information on balance sheets. The response rate was very low – less than 5% of questionnaires were returned. But the Board of Trade took the radical step of reproducing the information from all thirty-four usable responses, without statistical editing. Previous studies were over-edited, and therefore risked providing an idealised view in line with the researcher's preconceptions.

The report contains a translation of the introduction to Ignaz Gruber's *Die Haushaltung der arbeitenden Klassen* (1887) which includes a review of nineteenth-century attempts at collecting expenditures from the working classes. It is interesting to note that Gruber exhorts 'agricultural societies, [...] chambers of commerce, [...] industrial societies, and [...] societies of the working classes' to gather expenditure information (in his case referring specifically to Austria), and does not suggest that the statistical arm of government has any role (though he has previously discussed the useful role played by statistical offices in Prussia and Germany). Therefore, at this time it was clearly not part of general expectations that this information should be collected (and used) by governments.

4.3. THE BAAS REPORTS

Section 2.1 described the important contribution of Joseph Lowe, who set out the broad approach to producing a measure of the level of prices in his 1823 book, and section 2.2 described the efforts of a few individuals to collect wholesale prices and create basic index numbers of overall prices. However, it was clear that there were still many aspects of producing a measure that needed to be decided. To try to better specify the practical steps, a Committee was brought together by the British Association for the Advancement of Science. The Committee, which was founded 'for the purpose of investigating the best methods of ascertaining and measuring the Variations in the Value of the Standard of Money', first met in 1887. The members included notable figures from the economics community, including Alfred Marshall and Robert Palgrave,

with Francis Edgeworth acting as secretary. The Committee issued reports each year from 1888 to 1891.⁵⁵

The Committee considered a wide range of questions, including which commodities to incorporate in a measure, how weighting should be applied, the data needed and how to combine that data in a formula to produce index numbers. They also reviewed notable work carried out over the previous half century. The first report described the degree of challenge, and it noted that 'those who have entered on such discussions, like the notaries of speculative philosophy, may have found no end in wandering mazes lost'.⁵⁶ The Committee's findings were set out in their four annual reports. While they didn't give precise instructions on questions such as which commodities to include in a measure, they did specify principles which they hoped would benefit future producers of a 'monetary standard'. In the final report, presented in 1890, they gave a clear steer that a new or existing department of state should be

⁵⁵ F.Y. Edgeworth, 'Report of the committee, consisting of Mr. S. Bourne, Professor F.Y. Edgeworth (Secretary), Professor H.S. Foxwell, Mr. Robert Giffen, Professor Alfred Marshall, Mr. J.B. Martin, Professor J.S. Nicholson, Mr. R.H. Inglis Palgrave, and Professor H. Sidgwick, appointed for the purpose of investigating the best method of ascertaining and measuring variations in the value of the monetary standard', in *Report of the fifty-seventh meeting of the British Association for the Advancement of Science* (London: John Murray, 1888) pp.247-301; F.Y. Edgeworth, 'Third report of the committee, consisting of Mr. S. Bourne, Professor F.Y. Edgeworth (Secretary), Professor H.S. Foxwell, Mr. Robert Giffen, Professor Alfred Marshall, Mr. J.B. Martin, Professor J.S. Nicholson, Mr. R.H. Inglis Palgrave, and Professor H. Sidgwick, appointed for the purpose of investigating the best method of ascertaining and measuring variations in the value of the monetary standard', in *Report of the fifty-ninth meeting of the British Association for the Advancement of Science* (London: John Murray, 1890) pp.133-164; F.Y. Edgeworth, 'Fourth report of the committee, consisting of Dr. Giffen (Chairman), Professor F.Y. Edgeworth (Secretary), Mr. S. Bourne, Professor H.S. Foxwell, Professor Alfred Marshall, Mr. J.B. Martin, Professor J.S. Nicholson, Mr. R.H. Inglis Palgrave, and Professor H. Sidgwick, appointed for the purpose of investigating the best methods of ascertaining and measuring variations in the value of the monetary standard', in *Report of the sixtieth meeting of the British Association for the Advancement of Science* (London: John Murray, 1891) pp.485-488; Robert Giffen, 'Second report of the committee, consisting of Mr. S. Bourne, Professor F.Y. Edgeworth (Secretary), Professor H.S. Foxwell, Mr. Robert Giffen, Professor Alfred Marshall, Mr. J.B. Martin, Professor J.S. Nicholson, Mr. R.H. Inglis Palgrave, and Professor H. Sidgwick, appointed for the purpose of investigating the best method of ascertaining and measuring variations in the value of the monetary standard', in *Report of the fifty-eighth meeting of the British Association for the Advancement of Science* (London: John Murray, 1889) pp.181-232.

