Depreciation during the second industrial revolution: the British cycle and motor vehicle industries, c.1896-c.1922

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ABSTRACT

This study examines the approach to depreciation adopted by companies engaged in two light engineering industries associated with the second industrial revolution: the cycle and motor vehicle industries. Through an examination of the published accounts of 21 companies engaged in these sectors at some time during the study period, and the archival records of two of them (Birmingham Small Arms and Daimler), this study examines the extent to which firm depreciation practices differed from those in more traditional sectors (iron and steel, coal, transport) previously examined by historians. It is found that depreciation was applied more regularly and, at least in some cases, according to set rates and using sophisticated systems. Nevertheless, the depreciation practices of firms, especially in the motor vehicle sector, have been deemed to render net profit figures unusable as a means of comparing business performance before the introduction of new legal requirements relating to financial reporting introduced by the 1928 Companies Act.

KEYWORDS: light engineering; second industrial revolution; published accounts; depreciation; First World War

Introduction

Accounting for depreciation is an issue which has been the subject of much debate amongst accountants for more than a century (see Brief 1966; 1976; 1993; 2020). Modern conceptualisations focus on it as a 'measure of the wearing out, consumption or other reduction in useful life of a FIXED ASSET arising from use, effluxion of time or obsolescence through technology and market changes' (Parker 1994, 125). As Arnold (1997, 145) points out, Brief (1966; 1976) had shown that by the early 1880s 'the controversy among accountants appeared to have moved on from disputes concerning the "fact of chargeability" to matters of methodology and precise intention'. Amongst the depreciation methods discussed during the study period were the straight-line and reducing balance methods applied either to an asset's historical cost or replacement cost less estimated future scrap value. Yet how did the arguments amongst accountants affect practice?

As Edwards (2019a, 288) has recently reiterated, during the nineteenth century, practice in British businesses moved from 'Repairs and renewals accounting' through 'Replacement accounting' to 'depreciation accounting'. Brief (1965; see also Edwards 2019b, chapter 14) concludes that nineteenth century published financial statements were littered with examples of management error and bias, not least due to a failure to systematically account for capital expenditure. Arnold's study of the depreciation practices of British companies during the first 25 years of the twentieth century reveal them to be inconsistent rather than indicating 'any clear pattern of motivated misuse' (1997, 145). Research into the pre-First World War depreciation practices of British firms, however, has to date focused on traditional sectors, namely coal (Pitts 1998) and transport (e.g. railways (Edwards 1986a; Arnold and McCartney 2002); shipping (Napier 1990)), while Edwards's (1981)

study focuses on the iron and steel sector between 1900 and 1940. The depreciation policies of firms engaged in sectors linked to the technological developments associated with the second industrial revolution have, however, not been studied in any systematic manner. The quantitative analysis for the period 1880-1901 conducted by Carlon and Morris (2003) focuses mainly on a cross-section of firms engaged in traditional industries and finance, while of the 30 companies surveyed by Arnold (1997) between 1900 and 1924, only two had links to the new sectors: Birmingham Small Arms Co. Ltd. (hereafter BSA) which diversified from being a manufacturer of guns, into a maker of cycle components and later complete bicycles, motorcycles and motor cars, and Dunlop Rubber Co. Ltd., founded in 1889 to manufacture pneumatic tyres for bicycles.

Given the lack of detailed consideration in previous studies of depreciation practices in new sectors, this study focuses on light engineering firms, more specifically, those engaged in the inter-related industries of cycles (bicycles and motorcycles) and motor vehicles (cars and commercial vehicles). This choice was influenced by several factors: first, the existence of a relatively easily accessible set of published accounts for firms engaged therein; second, a desire to consider possible differences between the practices of companies operating in a new sector and those engaged in more traditional sectors; and third, the desire to examine how rapid technological change may have affected depreciation practices. Our analysis focuses on the practices of a sample of public listed companies, examining, where calculations are possible, the rates of depreciation applied to different types of asset and reflects on possible explanatory factors for those rates. In this way the study adds to our understanding of depreciation in British businesses in the first two decades of the twentieth century, through broadening the range of industries or sectors examined and considering the actual rates applied.

This study proceeds as follows. In the next section, to provide a contextual background for our analysis, we survey the results of previous studies into depreciation practices in British companies in the late-nineteenth and early-twentieth centuries, pointing out the limitations thereof. This is followed by a brief history of the development of the cycle and motor vehicle industries, before setting out details of the sample companies, our data sources and the methodological approach adopted in this study. Having examined aspects of the financial structure of the sample companies we then proceed to detail the nature of their published accounts. This is followed by an analysis of these companies' approach to depreciation, examining practice in the light of contemporary theory and writings, supplementing our analysis of the published accounts by material drawn from newspapers and the archives of two firms, BSA and The Daimler Motor Co. Ltd. In particular we examine the rates of depreciation applied to different types of assets and examine possible explanations for the rates chosen, including links to the financial structure of firms, taxation and war. In the concluding section we compare and contrast our results with those from previous studies and indicate avenues for further research.

Previous studies

During the nineteenth and early-twentieth centuries, whether depreciation should be charged and, if so, what method should be used, were matters of accounting choice for the directors of a business. In nineteenth-century France, Lemarchand (1993) notes that while the main choice was between 'immediate write-off' or 'successive' depreciation, within each of these approaches various methods could be adopted, depending on the motivations of the firm's management. While some British firms continued to engage in capital expenditure write-offs into the twentieth century, such as the iron and steel manufacturer John Brown (Edwards 1981, 26), there does seem to have been an increasing tendency towards the charging of successive depreciation. Nevertheless, Edwards

(2019b: 245) has recently claimed that, during the period 1900-1940, 'systematic depreciation of TFA [tangible fixed assets] had not become a widespread practice' in Britain, going on to note that complete omission of such a charge was not 'uncommon' and that deductions, when made, were often 'lump sum, related to the level of profit, and accounted for as an appropriation of profits' (2019b: 246). On the basis of his study of 12 iron and steel companies, Edwards (1981) observes that where depreciation was charged, it was often a round sum figure, for instance, £X000, suggesting that, to a large extent, the amount was either arbitrary and/or based on the amount of funds available. His more recent study (Edwards 2019a) notes that the Staveley Coal and Iron Co. Ltd. moved to this approach in 1878 having previously favoured using the sinking fund approach advocated by the engineering consultant William Armstrong. In her study of the actions of the directors of British coal companies in the late nineteenth and early twentieth centuries, Pitts (1998) finds that they only charged depreciation if sufficient funds were available after paying dividends, a result complemented by the statistical study of Carlon and Morris (2003). In their attempt to pin down more precisely the economic determinants of depreciation accounting between 1880 and 1901, they conducted univariate and multivariate analyses of a cross-section sample of the published accounts of 50 companies for each of the 'years' 1880/81, 1889/90 and 1899/1901.[1] Having found depreciation to have been charged in just under two-thirds of cases (i.e. 94 or 62.67 per cent of the sample), Carlon and Morris conclude that:

> Companies disclosed that they *charged* depreciation when they had sufficient profits, and the *amount* of depreciation charged was strongly related to the amount of profits rather than to the size of depreciable assets. Depreciation thus appears to have been opportunistically determined. (Carlon and Morris 2003, 297; italics in original)

In relation to other possible explanatory factors, the study of Carlon and Morris is more equivocal. While companies which had more preference shareholders and long-term debt holders were more likely to charge depreciation and disclose this fact, their results on the importance of the conflict between outside shareholders and insiders, as reflected by various measures of leverage, provide mixed and inconclusive results, although some support exists for the view that the employment of a professional auditor may have played a role (Carlon and Morris 2003, 297).

While some previous studies have focused on depreciation policies (Edwards 1986a; Pitts 1998) there has been little study of actual rates, not least because in most previous research depreciation practices were simply one part of a more general study of financial reporting practices, in which they played an important role. Thus, in his study of financial reporting disclosure, Arnold (1997) notes that depreciation practices transcended three issues: the treatment of investments in long-term or fixed assets; the degree of prudence exhibited; and the amount of information provided to owners, creditors and other interested parties.[2] The application or not of depreciation affects fixed asset values and, if it is carried out but not declared, it limits the amount of information provided externally while potentially enhancing prudence through the creation of secret reserves. Arnold considers that depreciation was 'a widely established, if inconsistently applied practice', and while it did not form the central focus of his study, which used both published and internal company records, he does note that BSA provided no information regarding its depreciation practices, while Dunlop, although providing a total figure for depreciation in its published accounts, generally 'understated' the yearly charge (1997, 153). Arnold also notes that the First World War affected depreciation practices: Dunlop increasing its depreciation rate on plant from 7½ per cent to 25 per cent due to increased wear and tear from continuous day and night work, although the company's internal records reveal that this amount was excessive (1997, 153); at BSA, internal records were noted as referring to special depreciation during the war, while the generous allowances agreed by

the Ministry of Munitions 'meant that virtually no depreciation had to be charged against profits' for war extensions (Arnold 1997, 154).

Although Edwards (2019a, 287) has indicated that the rate of technological change in certain industries was an 'important stimulus for incorporation', citing the developments of Bessemer and Siemens-Martin open hearth steel on iron and steel companies in the 1850s and 1860s respectively, no consideration has been given in previous studies to the impact on depreciation practices of rapid, continuous technological change, such as characterised firms in sectors involved in the second industrial revolution. Given the piecemeal nature of some of the data at our disposal, and the difficulty of providing a quantitative measure of the rate of technological change in a particular industry, our focus is qualitative rather than attempting to replicate the statistical analysis conducted by Carlon and Morris. Before proceeding to an examination of the depreciation practices of our sample firms, however, we will first consider the development of the industries which form the basis of our study.