⁵⁶ Edgeworth (1888) p.248.

responsible for collecting and publishing prices and calculating one or more index numbers for the monetary standard at least once a year. A draft proposal was created for the calculation of an official measure in the form of an index number. The report also gave an example of the use of such measures, suggesting that all contracts for money in a given year could be linked to the value of the monetary standard. This was a recommendation for what we would now call indexation of contract terms.

The department of state that took up the calculation of these index numbers was the Board of Trade, but not for some years, as section 4.4 explains. However, the reports of the BAAS Committee were summarised in Appendix 2 of the Board of Trade's *Report on Wholesale and Retail Prices* from 1903.⁵⁷ The value of the reports was acknowledged by the Board of Trade, and it helped them to move towards an official measure.

4.4. HIATUS IN THE 1890s

Despite the commitment made by the Board of Trade in 1886, only limited progress was made at first. This lack of progress on working class expenditure and the cost of living was to continue through the 1890s. Why was this? The actions of the Treasury were a major factor.⁵⁸ Throughout the period 1886-1914, the Treasury resisted the expansion of official statistics both as a means of limiting expenditure, and from its derogatory view of statisticians:

the collecting and digesting of public statistics is a duty that should be carefully watched and guarded in order that it may not degenerate into extravagance. There is a dangerous tendency to magnify work and extend functions beyond the limits required at once by economy and expediency.⁵⁹

The Treasury also opposed the appointment of professional statisticians, for two reasons. Firstly, it considered statistical enquiries to be 'mechanical work' suitable for junior administrators; secondly, statistical enquiries might uncover justification for additional government expenditure. The former objection presented a wholly inaccurate description of the statistical skills of the staff in the Labour Department, and

⁵⁷ Board of Trade, *Wholesale and retail prices*, pp.429ff.

⁵⁸ Wright, p.166.

⁵⁹ Davidson, *Whitehall*, p.169.

Llewellyn Smith still felt the need to fight for the skill and professionalism of official statisticians when he wrote his history of the Board of Trade in 1928.⁶⁰ If there was a valid criticism to be made of the Labour Department at the time, it was that despite engaging consultants conversant with the latest developments in statistical and sampling theory, the Labour Department was slow to adopt these methods itself.⁶¹ The Treasury also limited statistical capability through tight control of the budget allocation. Although the Labour Bureau was expanded to become a Labour Department in 1893, the number of staff allocated to labour statistics shows how limited the capabilities of the Labour Department were. At its inception, there was only one senior member of staff and eleven junior staff working on labour statistics and the cost of living – that covered producing statistics on industrial disputes, wage rates, hours and earnings as well as working class expenditure and the cost of living. The numbers grew slowly, reaching three senior staff and eighteen others in 1900.⁶²

Apart from the small scale Board of Trade enquiry into household expenditure of working class families described in section 4.2, the only other notable enquiry was carried out by the Commissioner of Labor from the United States, who organised the collection of expenditure data from 1,024 families in Great Britain for the purpose of comparing expenditure across countries.⁶³

5. THE STATE TAKES AN INTEREST

5.1. BOARD OF TRADE REPORTS

The priorities changed in 1903, when the Prime Minister, Arthur Balfour, asked for data on wages, the cost of living and comparisons with other countries.⁶⁴ These statistics

⁶⁰ Llewellyn Smith, *The Board of Trade*, pp.209-210.

⁶¹ Davidson, *Whitehall*, pp.220-223; Davidson, *Official labour statistics*, p.168.