The development of the British cycle and motor vehicle industries[3]

The British cycle industry developed in Coventry, in the English Midlands, from the 1860s, following the rapid decline of the city's silk weaving and watchmaking trades. The foundations were laid by the Coventry Machinists Company which was formed in 1869 by James Starley and others. Evolving out of a business initially formed to build sewing machines, as the market for such machines declined attention was turned to the bicycle. By the end of the 1870s, there were 16 cycle-makers in Coventry and the industry continued to expand. The growth of the cycle industry attracted many from outside the city, including individuals such as the inventor of the modern bicycle, John Kemp Starley[4], who arrived in Coventry from London in 1872 to join his uncle, James. Over the succeeding decades, the cycle industry also attracted people connected with the metal and gun trades in Birmingham, and others elsewhere in the Midlands, a region renowned for its metal manufacturing expertise.

'By 1890 the [cycle] industry was expanding quickly, reflected in the construction of new factories and a growing army of labour' (Thoms and Donnelly 1985, 15). The boom of 1896 and 1897 led to many existing cycle businesses (including private companies) converting to public listed companies, some promoted by two notorious company promoters/fraudsters of the late-nineteenth and early-twentieth centuries, E.T. Hooley and H.J. Lawson.[5] The number of cycle manufacturers in Coventry peaked in 1898 at 75, largely small-scale firms, but thereafter diminished as many ceased trading in the ensuing slump at the end of the century, while others began to turn their attention to the manufacture of motorcycles and other forms of motor vehicles. Indeed, as Thoms and Donnelly (1985, 5) have pointed out, 'the growth of the cycle industry was enormously influential in the diversification of the industrial base [of Coventry], for it was the pivot of a development block incorporating machine tools and motor vehicles.' It is usually taken that 1896 represents the effective start of the British motor industry, a result of the lifting of the speed limit imposed on motor vehicles under the Locomotive (Red Flag) Act (Maxcy and Silbertson 1959: 11). Moreover, the industry's foundations were laid in Coventry during the 1890s through the activities of companies such as Daimler, Rover, Standard, Riley, Siddeley and Alvis. While Daimler and Standard were new businesses formed to exploit the promise of the infant motor industry, Coventry-based companies such as Humber, Rover, Swift and Singer had their origins in cycles, as did the motorcycle manufacturer Triumph (which also began to produce cars shortly after the end of our study period).

During the formative years of the motor vehicle industry in Britain, many small firms competed to gain a toehold in an industry where demand was limited (early cars were expensive luxuries only the

rich could afford). The development of rallies and trials events, annual exhibitions of new models (e.g. the introduction of the Olympia motor show), and so forth, helped to improve the size of the market, but demand for the product of one manufacturer could rapidly rise and fall as new designs and technical advances were placed on the market by other, sometimes new producers. As a result of this and the fluctuations in demand over the economic cycle, many companies came and went, leaving their mark for only a very short period. Others amalgamated, underwent financial re-construction or were absorbed by larger concerns, in a search for long-term survival, but not always to any avail. 'Before 1913, nearly 200 makes of car had been placed on the market, and of these over 100 had disappeared' (Maxcy and Silbertson 1959, 12). By the eve of the First World War, while most motor vehicle manufacturers still in existence remained small-scale producers, there had been some movement towards the emergence of larger firms, though mass-production remained some way off as the market still remained highly segmented. While some firms, such as Daimler and Rolls-Royce, focused on the manufacture of small numbers of highly luxurious vehicles others, in the immediate pre-war years, increasingly focused their attention on the development of a wider market through the production of cheaper vehicles, e.g. Ford, Morris and Austin:

> By the time the war came, Ford [based at Trafford park, Manchester] had become the largest producer [in the UK[6]], with an annual output of 6,000 cars, followed by Wolseley, with an output of 2,000 to 3,000 cars. Other sizable producers were Morris, Austin, Singer and Rover, with outputs in the region of 1,000 cars each. (Maxcy and Silbertson 1959, 12).

By 1913, some 20 motor vehicle manufacturers were based in Coventry, out of c.113 spread throughout the country, producing c.9000 motor vehicles or about 28 per cent of national production of 34,000 vehicles. All but a tiny proportion of Coventry's output of motor vehicles in 1913 was manufactured by Daimler[7], Humber (the largest producer with 2500 vehicles), Rover, Swift, Singer and Standard. The census of 1911 reveals that over two-fifths of Coventry's occupied population were employed in vehicle and metal industries and some cycle and motor vehicle manufacturers had become major employers (e.g. the cycle manufacturer Rudge-Whitworth employed 2700 in 1906, while Daimler's pre-war peak level of employment reached 5372 in March/April 1913 (Coventry Archives PA1358/3/1)).

The First World War brought an abrupt halt to private car manufacture, as engineering companies were increasingly required to produce vehicles or products and components more relevant to the prosecution of the war, including shells, munitions, and aeroplane parts. Following the enactment of the Munitions of War Act on 2 July 1915, many vehicle manufacturers became controlled establishments, their subsequent production being determined by the Ministry of Munitions. Thus, Daimler and other motor vehicle companies focused on the manufacture of ambulances, trucks, aeroplane engines and such like. To facilitate the expansion of output to meet war demands, the government encouraged and/or financially assisted a growth in production facilities, although some of these extensions proved to be millstones around the necks of vehicle manufacturers once the war ended, as the facilities built during the war often proved unsuitable, without substantial further capital expenditure, for producing peacetime products.[8]

The immediate post-war years were somewhat turbulent to say the least, the re-stocking boom of 1919-20 being quickly followed by a severe slump in the economy in 1920-21 from which recovery was only slow and partial. Nevertheless, in 1923, motor vehicle manufacturers nationally produced 71,000 cars and 24,000 commercial vehicles, nearly three times the total produced in 1913 (Maxcy and Silbertson 1959, 223). In part, this expansion was the result of new motor manufacturers entering the market immediately after the war, although many were eliminated between 1922, when there were 88 firms producing cars, and 1925 (Maxcy and Silbertson 1959, 13). However, the

major explanation lies in the rapid development of the large mass producers which came to dominate the motor vehicle industry during the interwar years, viz. Austin (based at Longbridge, Birmingham), Ford (Manchester, then Dagenham, Essex), and Morris (Cowley, Oxford). Whereas Coventry had been the major centre of car production in Britain before the First World War and seemed poised to benefit from the growth in the demand for motor vehicles immediately thereafter, its supremacy quickly receded as the interwar period progressed. The era of Coventry's dominance was over by the immediate post-war years, most of its firms failing to adequately embrace mass-production methods, and hence the period from c.1896 to c.1922, which forms the focus of our study, represents a distinct phase – the Coventry era - in the development of the British motor vehicle industry.

Sample, data sources and methodology

In this study, we adopt an empirical approach based around one major source and two supplemental sources. The main source comprises the published accounts produced by 21 companies connected with the cycle and motor vehicle industries at some point within the study period, i.e. c.1896 to c.1922 (see Table 1). The accounts surveyed were located in a single source, namely the records of T.M. Daffern, a Coventry stockbroker who collected together the accounts of local businesses, as well as other firms associated with the cycle and motor vehicle industries located across Britain. Bound into a series of 47 annual volumes covering 1896/7-1946 (missing 1927, 1940 and 1945) they are to be found in the Daffern collection (PA606) at Coventry Archives. A mix of companies was chosen in a semi-*ad hoc* manner based on one or other of the following inter-related factors: that their incorporation as a public company pre-dated or coincided with one of the booms in the relevant sector (see Table 2); that whatever their date of formation, they later became well-known motor vehicle manufacturers; or that they linked to other ongoing research on BSA (e.g. Eadie Manufacturing, acquired by BSA in 1907). The sample thus includes a small number of component manufacturers (e.g. Brampton Brothers (chains, saddles, etc.), Coventry Chain (chains) and Joseph Lucas (lamps and electrical equipment)), some producers of finished bicycles (e.g. Eadie Manufacturing), some cycle manufacturers that subsequently produced motorcycles (e.g. Triumph) or cars (e.g. Humber, Riley, Rover), and some businesses that commenced as motor vehicle manufacturers (e.g. Daimler, Standard).

[INSERT TABLE 1 ABOUT HERE]

The manufacturing plants of nine of these companies were in Coventry, with those of seven others located nearby in other parts of the Midlands (i.e. six in Birmingham and one in Wolverhampton). The remaining five companies were based across Britain. While two of the firms in the sample, BSA and Humber, were already public listed companies prior to the commencement of the study period, Table 2 indicates that the remainder were floated on the capital market during one or other of the key booms in the cycle (1896-1897) and motor vehicle (1896-1897, 1905-1907 and 1913-1914) industries (see Table 2). Published accounts are available throughout the study period for Brampton Brothers, Humber, Riley, Rover, Singer and Triumph, but for other companies, due to take-overs (Eadie Manufacturing, Daimler), financial reconstructions (Singer), late starts (Rolls-Royce, Standard) and conversions from private to public company (Albion, Dennis, Napier, Vauxhall), it is not the case. In total, 318 sets of accounts have been examined, the shares of the sample companies being quoted on a provincial stock exchange such as that in Birmingham and/or the London Stock Exchange.

[INSERT TABLE 2 ABOUT HERE]

In an attempt to provide additional insights into the depreciation activities of our sample companies, we have also utilised two additional sources: (1) material from online newspaper archives, in particular capital issue prospectuses (both for initial public offerings [hereafter IPOs] and subsequent issues) and reports of activities at company annual general meetings; and (2) the archival records of two of the sample companies, BSA and Daimler.[9] Following BSA's takeover of Daimler, the records of the two companies become entwined and can be found at Coventry Archives (hereafter CA - Daimler records, collections PA594 and PA1358) and the nearby Modern Records Centre of the University of Warwick (hereafter MRC - BSA records, collections MSS.19A and 19C). Copies of archival documents, together with published accounts from the Daffern Collection, were collected in early 2020 using a digital camera for later perusal, as it transpired, during the Coronavirus lockdowns. Before proceeding to an analysis of the accounts, we first provide an overview of the financial structure of our sample firms.

Financial structure of the sample firms

Information on the financial structure of our sample firms is available not only from the published balance sheets but also prospectuses accompanying public issues of capital. For 16 of the 19 companies whose IPO occurred during the sample period, it has been possible, from newspaper archives, to locate copies of the accompanying prospectus. Various details extracted therefrom, together with information contained in early balance sheets are presented in Table 3. The columns in the first part of this table indicate that the cost of acquiring existing businesses varied from £19,737 (Deasy) to £750,000 (Napier and Singer) and that payment was accepted in various combinations of cash, shares, and debentures. The proportion of the purchase price which comprised goodwill, which represented the major intangible asset identified in the balance sheets of sample firms[10], varied from around one-third (Joseph Lucas and Vauxhall) to 82.8 per cent (Singer). Over time, the proportion of total balance sheet assets which comprised intangibles fell, partly as a result of capital reconstructions (e.g. Singer) and the increasing ability of directors to write-off intangibles as profits were earnt. Although not all published balance sheets, at least initially, separately distinguish between tangibles and intangibles, in those cases where data are available, there were clearly two types of firms in 1898: those where the two types of fixed asset were of roughly similar magnitude (Daimler and Eadie Manufacturing) and those where intangibles were twice as large (Albert Eadie Chain, Riley, Rover and Triumph). Two clear outliers are visible in Table 3: Singer, in 1898, where intangibles were over 10 times the size of tangible assets[11], and Deasy, in 1906, where the purchase price was less than the amount shown for 'Goodwill and Patents' in the company's first balance sheet published in October 1907.[12] By 1907, tangibles exceeded intangibles for most companies (except for the four early starters, Singer, Humber, Riley and Triumph), while by 1914 the balance sheets of 11 of the 19 companies showed no intangible assets, this proportion increasing to 13 out of 17 by 1921.

[INSERT TABLE 3 ABOUT HERE]

Where intangibles were written off, various approaches were employed. Some companies wrote them down gradually over time (e.g. Coventry Chain [1907-1912], Triumph]1897-1912]), while others did so in one go, usually out of the current year's profits, especially in boom years (e.g. Sunbeam [1907], Rolls-Royce [1913-14]) or out of reserves (e.g. Joseph Lucas in 1911, Brampton Brothers in 1917). Two companies, Riley (1919-1920) and Vauxhall (1920) took advantage of post-war asset revaluations to completely write off intangibles, while the directors of Deasy (1910) purged them from the company's balance sheet by transferring goodwill, together with preliminary

expenses and the reduction in value following a revaluation of the company's assets, to a 'deficiency account'. Much of the reduction in intangibles at Singer resulted from write-downs associated with company re-organisations in 1903 and 1909, while at Daimler they were only written off following the company's acquisition by BSA. Of the four companies where intangibles were listed on their balance sheet in 1921, three had become public companies just prior to the war (Dennis and Napier (both 1913) and Austin (1914)), while Humber's existence as a public company pre-dates the commencement of our study period. Dennis, Napier and Austin represent three of the four flotations depicted in Table 3 which involved purchase prices of over £200,000 (the other being that of Singer in 1896), with goodwill representing over 40 per cent of the purchase price in each case.

Not only did the purchase price of different businesses vary greatly, so too did the authorised share capital of the newly floated companies, which ranged from £50,000 to £650,000 (see Table 3). The extent to which the public was invited to participate in IPOs also varied, reflecting both the willingness of former owners to accept shares in the new entity in either full or part-payment of the purchase price and the proportion of any authorised capital issued. As Table 3 shows, the proportion of the issued share capital held by vendors varied from zero (Daimler, Singer) to almost 91 per cent (Brampton Brothers), although for most businesses it was between one-third and two-thirds. Thus D. Napier's personal share of his business fell from 98 per cent to nearer 50 per cent after conversion in 1913. Over time, however, the proportion of the issued share capital controlled by former owners invariably fell, in part due to requirements for additional working capital and partly their desire to realise tied-up assets. Thus, Joseph and Harry Lucas, the former owners of the business which became Joseph Lucas & Son Ltd. in November 1897, having received 20,000 ordinary shares in part payment, had reduced their holding to just 8346 shares by the following September (Nockolds 1976, 95). Dilution also occurred through additional public issues, such as at Coventry Chain, where the initial authorised share capital of £100,000 in 1907 was increased to £150,000 in December 1913 and to £250,000 in July 1915. However, this company rarely issued all its authorised share capital, only £60,000 being issued by 30 August 1907, rising to £65,000 a year later, before remaining at this level until 1912 when it increased to £75,000. In December 1913, when the authorised capital stood at £150,000, only £97,376 had been issued (*Western Mail*, 19 July 1915, 4).[13]

The overall financial structure of our sample companies varied greatly and changed over time, albeit in different ways. Some companies, for example, Dennis Brothers and Albert Eadie Chain, relied solely on equity capital, the former issuing just ordinary shares, while the latter also issued preference shares. Some businesses which otherwise did not normally resort to loan financing, were forced to rely on bank financing for varying periods of time. Thus, in 1908, Brampton Brothers took out a small, secured bank loan (less than £5000) which was paid off two years later, while during 1918-19 Lucas borrowed nearly £120,000 from Lloyds Bank to help finance the growth in its electrical equipment business, subsequently repaying this through an issue, in August 1919, of ordinary and preference shares. At Vauxhall, where the authorised and issued share capital had been increased to £300,000 in 1916 and £400,000 in 1919, there was a bank overdraft of nearly £250,000 outstanding at the end of 1919. During 1920, Vauxhall increased its issued share capital to £600,000 and in October issued £200,000 of 5-year notes bearing an interest rate of 10 per cent. Despite these actions, the company's bank overdraft at the end of 1920 remained in excess of £100,000, rising to over £125,000 a year later. BSA, which embarked immediately after the war on several acquisitions as a means of both diversifying its business and trying to secure control of supplies of key inputs, financed these, in part, through a £2.5m issue of 6½ per cent 12-year notes, shortly before the British economy entered a steep decline in the latter part of 1920.[14]

At other sample companies, improvements in performance over time enabled them to reduce their reliance on long-term loans, such as debentures or mortgages taken out on going public or shortly thereafter. Thus, Rover, which had issued £50,000 of debentures in 1896 alongside £150,000 of ordinary share capital, was able to pay off the former in 1913-14. A similar story played out at Triumph where the £40,000 of debentures issued in 1897 began to be paid off in 1910-11, the task being completed the following year without any need to increase its issued equity capital, which remained at the levels of the IPO (i.e. £80,000 in ordinary and £50,000 in preference shares). For most companies, throughout the study period their main source of finance comprised ordinary and preference share capital. Calculations of the debt-equity ratio (defined as long-term debt (including rolled-over bank overdrafts) divided by issued ordinary and preference share capital) for each firm show this usually to be below 0.5 and often much lower, if not zero. The ratio only goes above 1 for Singer in 1903/4-1906/7 and 1911/12-1913/14 (both the result of financial restructurings involving write-downs of the value of share capital and, in the latter case, the firm being taken over by the debenture holders), Standard in 1912/13 (due to a bank overdraft secured by debenture) and 1915/16-1918/19 (due to financing wartime extensions via a debenture issue), and Austin in 1916/17 and 1917/18 (due to government loans received to build additional capacity).

While prospectuses and company annual reports provide information on debt and equity capital, they do not indicate the number of shareholders, and it is not possible to obtain this information in any systematic manner. While companies were required to make annual returns of shareholders to Companies House, many such records have been destroyed through archival weeding and, where they have survived, they are not easily accessible (digitised versions of company files available from Companies House often do not contain these due to their length and/or are unreadable due to poor quality reproduction). While Dennis Brothers (1913) Ltd. had over 1900 shareholders within two months of its IPO (*The Times* 20 May 1913, 19), such information is not normally available. Other details, such as whether conversion to a public company led to a change in auditors is also rarely clear since the IPO prospectuses either contain no details as to the prior auditors or the evidence is inconclusive. Four exceptions, however, are those for Albion (*The Times* 17 December 1918, 13), Austin (*Manchester Courier & Lancashire General* Advertiser 10 February 1914, 5), Triumph (*Pall Mall Gazette* 15 February 1897, 4) and Vauxhall (*The Times* 18 May 1914, 21), which clearly indicate that the firm of chartered accountants which was to audit their accounts, had acted as auditors since their incorporation as private companies. The following sections comment and reflect upon the impact of auditors, alongside aspects of financial structure discussed above, on the form and content of the published accounts of our sample companies and, in particular, the treatment of depreciation.

Published accounts

Prior to the enactment of the Companies Act of 1981 the 'publication requirements imposed on British companies were based on the practice of prescribing a minimum level of disclosure' with directors being 'at liberty to employ whichever method of presentation they considered most likely to communicate effectively the facts reported in the balance sheet and profit and loss account' (Edwards 2019b, 194). Such financial reporting requirements as existed at the beginning of the twentieth century focused

> on companies as separate legal entities. C[ompanies]A[ct] 1900 obliged company directors to present an audited (sometimes called the 'legal' or 'statutory') balance sheet to shareholders attending the AGM, while C[ompanies]A[ct] 1907 required public (but not the newly defined 'private') companies to file an audited balance sheet with the Registrar of Companies. (Edwards 2019b, 206)

In both of the industries from which our sample firms are drawn, demand was seasonal in nature, sales being most heavily concentrated in the spring and summer months with the autumn and winter periods spent developing and building up stocks of products for the forthcoming season. In the cycle industry, most companies adopted a financial year-end date of 31 August or 30 September, while in the motor trade some companies chose 30 October or even 31 December. Due to financial restructurings, changes of ownership/chairman, and problems related to stock-taking, the sample firms sometimes adjusted their financial year-end, not always simply on one occasion. The upshot is that published accounts do not always relate to a period of 12 months, meaning that our sample comprises 318 sets of published accounts, comprising a balance sheet, a directors' report and, in 214 cases an additional statement, usually, but not always, referred to as a 'profit and loss' account (see Table 4). Every set of accounts examined in this study was audited by a chartered accountant and in only two cases was there a change in auditor during the study period, namely at Standard where, upon the retirement of Ralph S. Morrish, Chartered Accountant, Chas. Baker & Co. was elected in his place, and at Riley where, in 1902-03, James Rhodes & Co. was replaced by Edward Thomas Peirson & Son.[15] The sample of published balance sheets is complemented by three, additional internally generated sheets relating to Daimler post-1910 (CA, PA594/5/2/2/4-6).