⁶² Davidson, *Whitehall*, p.105.

⁶³ *Sixth annual report of the Commissioner of Labor* (Washington, Government Printing Office, 1891), p.605; *Seventh annual report of the Commissioner of Labor*, II (Washington, Government Printing Office, 1892) p.845; for more details see Christoph Conrad & Armin Triebel, 'Family budgets as sources for comparative social history: Western Europe U.S.A. 1889-1937', *Historical Social Research / Historische Sozialforschung*, 35 (1985), pp.45-66.

⁶⁴ Rebecca Searle, 'Is there anything real about real wages? A history of the official British cost of living index, 1914-62', *The Economic History Review*, 68 (2015) 145-166 (p.147).

were to assist with the debate over free trade (the Tariff Reform campaign of 1903).⁶⁵ This led to two reports, published in quick succession, in August 1903. The second was a compilation of statistics comparing the economic situation in the UK with those of foreign countries, particularly France, Germany and the US.⁶⁶ It was commissioned rather by way of making some progress in response to repeated calls for a Royal Commission to investigate free trade, but it provided many statistics and little interpretation. Its outputs therefore generated more controversy than enlightenment.⁶⁷ It was also a challenge for the Board of Trade, who said:

If, however, we want to obtain a single series of figures representing accurately the average changes of General Prices or of Wages, or the comparative level of foreign Customs duties as a whole, we are at once embarrassed by the difficulty both of obtaining and of dealing with the required data.⁶⁸

Nevertheless, this second report included some comparative information on prices in the UK and other countries. But it was the first of the 1903 reports that was the catalyst for a real interest in the provision of price information by the state. This 'Report on Wholesale and Retail Prices' gathered together in one place much of the research that had taken place during the long-nineteenth century, and made the best of putting it together to make a continuous series of wholesale prices for the UK covering that whole period.⁶⁹ It also, for the first time in an official publication, collated the available information on retail prices, which was at this stage rather sparse. Along with weighting information from the US Commissioner of Labor's study (see section 4.4), it was also used to create a retail price index for the years 1877-1901. This study was chosen so that the resulting statistics would be comparable internationally. However, there were several alternative choices for the weighting information which would have been more up to date, although they were all incomplete, with small samples and partial coverage,

⁶⁵ A.W. Coats, 'Political economy and the tariff reform campaign of 1903', *The Journal of Law and Economics*, 11 (1968) pp.181-229.

⁶⁶ Board of Trade, *Memoranda, statistical tables, and charts prepared in the Board of Trade with reference to various matters bearing on British and foreign trade and industrial conditions*. Cd. 1761 (London: His Majesty's Stationery Office, 1903b).

⁶⁷ Coats, pp.205-208.

⁶⁸ Board of Trade, *Memoranda*, p.vii.

⁶⁹ Board of Trade, *Wholesale and retail prices*.

including a 1903 household expenditure survey run quickly by the Board of Trade.⁷⁰ The report was put together hurriedly, but it covered a range of sources and made recommendations on the ways in which indices should be calculated, building strongly on the work of the BAAS committee (section 4.3) in setting out the theoretical basis for calculating price indices.⁷¹ Indeed, the use of index numbers, hitherto mainly used in comparing prices, was extended to other measures in the second report, and it is doubtless the proximity of the development of these reports which suggested this use.⁷²

The inadequacy of household expenditure data for the purpose of constructing a retail price index was apparent. The 1903 survey had been run very quickly, had weaknesses in its design, and a very poor response rate, all of which led to considerable doubts about the quality of the estimates derived from it. It was therefore quickly followed by a further, much more successful survey in 1904, with the results published in an updated *Second Series of Memoranda*.⁷³ At this stage the machinery of state had been engaged, and further consolidation was not long in coming, with additional surveys of household expenditure, retail prices and rents in 1905 and 1913.⁷⁴ This activity meant that the UK was well-placed at the start of the First World War to introduce the first regularly calculated, national index of retail prices: the Cost of Living Index. For details of the subsequent evolution of the retail price measures, see Searle (2015), O'Neill *et al.* (2017) and Ralph *et al.* (2020).⁷⁵

5.2. SAMPLING

Booth and Rowntree both attempted essentially a complete enumeration of their defined study areas in collecting poverty information (see section 3.1). But this was not feasible as an approach to gathering evidence on which the condition of the whole

⁷⁰ O'Neill *et al.*, *Inflation*, pp.99-103.