[INSERT TABLE 4 ABOUT HERE]

The Balance Sheet

Although company directors were required to present shareholders with a statement of the assets and liabilities of a company annually, since the legislation did not stipulate how the assets were to be presented in the balance sheet, boards of directors made their own decisions, albeit possibly guided by the company's auditors. Although Arnold (1997, 161) reports that few firms used a single figure, or 'omnibus heading', Edwards (2019b, 249) maintains that a 'single omnibus heading was widely used to cover all fixed assets (including intangibles and investments in other companies) reported in published balance sheets until the C[ompanies]A[ct] of 1928 came into effect on 1 November 1929'. Although 11 companies in our sample used an omnibus heading for fixed assets at some stage during the study period (see Table 5), only four did so throughout their existence: two of these were related companies which only appear for a short period at the start of our study (Albert Eadie Chain Co. (1898-1904) and Eadie Manufacturing (1898-1906))[16], while Rolls-Royce (1907-22) and Albion (1915-21) were still in existence in 1922. While all other balance sheets depict fixed assets under at least two sub-headings, as indicated in Table 5, a great variety of headings was used, not just between companies but also over time by the same concern, although no simple pattern is easily discernible. Eight companies exhibited a decrease over the study period, three of which moved to an omnibus heading; three companies exhibited a rise in the number of categories employed; and one showed a decrease followed by a move back to the original number! Just four companies utilised the same classifications throughout: Napier (1914-21 – two categories); Rover (1898-1922 – two); Sunbeam (1905-21 – four); Triumph (1897-1922 - three).

[INSERT TABLE 5 ABOUT HERE]

The main separation found was between 'land and buildings' on the one hand, and all other tangible assets on the other. Regarding the former, some companies separately distinguished freehold from leasehold properties, while others combined them under a single heading. Of the other fixed assets, the category most likely to be listed separately was plant and machinery, but sometimes these assets would be linked with fixtures, fittings, and furniture (or some variation thereon), and in three cases, Dennis Brothers (1916/17-21), Napier & Son (1914-21) and Vauxhall (1921), with leasehold land and buildings. In total, nine companies used three or more categories at some stage during the

study period, but Daimler's balance sheets were exceptional, utilising six categories in 1897 and 1898 and five between 1899 and 1905. One category of assets about which there was no common view amongst company directors or auditors as to how they should be treated was jigs, dies, pattens, drawings, etc. (i.e. assets specifically related to a particular product model). Daimler was unusual in that it provided separate entries for 'Tools', 'Jigs and Dies', and 'Patterns, Drawings, etc.' but other companies also separately identified some of these assets. Austin identified 'Loose Tools, Patterns, Drawings and Dies' (1914-15); Coventry Chain, 'Jigs, Dies, Tools, Gauges, etc.' (1909 -1922); Sunbeam, 'Patterns, &c.' (1907-21); Triumph, 'Patterns and Patents' (1897-1922); and Standard, 'Drawings, Patterns and Dies' (1913). Four firms – Coventry Chain (1907), Deasy (1907-10 and 1913-14), Riley (1897-1918) and Standard (1914-22) – included them with plant, machinery, fixtures, fittings and such like. With rapid technological change rendering such assets quickly obsolete, the issue of how depreciation should be applied to them was an important issue in the early-twentieth century (see below under 'Obsolescence').

Additional statements

While there was no legal requirement during the study period for companies to produce additional statements, such as a profit-and-loss account, even for their own shareholders, Table 4 shows that only three companies never did so, namely BSA, Joseph Lucas and Napier. In the case of the latter two companies, the way information was presented in the directors' report nevertheless provided a clear indication of how the year's profit had been appropriated. Of the remaining 18 firms, Austin (1922) and Deasy (1907/8) only provided an additional statement on one occasion, while companies such as Standard (1914), Coventry Chain (1915) only began to do so around the time of the First World War. Some of the companies which initially published an additional statement then stopped: Riley published a 'revenue account' but only from 1899 through to 1910, and Sunbeam a profit-and-loss account from 1905 to 1915. The remaining twelve firms produced an additional statement in each year of the study period for which they were extant, and while most of them published what was termed a profit-and-loss account, Rover's statement was designated as an 'Income and Expenditure Account', while that of Rolls-Royce as a 'Profit and Loss Appropriation Account'. In total, our sample of published accounts comprises 214 additional statements (67.3 per cent of the number of balance sheets).

The main items presented in these additional statements are indicated in Table 6. For the majority of the firms (13 out of 18) which produced at least one such statement, the major credit entry (or debit in a bad year) was referred to as either 'Gross Profit', 'Trading Profit', 'Balance on Trade Accounts' or something similar. Three companies used a different measure: from 1915 to 1918 inclusive, Albion's main credit entry was labelled 'By Profit for the year after providing for Depreciation, Managing Director's Remuneration, and Branch Expenses, and making provision for the estimated liability under the Munitions of War and Finance Acts', but in 1919 this was changed to 'Profit for year after providing for Depreciation and making provision for estimated liability under the Finance Acts' (it is not clear what happened to the Managing Director's Remuneration or Branch Expenses); Rolls-Royce simply referred to 'Net Profit for year'; while Riley, in their Revenue Account, referred to 'By Profit - brought from Profit and Loss Account', later 'By Balance from Profit and Loss Account'. In addition to the profit figure indicated, most statements contained a credit entry for transfer fees (14), while eight made explicit reference to interest or dividends received. In contrast to the limited number of entries indicated on the credit side of such statements, far more were usually contained on the debit side. The most commonly occurring items (14 times) were depreciation and a figure representing some combination of management expenses and directors' and/or auditors' fees. Other common

debit items were 'Debenture and Mortgage Interest' or similar (9), transfers to reserves (general, bad and doubtful debts, etc. – 8) and 'Income Tax' (8).

[INSERT TABLE 6 ABOUT HERE]

Having briefly analysed the contents of the balance sheets and additional statements for our sample companies, in the next section we focus our attention on how depreciation was treated, contrasting practice with the views expressed in the contemporary literature and the findings of previous studies.

Depreciation

At the end of the nineteenth century contemporary discussion regarding depreciation revolved around a series of issues: (1) the need for a depreciation charge, separate from that for repairs and renewals; (2) whether the charge should be seen as a provision from (i.e. a cost of production) or an appropriation of profit; (3) the method to be used in determining the amount to be charged; and (4) ensuring the accuracy of the method used through asset revaluations. We also consider the issue of taxation though this matter is one largely ignored by contemporaries and features little in historical studies. Following the lead of Carlon and Morris (2003), we also comment, in passing, on the possible impact of a company's financial structure on depreciation practices. In a major departure from previous historical studies, we place a special focus on analysing the depreciation rates used. We now turn to each of these issues.

(1) *A separate charge*?

During the 1880s and 1890s, depreciation was an issue discussed in both the accounting and engineering literatures. Following his review of late-nineteenth century writings in *The Accountant*, Brief (2020, 132-133) concludes that the first clear exposition of a theory of depreciation (i.e. as a cost equal to the value of the asset that is 'consumed' during the year) was provided by Edwin Guthrie in 'Depreciation and Sinking Funds', published in the edition of 21 April 1883. For most historians, however, it is the engineering consultant, Ewing Matheson, who was the first writer to distinguish properly between depreciation (the shortening of the working life of an asset through physical deterioration), obsolescence (from external causes, such as technological advancement), and fluctuation in value (through changes in market prices) (Edwards (1986b: 91).[17] Matheson was quite adamant that a separate depreciation charge was required:

> The Deterioration of a Factory by time and use, the appraisement of the loss and its allotment in the accounts of the undertaking, are matters of great importance in the economy of management; and any neglect or error in 'writing off' will, according to its extent, render calculations of cost and profit fallacious. (Matheson 1884, 1)

While Matheson may have been clear of the need for a depreciation charge over and above that for repair and renewal, others were not so sure. Indeed, in the late-nineteenth and early-twentieth centuries there were clearly differences, especially in circumstances where fixed assets were properly maintained. In such circumstances, some felt that depreciation was unnecessary, while others argued that even with proper maintenance assets would not last forever due, for example, to the costs of repairs becoming too onerous or through technological obsolescence (Edwards 2019b, 237). The accountant, George Pepler Norton, was clear:

> [A]s a broad principle … *existing Works, Plant, Machinery, &c., should be efficiently maintained, by all necessary repairs and renewals, out of* **revenue**, *and, in addition, the Trading Account should bear an adequate charge for* **depreciation.** (Norton 1889, 233, italics and emphasis in original)

Of our sample companies, 18 of them listed at least one charge for depreciation in their balance sheet on one occasion or more (see Table 4), while in the three companies (Albion, BSA and Napier) which never did so, their directors nevertheless claimed that depreciation had been charged, with archival evidence supporting that made by BSA's directors.[18] Overall, depreciation is mentioned in 312 of the 318 sets of published accounts analysed: a separate figure or figures is given in 240 cases (75.47 per cent), a further five show a combined figure for depreciation and net additions, while in another 67 cases (21.07 per cent) it is indicated that either the asset or profit total is shown net of depreciation. In only six sets of accounts was no mention found at all, three of these being for Austin during the war years when its accounts, like those of several other sample companies, were presented together in a block at the end of the war.