⁷¹ Edgeworth (1888, 1890, 1891), Giffen (1889).

⁷² Board of Trade, *Memoranda*, pp.vii-viii.

⁷³ Board of Trade, *Second series of memoranda, statistical tables, and charts prepared in the Board of Trade with reference to various matters bearing on British and foreign trade and industrial conditions*. Cd. 2337 (London: His Majesty's Stationery Office, 1905); O'Neill *et al.*, *Inflation*, section 5.4.

⁷⁴ Board of Trade, *Cost of living of the working classes*, Cd. 3864 (London: His Majesty's Stationery Office, 1908); O'Neill *et al.*, *Inflation*, sections 5.5-5.6.

⁷⁵ Searle; O'Neill *et al.*, *Inflation*; Jeff Ralph, Robert O'Neill & Paul A. Smith, *The Retail Prices Index: A Short History* (Cham, Switzerland: Palgrave Pivot, 2020) doi: 10.1007/978-3-030-46563-6.

country could be deduced. There was considerable discussion of the generalisability of Rowntree's results.⁷⁶ The Board of Trade's 1903 and 1904 inquiries covered all parts of Britain and Ireland, but used a sampling process that was 'anything but random'.⁷⁷ The 1905 inquiry investigated rents and fuel as well as food prices, covering eighty-nine industrial towns in the UK as part of a multi-country investigation, where the Board of Trade also collected data in Germany, France, Belgium, and the US.⁷⁸ The UK component presented a national picture based on selected towns, which was a further step in generalisability, but involved a substantial effort in data collection, and did not use a process of randomised selection.⁷⁹

Arthur Bowley was an academic at the London School of Economics and University College, Reading, and was interested in the application of sampling to the measurement of social conditions. He and Alexander Burnett-Hurst undertook surveys in four English towns in 1912-13 using sampling, and were able to show that their results were consistent with other statistics produced from official collections (for example, of numbers of schoolchildren).⁸⁰

This demonstrated the efficacy of sampling for the collection of household expenditure data, even though the primary purpose of these surveys was not to provide data to calculate weights for price indices. It formed one part of the beginning of the use of sampling in official statistics, but did not generate official sample-based series of expenditure data until after the period covered in this paper.⁸¹ It was, however, a final example of an endeavour outside of state-funded collections during the long-nineteenth century, as an exemplar for the state to follow.

⁷⁶ E. P. Hennock, 'The measurement of urban poverty: from the metropolis to the nation, 1880-1920', *The Economic History Review*, 40 (1987) pp.208-227.

⁷⁷ Ian Gazeley & Andrew Newell, 'Poverty in Edwardian Britain', *The Economic History Review*, 64 (2011) pp.52-71 (p.57).

⁷⁸ Board of Trade, *Cost of living*.

⁷⁹ Hennock.

⁸⁰ A.L. Bowley & A.R. Burnett-Hurst, *Livelihood and poverty* (London: G. Bell & Sons Ltd., 1915) pp.182-183; Hennock.

⁸¹ Alain Desrosières, *The politics of large numbers* (Cambridge, Massachusetts: Harvard University Press, 1998) pp.221-225

6. DISCUSSION

If the development of measures of retail prices was a revolution, it was a very slow and stealthy one, operating more or less throughout the long-nineteenth century. However, it did reform the way in which money and its value were considered, and this produced a radical change, in several respects. First, it altered the views of those who were concerned with work and poverty; the idea of the change in the value of money providing a way of thinking about changes in poverty lines and the effects of prices alongside changes in wages. Second, it contributed to the political pressure to institute wider statistical collections about poverty, wages and the cost of living. The availability of this information affected policy in the government more widely, as well as providing evidence of the need for social reform. Finally, it culminated at the beginning of the First World War with the linkage of wages to the newly constructed Cost of Living Index. This began a development in the national psyche of linking the value of wages with measures of the changes of prices, which had a real impact on take-home wages – even to the extent that wages fell when prices dropped, a situation which would not operate in modern conditions.

All of this development depended on the interest, dedication and scholarship of a few individuals who compiled quantities of price information and undertook the calculations needed to summarise them into a form which could be interpreted. In the first three quarters of the nineteenth century this situation was relatively stable – there were debates about the correct form for an index number (and we have already seen that Jevons used the geometric form, whereas most other series were based on the simpler arithmetic mean) – but otherwise the sources of prices (and therefore the focus on the wholesale price index) and the items to be included did not change much.

The demand for the collection and analysis of price information arose out of a wish to understand observed changes, and to have the best data to judge between competing hypotheses for the relatively large changes in prices observed at the end of eighteenth and beginning of the nineteenth centuries. This would present evidence to refute (or not) the persistent proposals for returning to fixed exchange rates; such was the push for Tooke's collections.⁸² Jevons had a similar motivation, though he wanted to understand the effect of the greater availability of gold on its value.

⁸² Tooke, *History of prices*, I, pp.1-6.

The situation became quite complex in the 1880s, however. The Board of Trade ceased to compile the *Miscellaneous Statistics of the United Kingdom* series, which had provided an official price series (though admittedly mostly compiled from available data from trade journals and public contracts rather than through a price collection). This may have been a response to the government's request for more and better statistics on the labour market, wage rates and the cost of living (section 4.1) and the reluctance of the Treasury to provide further funding for statistics (section 4.4). It is ironic that the government's request for more statistics on prices should effectively stop the only large scale official price publication. Nevertheless, government interest stemmed from pressure to understand the extent and causes of poverty, rather than from a requirement for the price information in itself. This interest contributed directly to improvements in price measurement because it led to collections which provided data that could be used to calculate index weights, although this was not their primary purpose.

At the same time, Sauerbeck was continuing the tradition of an individual-compiled series by commencing his own series of calculations, which could nevertheless be linked to what had gone before, and the BAAS was setting up a committee to consider how measures of the value of money could best be organised.⁸³ This committee came down strongly on the need for an index number (a measure of the level of prices), and for the resources of the state to be employed in providing it, as the only reasonable approach to collecting such a wide range of information. Indeed, in the final report they proposed an Act of Parliament to support the calculation of such an index by a suitably appointed commission. Although this was not immediately taken up, the material was readily at hand when the official data collection for a retail price index commenced, allowing quick progress that would have been unlikely if the methods had needed to be decided at the same time the data were being collected.

The final driver for collection of the building blocks of a modern price index, acting in the early 1900s, was the need for evidence to support the government's free trade policies, and this finally made the gathering of information on prices and expenditure patterns an activity supported by state funding, though it was not until the start of the First World War that this led to a regularly produced consumer price index.

⁸³ Sauerbeck.

Although no legislation was brought forth to support or require the calculation of a retail price index (or its wholesale counterpart), in a curious twist, almost exactly 100 years later the Statistics and Registration Service Act (2007) for the first time *required* the monthly publication of the Retail Prices Index, the successor to the Cost of Living Index.⁸⁴



BIOGRAPHY: Paul A. Smith is Professor of Official Statistics at the University of Southampton, and is interested in the theory and practice of sample surveys and other approaches to measuring the characteristics of human and business populations. He previously worked for the Office for National Statistics, gaining extensive experience of a range of official statistics, including price statistics, the population census and business surveys.

CONTACT: p.a.smith@soton.ac.uk

BIOGRAPHY: Jeff Ralph is a visiting academic at the University of Southampton, UK. He worked for the Office for National Statistics for 14 years, retiring in 2018. Most of that time was spent working on price statistics - this included research and teaching. Jeff is joint author of three books on index numbers and inflation measurement. He holds degrees in Mathematics and Physics from the Universities of Warwick and Reading.

CONTACT: j.ralph@soton.ac.uk

⁸⁴ Ralph et al., *The Retail Prices Index*.