Reflecting differences of opinion within the literature, while most firms in our sample presented depreciation as separate charge, three firms used a heading which indicated that depreciation was combined with maintenance or repair and renewals expenditure. At Brampton Brothers (1898/9 – 1906/7) a single figure was shown in the profit-and-loss account for 'Maintenance and depreciation of Plant, Machinery and Tools' but thereafter, when only a balance sheet was published, 'depreciation' was deducted from the total for plant and machinery after 'additions' had been added to the total brought forward from the previous balance sheet. At Standard (1913/14 – 1918/19), while the balance sheets refer to 'Depreciation written off', the same figure is shown in the profit-and-loss account as 'Amounts Written Off for Repairs and Depreciation'. Finally, Triumph's accounts (1896/7 – 1914/15) contain entries for 'writing off repairs and depreciation' on both 'Freehold Property' and 'Plant and Machinery, Loose Tools, Fixtures, Fittings, etc.' From 1915/17, however, for each of these categories, Triumph's income statement separates 'repairs and maintenance' from 'depreciation'. Other companies also separately identified depreciation from maintenance/repairs/renewals: from 1910/11 until 1914/15, when it ceased to publish a profit-and-loss account, Sunbeam separately listed 'Repairs to and upkeep of Tools, Plant, and Buildings' and 'Depreciation on Plant and Tools, Furniture, and Buildings', while in 1922 Austin's first profit-and-loss account contained separate figures for 'Maintenance of Buildings, Plant, Fittings and Tools' and 'Depreciation'. At Singer, following a reconstruction of the company in 1909, its directors stressed in their reports for 1909/10 to 1912/13 that, in addition to making a provision for depreciation, the factory, machinery and plant had been maintained in good order. There is a suggestion here of a move over time towards separation but it is not clear that it was the case for all companies. Thus, Rover, in its income and expenditure statement presented a figure for 'Depreciation' (1898/9 to 1903/4) and 'Depreciation on Plant, Fixtures, etc.' (1904/5 to 1907/8), but thereafter subsequently described the deduction as 'Maintenance and Depreciation of Plant, Machinery, Tools, Patterns, Drawings and Furniture' (1908/9 to 1921/2). At Daimler, however, separate charges were clearly made for expenditure on repairs and renewals and for depreciation (CA, PA1358/4/1,2).

(2) A provision or an appropriation?

Garcke and Fells noted that depreciation practice could vary (4th ed., 1893: 98)

> according to the business effected, or to the balance remaining to profit and loss account, or is regulated by the desire of the firm or its managers, either on the one hand to show a large profit, or on the other to add to the stability of the concern.

This contemporary view is echoed in the findings of Edwards (1981) and Carlon and Morris (2003) noted earlier, based on companies engaged in traditional sectors of the economy. The companies in our sample, however, despite the cyclical nature of the cycle and motor vehicle industries and the regular occurrence of losses due to trade slumps, continued to make depreciation charges even when a loss was recorded. Thus, despite a steep fall in profits between 1896/97 and 1901/02, and despite being massively over-capitalised, Singer charged a similar amount of depreciation each year. In 1907/8 Deasy wrote off £2225 15s. 9d. for 'Maintenance and Depreciation of Buildings, Plant, Machinery, etc. and preliminary Expenses, notwithstanding the result shown by the accounts' (a net loss of £5,606). At Riley, where depreciation 'as certified by Managing Director' (W. Riley, Jr., who was described in 1900-01 as a 'valuer') was charged from 1897-98 onwards, it continued to be charged even when results were adverse. Thus, in their report covering the period 1 January 1921 to 5 August 1922, Riley's directors indicated that they had determined to charge depreciation 'at the usual rate' amounting to £11,431 despite the trading loss reported of £3463, considering this approach to be 'in the best interests of the Company'.

Continuing to make a charge irrespective of the level of profits suggests that the directors of cycle and motor vehicle manufacturers considered depreciation to be a charge against, rather than an appropriation of, profits, even if it was shown in the accounts in slightly different ways. Thus, firms such as Albion, Joseph Lucas, Napier, Rolls-Royce and Singer presented a figure for net or trading profit after charging depreciation, while others like Brampton Brothers, Coventry Chain, Rover, Standard, Sunbeam, Triumph and Vauxhall showed depreciation as a deduction from trading profit in their additional statement. Riley's approach after 1898 was to show depreciation as a debit in its revenue account, that is, as a deduction from the main credit entry, the balance of the profit-and-loss account (which account was not shown). The three firms which referred to depreciation as an appropriation of profit (e.g. Austin in 1914, Napier in 1913-14 and Riley in 1897/8), only did so in the first year following their formation, subsequently treating it as a provision.[19] In only one instance was there neither no claim made that depreciation had been charged nor any actual charge shown. During 1908 and 1909 and facing major problems, not for the first time, the old Humber company was liquidated and a new company formed. The first set of accounts for the re-formed company relate to the 19-month period ending 31 August 1910, with neither the balance sheet nor the profit-and-loss account for that period showing any evidence of a depreciation charge. Despite the company's directors suggesting in their report that the balance to credit of profit-and-loss after charging £21,632 for renewals and maintenance of plant, machinery, etc., namely £5045, should be written off as depreciation, the auditors felt it their duty to draw the attention of shareholders to the fact that no provision for depreciation had been made in the period's accounts. Similarly, in their report for 1910/11, the directors suggested that '£6595 0s. 0d., which includes 7½ per cent. upon Plant and Machinery, be written off as Depreciation for the year'. Despite this, the company's auditors (Charles Eves & Co.) qualified the accounts, writing:

> No depreciation has been written off plant, machinery or tools in respect of the year and the amount appropriated from last year's account to cover depreciation for nineteen months to 31st August 1910, is, in our opinion, quite inadequate.

Perhaps as a response to such criticisms, Humber's accounts for 1911/12 show a depreciation charge of £6,191 0s. 6d. Despite acknowledging that plant had been depreciated at a rate of 7½ per cent,

the auditors nevertheless stressed that previous deficiencies to which they had drawn attention had not been made good!

In the main, the directors of our sample firms saw depreciation as a provision which needed to be made independently of the level or profit reported. Thus, while the vast bulk of those companies which published a profit-and-loss account indicated depreciation as a deduction from gross profit, Garcke and Fells (1887, 7, 14), taking their cue from Matheson, expressed the view that depreciation should be seen not in this way but rather as an element of prime cost, thereby reducing manufacturing gross profit. This approach was the one adopted at Daimler, whose surviving manufacturing profit-and-loss ledgers covering the period 1906-18 (CA, PA1358/4/1,2) clearly show separate charges for expenditure on repairs and renewals and for depreciation in the production cost figures.

(3) Taxation

In Britain, during the study period, gains from trade and manufacture made by businesses were subject to income tax, in the same manner, and at the same rates, as individuals. Under Schedule D, firms were required to pay income tax 'computed on a sum not less than the full amount of the balance of the profits or gains upon a fair and just average of three years' (Garcke and Fells 1893, 104). During the First World War, however, companies found themselves potentially subject to two new taxes, Munitions Levy and Excess Profits Duty (EPD), although gradually most companies fell only under the latter. Introduced in June 1915, EPD was levied for the seven accounting years from August 1914 (Arnold 2014, 62) and represented the first occasion on which profits provided the single basis for a tax on companies (Arnold 2014, 68). With EPD about to be phased out, the Finance Act 1920 briefly introduced a Corporation Profits Tax but this tax proved highly controversial and was repealed in 1924 (Walsh and Sangar 2014, 3).

Although taxation was not totally ignored by contemporary accounting writers when discussing depreciation, it did not tend to feature in their discussions of how to determine the amount or rate to be applied. Thus, Garcke and Fells, having pointed out that the Income Tax Acts 'have an important bearing upon the depreciation and valuation of assets, and no method of dealing with large assets of fluctuating value should be decided on without due regard being paid to the provisions of these Acts' (1893, 104), went on to indicate that the best way of determining the depreciation rate was to take the life of the asset, modified by 'original cost plus interest, renovation, and residual value' (1893, 105), ignoring any role for taxation. A major reason for this is that the amount of depreciation determined by a company's directors has never been considered a tax-deductible expense in Britain, neither during our study period nor even today (see HMRC, 2014/2020). Rather, from 1878, when a 'wear and tear' deduction was first recognised, the focus has instead been on capital allowances sanctioned by the tax authorities.[20] Initially 'just and reasonable' allowances applied simply to plant and machinery but were subsequently extended before the turn of the century to 'ordinary current repairs' for mills and factories subject to the effects of vibrating machinery (Parliamentary Papers [hereafter P.P.] Cmd.618, 50). Although the deductions were supposed to give tax relief for an amount broadly equal to the actual economic depreciation suffered, the method of applying standard annual percentage allowances meant that there was not necessarily any simple relationship between the depreciation policy adopted by a firm and the tax regime, as confirmed by a small number of surviving draft income tax returns prepared by BSA at the beginning of the twentieth century (see Table 7). In each of the four tax years 1900/1 - 1903/4, the company's allowance against income tax for wear and tear was set by the tax authorities at £8600,

calculated at the allowable rate of 5 per cent on £172,000 (the local tax surveyor's valuation of the company's plant and machinery[21]).

[INSERT TABLE 7 ABOUT HERE]

As can be seen from Table 7, whilst BSA's taxable allowance remained constant over the four years, the company's depreciation was not only larger but increasingly so, the divergence between the two figures rising from £844 in 1900/1 to £16,755 in 1903/4. Data deficiencies mean that it impossible to know if other companies in our study also received the 5 per cent rate, but a widespread concern in the early-twentieth century was that different bodies of tax commissioners applied different rates to similar plant and machinery in the same industry. However, despite taking the view that it was not possible to lay down a precise scale of allowances for plant and machinery due to the 'varying circumstances of manufacturing machinery' (P.P. Cd.2575, para. 73, xiii), the Departmental Committee on Income Tax in 1905 acknowledged that 'considerable progress' had been made in some trades in 'establishing typical rates of allowance on different classes of machinery', a list of those applied by some commissioners being presented in evidence to the Committee (P.P. Cd.2576, App. IV, 14). Under 'Engineers', for example, two rates are listed: Leicester - 7½% 'On full value'; and Cardiff - 5% 'On written down value'. Subsequent negotiations between certain trade bodies and the Board of Inland Revenue meant that by 1918 agreed 'standard rates of depreciation for particular classes of machinery' had been established in 12 industries (P.P. Cmd.618, 48). However, neither the engineering sector as a whole, nor the cycle and motor vehicle trades was represented in this list (P.P. Cd.9134, 6).

While moves to provide greater standardisation or allowance rates pre-dated the First World War, it is possible that the war provided an added stimulus to such attempts. During the war, companies subjected to EPD could benefit from special relief

> available for the postponement or suspension, as a consequence of the war, of renewals or repairs, for the exceptional depreciation or obsolescence of assets employed in a business on war work and for the costs of providing plant which would not be wanted for the purposes of trade after the end of the war. (Arnold 2014, 69)

For some companies, as indicated in the next section, depreciation rates did increase during the war period.

(4) Determining depreciation: method, rates, and obsolescence

Having determined that a charge for depreciation should be made, there was then the issue of deciding how it should be determined. Garcke and Fells (1893: 113-114) noted that firms could simply charge a lump sum to profit-and-loss or they could allocate depreciation to the various processes from whose operation it had derived. There is no evidence from our sample companies that, like Edwards' iron and steel companies, firms in the cycle and motor vehicle industries took the former course. If round sums are found, it is usually the case that the figures are rounded to the nearest £, not the nearest £000. Unrounded sums, however, do not of themselves necessarily imply that a specific calculation of depreciation has taken place, though it is possibly indicative that some method has been used, however imperfect or imprecise it might be. We now examine three inter-related issues: (i) the method used; (ii) the rates of depreciation charged; and (iii) the influence of obsolescence on the method and rates used.

(i) Method

As found by Arnold (1997, 161), the asset values given in the balance sheets of our sample companies were normally presented as 'the balance brought forward from the previous year, adjusted by annual expenditures and depreciation'. Furthermore, where a separate figure is presented for depreciation, it is clear that the norm was for depreciation to be applied only to the balance brought forward, additions not being depreciated during their first year, except in the case of assets whose life was considered indeterminate (i.e. jigs and dies, patterns, drawings, etc). The application to the balance brought forward of the depreciation rates discussed in the next sub-section suggests that firms were utilising the reducing balance method of depreciation, as favoured by contemporary opinion, rather than the straight-line method. One major critic of the reducing balance approach was P.D. Leake, who considered that it placed 'an abnormally heavy burden on the earlier years and an altogether inadequate charge on the later years of the period' (1923: 68). He also expressed the view that many who used it were under the misapprehension that, for example, using a 5 per cent rate of depreciation would lead to the total capital cost of an asset (assuming a scrap value of 5 per cent) being written off in 20 years, but those running BSA and Daimler clearly understood that it would, in fact, take 58 years (Leake 1923: 65; CA, PA594/5/1/6).

(ii) Depreciation Rates[22]

While all companies in our sample either showed a depreciation charge or claimed that one had been made at some point during the study period, determining what rates were applied is no simple matter. Where only a single overall figure is given for depreciation, determining the rate as a percentage of total fixed assets is simple, but its meaning is not. If, as suggested by contemporary writers, different rates should be applied to different classes of asset, then any overall rate is simply a weighted average of these unknown rates. Only where balance sheets list different classes of asset, together with the amount of depreciation applied thereto, can we determine the depreciation rates. Of the main classes of fixed assets, that most commonly depreciated was plant and machinery, followed by land and buildings. Table 8 therefore presents the rates applied to these two classes of assets for those companies for which it has been possible to make such calculations. Even so, these figures are not without their problems. Though the figures for plant and machinery are the most informative, the picture is often complicated by the fact that the assets included under this category can vary both between companies and over time within the same firm. For land and buildings, unless the rate on buildings is specified in the accounts, since land was never depreciated[23], calculated rates do not properly indicate the rate applied to buildings since the denominator is influenced to an unknown extent by the value of land held.[24]

[INSERT TABLE 8 ABOUT HERE]

Nevertheless, the figures presented in Table 8 suggest that some companies pursued a policy of charging a specific percentage rate for depreciation to all their plant and machinery, figures such as 5 per cent, 7½ per cent and 10 per cent being favoured by different companies at various points in time. The directors of Sunbeam, in their first annual report for the year 1904/05, declared that profit was presented net of depreciation on plant at the rate of 7½ per cent, the same rate as that applied by Humber from 1910/11. Such figures, while in line with those contained in the lists provided in App. IV of the 1905 Departmental Committee on Income Tax (P.P. Cd.2576) and the 1918 White Paper (P.P. Cd.9134), they are much lower than those mentioned by Garcke and Fells (4th ed., 1893: 109) who considered that it was usual for 25 to 35 per cent of the book value of plant and machinery to be written off annually. In Table 8, the rates indicated only approach or surpass this latter range in four cases: Triumph (1907-1920), Rover (1910-1922), Coventry Chain (1916-1919) and Daimler

(1917-1918). In the case of Triumph, the rates are high due to the inclusion, between 1896/7 and 1914/15, of repairs with depreciation, and it is the charging of maintenance alongside depreciation which explains the increase shown in Table 8 for Rover between 1907/8 and 1908/9. While the highest ever rate charged by Triumph was 60.8 per cent in 1917, there were three pre-war years when the rate exceeded 48 per cent. The rise in the rate for Coventry Chain between 1914/14 and 1915/16 and 1916/17, however, appears to have been a direct consequence of the war, possibly reflecting the advent of special allowances provided in relation to EPD noted in the previous section. Similar sharp jumps occurred at Humber, Singer and Standard, though in all four cases the rates fell again towards the end of the war and/or immediately after suggesting that any wartime effect was limited in duration. Indeed, at BSA, in an internal memorandum of accounts for the year to 31 July 1919, it was noted that the high depreciation rates charged during the war were no longer being used, there having been a return to 'more or less normal rates recommended by the Engineering Department', albeit that these were 'rather higher than pre-war rates' (MRC, MSS.19A/2/26/2, f.5). The impact of war at other companies, however, appears to have been more limited, possibly reflecting a lower degree of involvement in the war effort (e.g. Brampton Brothers).

While an assessment of the full impact of the war will undoubtedly require the further interrogation of archival records, assuming they exist, other discrete jumps in rates indicated in Table 8 were clearly not connected with the war. The limited number of sample companies, and the piecemeal nature of the surviving data, however, make it difficult to discern any clear links with other possible explanatory factors such as changes in financial structure. For example, there was no change in the company's auditors or in its debt/equity ratio which might explain the rise at Riley c.1911-13.

A further complication in trying to explain the depreciation rates for plant and machinery, even where not linked with other types of asset, is that it comprises a broad class, the figures presented in Table 8 potentially being averages of varying rates applied to different types of equipment. The heterogeneous nature of machinery was one reason for the Departmental Committee of 1905, like Matheson, eschewing the provision of a schedule of rates for different types of machine, but others were clearly more sanguine. Norton (1900, 236) suggested rates for different types of textile machinery[25] and evidence exists that this approach was one adopted by some car companies. Thus McKinstry (1999, 210) notes that at Albion Motors, depreciation rates varying from 10 per cent to $33^{1}/_{3}$ per cent were charged on machinery while the archival records of BSA and Daimler clearly indicate the adoption of a similar approach. By at least the autumn of 1911, by which time it had adopted the reducing balance approach, BSA was using lists indicating the rates to be applied, that for plant comprising 82 types and that for machines 32 (CA, PA594/5/1/6). For machines, the rates to be used varied between 5 per cent and 15 per cent in steps of 2½ per cent, according to the expected life of the type of machine, while those for plant varied from 5 per cent to 20 per cent, again in steps of 2½ per cent. It was indicated that the latter were 'based on the figures which the Daimler Co. find by experience meet the conditions'.[26] Two additional documents in this group indicated the method (reducing balance) and rates to be employed in valuing 'buildings' (1½ per cent) and 'jigs and fixings' (20 per cent), while that for loose tools indicated that they were to stand at 'full value' (CA, PA594/5/1/6).

Given that 'land and buildings', and 'plant and machinery' were often the only two categories of fixed assets separately identified, published balance sheets provide limited evidence as to the rates applied to other classes of assets. Daimler's published accounts from 1898 to 1905 are one of the few exceptions, providing an indication of the rates applied on several classes of asset not usually distinguished in the accounts of other companies (see Table 9). Another company which also

[INSERT TABLE 9 ABOUT HERE]

provided an indication of the rates charged on other assets, albeit only for 1905/6 and 1906/7, was Sunbeam. In both years a rate of 5 per cent was applied to 'Office Furniture', in the second year, this amount seemingly applied to both the value of the original assets and the new additions made during the year. For 'Show Fittings' in 1905/6, 10 per cent of the original cost was charged to depreciation (i.e. £2. 9s. 0d), the same amount being applied in 1906/7 to the balance brought forward, suggesting use of the straight-line method for this asset. From 1907/8 onwards, however, it is impossible to determine either the rate or method used since, as for all classes of assets, they were combined under a single heading and figures are shown as 'at Cost, plus additions to date, less Depreciation written off'.

(iii) Obsolescence

Changes in the calculated rates for plant and machinery shown in Table 8 could be the result of many different factors, including changes in economic conditions, it being necessary to adjust rates depending on the state of the economic cycle and the extent to which assets were being utilised. Another possible reason for needing to use accelerated depreciation rates noted by Matheson (1884) was obsolescence due to technological change. The extent of such obsolescence obviously differs as between sectors of the economy and over time within a single sector. New industries are often prone to more rapid technological change than more mature, traditional ones, and thus it may be appropriate for firms in such industries to charge higher rates of depreciation. In reviewing the cycle industry, for example, *The Economist* (8 November 1902, 1722) noted that it was important for firms to put aside to reserves, sums not just representing depreciation due to normal wear and dilapidation but also to reflect that machinery and appliances were liable to rapid obsolescence. Rapid technological change meant that calculating the lifespan of certain types of assets, and hence the appropriate depreciation rate to be applied, could be difficult. In the industries examined in this study, this situation particularly applied to assets such as standard tools (jigs and dies), patterns and drawings. Rapid changes in the designs of cycles and, more especially, motor vehicles in the 1890s and early 1900s meant that those assets associated with the manufacture of a specific design, could become quickly obsolete. Indeed, the desire of the small car-buying public of the time for year-on-year improvements and changes in design, especially after the introduction of the annual motor shows from 1903[27], meant that assets associated with a specific model of car produced in the current year could become irrelevant for that to be produced next year and would have to be scrapped.

In 1945, the ICAEW's Recommendation on Accounting Principles 9, on the topic of fixed asset depreciation, recognised that assets with a short effective life, such as loose tools, jigs and patterns, might need to be treated differently from other assets and that, rather than applying depreciation on a straight-line basis as recommended for other fixed assets, it might be more appropriate to use revaluation, as previously recommended by accountants such as Spicer and Pegler (1914, 145). Falling somewhat between the accountants' traditional divide of fixed and floating or current assets, it is perhaps not surprising to find little agreement as to how such assets should be treated in company accounts. While the use of broad categories of assets such as 'Plant, Machinery, Tools, Fittings etc.' by some companies makes it difficult to be certain precisely how they treated them, there was clearly no consensus during our study period. While some listed 'Loose tools' separately, others included them with 'sundry stores' (e.g. BSA, Austin), and some failed to separately identify them. As indicated in Table 9, Daimler, up to and including 1904-05, separately identified 'Standard Tools', 'Patterns' and 'Drawings', although thereafter it combined them into a single item 'Jigs and

Dies (Standard Tools), Patterns and Drawings'.[28] While the rates shown in Table 9 fluctuate, they do so largely about an upward trend, with patterns being fully written off in 1905 together with half the value of drawings. From 1899 onwards, Triumph also completely wrote off its annual expenditure on 'Patterns and Patents' in the year in which it was incurred. In its balance sheet for 1906/7, Sunbeam's directors separately recorded 'Patterns &c', but rather than show a depreciation figure, in 1907/8 and 1908/9 the total presented was given 'as per Valuation passed by the Directors'. From 1909/10, as with all other classes of asset from 1907/8, the form adopted at Sunbeam was 'at cost, *plus* additions to date, *less* depreciation written off'. The chairman of Rolls-Royce referred, in speeches to the company's AGMs before the First World War, to 'the very liberal depreciation of many items which in a business like theirs [requiring the latest methods and designs] was of necessity of uncertain value, such as alterations of designs' (*The Times* 15 January 1910, 13) and of the need to make 'ample provision … for discarding and replacing, liberally and judiciously, anything which was not of the best, whether plant, premises, or stock' (*The Times* 21 January 1911, 16).

It was the uncertainty over how to deal with assets whose lifespan was especially unclear which led to a wariness amongst some commentators as to the validity and comparability of profit figures presented in the accounts of cycle and motor vehicle manufacturers. One contemporary source which changed its opinion towards the end of our study period was *The Economist*. Despite having commented in its 1898 review of the cycle trade that 'it is evident, owing to the poor results, quite inadequate allowances have been made for depreciation' (*The Economist* 25 November 1899, 1658) and subsequently lamenting that no cycle company published a trading account (16 November 1901, 1696), the journal nevertheless presented tables of net profits after depreciation of a (changing) sample of companies in its annual review of firms operating in the cycle and motor vehicle trades from the 1890s through to the early 1920s.[29] Occasionally, it would draw attention to a specific company about which there were concerns over the treatment of depreciation, but these were few and far between. Two such cases where auditors had raised concerns were noted in its review of 1910-11: one was Humber (referred to above) and the other was that of the James Cycle Co. (not part of our sample) where it was noted that the balance sheet 'does not meet with the unqualified approval of the auditors, because no depreciation has been written off for several years' (*The Economist* 9 Dececember 1911, 1203). By the time of its 1921 review, *The Economist's* view had clearly changed, declaring:

> On account of the differences of opinion existing as to what is an adequate sum for depreciation, we have shown, where possible profits before amounts for depreciation have been deducted. (*The Economist* 20 May 1922, 945)

Possibly taking their cue from sources such as *The Economist*, Maxcy and Silbertson (1959) favoured the use of trading profits over net profits before tax in analysing profitability and rates of return on capital in their study of the motor vehicle industry. For the pre-1929 period, they stressed that the use of net profits was problematic due to the sharp changes in depreciation provision made by companies from year to year (given some credence by the figures presented in Table 8). They considered the pre-1929 profit data to be 'extremely inadequate' (Maxcy and Silbertson 1959, 151), stressing the 'big divergence between net profits and trading profits in some years but not others' resulting from the method of writing off expenditure on jigs and tools for new models, which they suggested was often done over one to three years, a period much less than their actual life (1959, 153-154).

The problem, however, went beyond that of jigs and tools. In his speech to the AGM of Vauxhall Motors in April 1924 (*The Times* 11 April 1924, 22), the chairman and joint managing director, Leslie Walton, noted that while the directors had regularly put aside funds to cover 'ordinary depreciation

and obsolescence over a long period', they had not put aside any sums 'to meet the sudden obsolescence of plant which may be brought about at any time by new methods of manufacturing or the utilization of new material requiring different plant for its operation'. It is not clear if he had anything specific in mind, but such concerns presumably underlay the increase in the company's charge for depreciation on plant and machinery rising from just over £5000 in each of 1921 and 1922 to £23,000 in 1923.

(5) Asset revaluation: checking the accuracy of the depreciation method

Whatever the method used, its sophistication and rates applied, for reasons already noted no guarantee existed that the amount of depreciation charged would be adequate to fully reflect the depletion of fixed assets. While the system of depreciation introduced by BSA from the autumn of 1911 appears to have been part of an internal system used to annually determine the current value of the company's assets, as advocated by writers such as Garcke and Fells (1893: 99), Dicksee (1905: 239), and Norton (1900, 236), the last also advocated an independent valuation be carried out every five years. No such examples of regular checks have been found, but in early 1920, BSA, whose assets had expanded greatly during the war, called in the valuers, Fuller, Horsey, Sons & Cassell, who valued the company's fixed assets (exclusive of loose tools, jigs and fixtures) at £2,569,030, double BSA's own internal valuation as at 31 July 1919 of £1,246,732 (CA, PA594/5/1/6 - report dated 1 March 1920).[30] At other sample companies, revaluations were carried out on an *ad hoc* basis, associated with issues such as capital reorganisation (e.g. at Deasy in 1909/10) or, as suggested by Edwards (2019b, 247), price level changes or problems caused by successive losses that required a downward revision of book values.

In early 1920, *The Economist* (7 February 1920, 253) commented that, due to wartime inflation, companies which had not revalued their assets after the war and continued to take them at pre-war values, in consequence had substantial hidden reserves, while those which were extending their businesses at the materials prices prevailing during the immediate post-war period 'must be prepared to write off substantial sums for depreciation in the future'. Given the rapid downturn in the fortunes of the British economy from the summer of 1920, however, a failure to revalue assets after the war may not have been a major one. Indeed, the more cautious approach adopted by the directors of D. Napier & Son who, having received an independent valuation of the company's property, plant and machinery of £468,000 decided to only take these assets into the accounts at a value of £253,095 (*The Economist* 22 January 1921, 117), may have been more appropriate.[31] Indeed, for some companies, capital reductions became the order of the day as the profits of the war years were quickly converted into losses. Austin, for example, reported a combined trading loss on profit-and-loss account for the 24-month period covering 1920 and 1921 of £381,923 (including 'normal depreciation of £123,824' but before abnormal depreciation of stock and tools, of £1,951,924), in marked contrast to the net profit of £237,866 reported in 1919. The company's directors, in their combined report for 1920 and 1921, however, acknowledged that there was an urgent need to write down several other major assets, including investments, the Longbridge Estate, and the Flying Ground, by about £300,000, and for there to be a review of the value of all the company's assets.

Conclusions

Bryer (1993, 469) suggests that modern financial reporting was developed in the late-nineteenth century, 'founded on principles of cost-based accrual accounting and independent professional audits'. An important element of this development was the implementation of depreciation accounting, although as pointed out by Arnold (1997, 145), in the early-twentieth century 'depreciation was a widely, if inconsistently applied practice'. This study has found that the charging of depreciation was indeed widespread amongst firms in the cycle and motor vehicle industries up to 1922, and unlike in more traditional industries (cf. Edwards [1981], Pitts [1998], Carlon and Morris [2003]) it was less opportunistic and more systematic. Successive depreciation was chosen over immediate write-off amongst our sample companies[32]. Yet without any clear consensus as to what the depreciation rate applied to various classes of asset should be, it has not been possible to determine whether the amounts written off were adequate, although company chairmen, in speeches to annual general meetings, often referred to their company's policy of 'liberal depreciation' and/or that assets had been conservatively valued (see, for example, those of the chairman of Rolls-Royce for 1909-1912 (*The Times* 15 January 1910, 13; 21 January 1911, 16; 1 February 1912, 19) and Deasy for 1911-12 (*The Times* 8 November 1912, 21)). Liberal depreciation was certainly applied to those assets particularly prone to rapid obsolescence, such as jigs, tools, patterns and drawings associated with individual models but, as previously noted, at least one chairman was also concerned about plant and equipment that might be rendered obsolete by rapid technological progress.

Since all companies in our sample employed professional accountants as auditors[33], even though it was not a legal requirement until the Companies Act of 1947 (Edwards 1989, 264), it could explain the application of a deprecation charge in their accounts. However, it clearly did not lead to a uniformity of approach. Nevertheless, there is evidence that firms in the Coventry area were more likely to specify the depreciation charge on plant and machinery: of the 11 companies whose rates are shown in Table 8, eight were based in Coventry (out of nine Coventry firms in our sample), two in Birmingham (out of six) and one in Wolverhampton. *Prima facie*, Midlands, and especially Coventry-based, firms seem to have been more likely to provide information on depreciation and to do so consistently throughout the study period, suggesting that a further analysis of these companies' auditors, and the accounts of other companies which they audited, may provide further insights, such as whether car companies inherited this practice from firms in the cycle industry. The use of professional accountants by our sample firms may explain why depreciation was treated as a provision rather than an appropriation of profit, though disagreements amongst contemporary accountants regarding whether repairs and renewals should be treated separately from depreciation, may explain the differences in observed practice. It remains to be investigated using internal company records, whether the presentation of an overall figure reflects confusion or was used as a means of hiding the exact charge for depreciation (and/or trying to boost its apparent size).

Where a separate provision for depreciation was made, as indicated in Table 8, the rates applied to different classes of assets were different and could vary over time. While the cause of such variations is often difficult to pin down from the published accounts alone, there is evidence of some companies operating sophisticated systems by which to determine the annual reduction in asset values. In this respect, Daimler seems to have been as much a pioneer as it was of the British motor vehicle industry. Like its parent company BSA, Daimler may have operated an internal system of annual asset valuations but we find no evidence, either for it or other companies during the study period, of any regular external revaluations being used to check on the efficacy of the depreciation system as urged by contemporaries such as Garcke and Fells (1893), Norton (1900) and Dicksee (1905). There is also no strong evidence of any major impact of company financial structure on

depreciation practices, though the war clearly had a short-term effect in raising the rates used by companies like BSA, possibly reflecting the recognition during the period of operation of EPD of special allowances by the tax authorities, even though the amount of depreciation shown in UK company accounts has never been allowed as a deduction from taxable income. Clearly further research is required into these issues as limitations in the data set used in this study have made it impossible to conduct any meaningful statistical analysis along the lines of that conducted by Carlon and Morris (2003). An extension of the study beyond 1922, into the mass production era for cars, may also yield additional insights, not least whether the changes resulting from the implementation of the Companies Act of 1928 made the net profit figures of firms in the motor vehicle industry more reliable for comparative purposes, as suggested by Maxcy and Silbertson (1959).

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Table 1. Sample companies - key background information.

	Business Founded	Incorporation as Public Co.	Prospectus available	Stock Market listing from	Commencement of Production of Bicycles/ components	Commencement of Production of Motor Vehicles	Location during study period
Albert Eadie Chain Co. Ltd,	1892	1897	Yes	12/1897	1892	–	Redditch (near Birmingham)
Albion Motor Car Co. Ltd.	1889	1914	No	9/1919[1]	–	1900	Glasgow
Austin Motor Co. Ltd.	1905	1914	Yes	1/1915	–	1906	Birmingham
Birmingham Small Arms Co. Ltd.	1854?	1861	No	pre-1/1895	1880	1908	Birmingham
Brampton Brothers Ltd.	1852	1897	Yes	10/1897	c.1885	–	Birmingham
Coventry Chain Co. Ltd.	1896	1907	No	1915[1]	1896	–	Coventry
Daimler Motor Co. Ltd.	1893	1896	Yes	6/1897	–	1896	Coventry
Deasy Motor Car Manufacturing Co. Ltd.	1903	1906	Yes	10/1906	–	1906	Coventry
Dennis Brothers (1913) Ltd.	1885	1913	Yes	8/1913	1885	1895	Guildford
Eadie Manufacturing Co. Ltd.	1892	1897	Yes	11/1895	1892	–	Redditch (near Birmingham)
Humber & Co. Ltd./Humber Ltd.	1868	1887	Yes	11/1887	1868	1896/7	Coventry
Joseph Lucas Ltd.	1860	1897	Yes	11/1897	1878	–	Birmingham
D. Napier & Son Ltd.	1808	1913	Yes	1/1915[1]	–	1900	London
Riley Cycle Co. Ltd./Riley (Coventry) Ltd.	1885	1896	Yes	10/1897	1885	1899	Coventry
Rolls-Royce Ltd.	1884	1906	Yes	3/1907	–	1904	Derby
Rover Cycle Co. Ltd./Rover Co. Ltd.	1878	1896	Yes	12/1896	1878	1904	Coventry
Singer Cycle Co. Ltd./Singer & Co. Ltd.	1875	1896	Yes	11/1897	1888	1905	Coventry
Standard Motor Co. Ltd.	1903	1913?	No	7/1917	–	1903	Coventry
Sunbeam Motor Car Co. Ltd.	1859	1911[2]	Yes	10/1906	1887	1901	Wolverhampton
Triumph Cycle Co. Ltd.	1885	1897	Yes	11/1895	1885	1920s	Coventry
Vauxhall Motors (1914) Ltd.	1907	1914	Yes	2/1915	–	1908	Luton

Notes:

1 First mentions of trades in company's shares on London Stock Exchange in Supplemental List of 'unquoted securities'

2 Company newly formed in January 1905 to purchase the motor car department of John Marston Ltd.; only appears to have gone public in 1911

Sources: The information contained in this table has been assembled from numerous sources, most specifically *the Birmingham Daily Post, The Times* and Grace's Guide (www.gracesguide.co.uk).

Table 2. Booms in company formation, 1892-1915.

Period	Cycles and Motor-Cycles	Motor Cars
	£	£
1892-1895	1,151,000	-
1896-1897	13,091,327	1,502,000
1898-1904	133,500	151,250
1905-1907	62,493	2,714,173
1908-1912	-	447,000
1913-1914	284,000	1,290,421

Source: Adapted from Harrison (1981, 167).

Table 3. Details of share issues, purchase price, etc. of certain companies at initial public offering.

(All monetray values in £)	Year of Flotation	Purchase Price Total	Goodwill	Goodwill as % of purchase price	Mode of payment	Authorised Capital	Shares taken by Vendors	Public Issue at flotation	Vendors shares as % of issued capital	Debentures publicly issued at time of flotation
Albert Eadie Chain	1897	55000	30000	54.5	?C and S	65000	n.k.	?65000	0?	
Austin	1914	399993	228874	57.2	S	650000	400000	250000	61.50	
Brampton	1897	180300	130000	71.0	S	200000	181500	18500	90.75	
Daimler	1896	40000[1]	n.k.		C	100000	0	100000	0.00	
Deasy	1906	19737	22524[2]	114.1	C and S	150000	18737	80000	19.00	
Dennis	1913	235000	102597[3]	43.7	C[9]	300000	100000[9]	200000	66.67	
Eadie Manufacturing	1897	133575	67071[4]	50.2	n.k.	160000	n.k.	160000	0?	
Humber	1887	93500	n.k.		C and D	125000	40000[11]	85000	32.00	
Joseph Lucas	1897	170000	55573	32.7	C and S	225000	100000	100000	50.00	
D. Napier & Son	1913	750000	300000	40.0	C and S	650000	350000	300000	53.85	100000
Riley	1896	38767	17000[5]	43.9	C[10]	50000	15000[10]	16000	48.39	15000
Rolls-Royce	1906	38602	20000	51.8	S and D	200000	30102[12]	100000	28.91	
Rover	1896	180000	124205[6]	69.0	C	150000	47000[13]	103000	31.33	50000
Singer	1896	750000	620752[7]	82.8	C	600000	-	600000	0.00	200000
Triumph	1897	145000	87315[8]	60.2	C and S	130000	43333	86667	33.33	40000
Vauxhall	1914	161248	53700	33.3	C and S	200000	110000[14]	96000	55.00	

Notes:

Mode of Payment (key):	C = Cash; S = Shares; D = Debentures
n.k.	not known
1	Payment to British Motor Syndicate for licence to manufacture under Daimler patents
2	'Goodwill and Patents'
3	'Purchase of Business and Goodwill' (Buildings, Plant & Machinery are separately listed)
4	'Goodwill, Trade Marks, Patents, &c' as per balance sheet for 1897/8
5	'Goodwill and Trade Contracts'
6	'Goodwill, Patents and Registrations'
7	As at December 1898
8	'Goodwill Account, contracts, trade marks, etc.'
9	Vendors paid in cash but £100,000 of issue allotted to directors and friends
10	Vendors paid in cash but take 15,000 shares and to pay for them in cash
11	Vendors received £72,500 in cash and £21,000 in debentures; they and friends to subscribe for and be allotted £40,000 of shares
12	Vendors also received £8,500 of debentures
13	This amount reserved for Starley and other members of the former company; in addition, £30,000 of shares also privately subscribed
14	£66,000 in part payment and £44,000 subscribed by directors
Sources:	Company prospectuses (various newspapers) and early (post-flotation) balance sheets

Table 4. The number of sample accounts and the depiction of depreciation in published balance sheets.

	Sample of Accounts				Depiction of Depreciation in Balance Sheet			
			Number of			In combination	Asset total or	
			Balance Sheets	Additional Statements	Shows separate	with assets sold	profit is net	Not shown or
	Start	Finish			figure(s)	or additions	of depreciation	mentioned
Albert Eadie Chain Co. Ltd,	1897/8	1903/4	7	7	7	-	-	-
Albion Motor Car Co. Ltd.	1915	1921	6	6	0	-	5	1
Austin Motor Co. Ltd.	1913/14	1922	8	1	4	-	1	3[2]
Birmingham Small Arms Co. Ltd.	1897/8	1921/2	24	0	0	-	24	-
Brampton Brothers Ltd.	1898/9	1921/2	24	9	24	-	-	-
Coventry Chain Co. Ltd.	1906/7	1921/2	16	8	9	-	7	-
Daimler Motor Co. Ltd.	1896/7	1908/9	13	13	9	-	3	1
Deasy Motor Car Manufacturing Co. Ltd.	1906/7	1914/15	7	1	5	-	1	1
Dennis Brothers Ltd.	1912/13	1920/1	9	9	9	-	-	-
Eadie Manufacturing Co. Ltd.	1897/8	1905/6	9	9	9	-	-	-
Humber & Co. Ltd./Humber Ltd.	1896/7	1920/1	24	24	24	-	-	-
Joseph Lucas Ltd.	1902/3	1920/1	18	0	6	5	7	-
D. Napier & Son Ltd.	1913/14	1920/1	8	0	0	-	8	-
Riley Cycle Co. Ltd./Riley (Coventry) Ltd.	1896/7	1921/2	24	12	21	-	3	-
Rolls-Royce Ltd.	1906/7	1921/2	14	14	14	-	-	-
Rover Cycle Co. Ltd./Rover Co. Ltd.	1897/8	1921/2	25	25	24	-	1	-
Singer Cycle Co. Ltd./Singer & Co. Ltd.	1895/6	1921/2	22	23[1]	22	-	-	-
Standard Motor Co. Ltd.	1912/13	1921/2	10	9	9	-	1	-
Sunbeam Motor Car Co. Ltd.	1904/5	1920/1	17	11	11	-	6	-
Triumph Cycle Co. Ltd.	1896/7	1921/2	25	25	25	-	-	-
Vauxhall Motors Ltd.	1914	1922	8	8	8	-	-	-
TOTALS			318	214	240	5	67	6
(as % of sample)					75.47	1.57	21.07	1.89

Notes:

1 The first year's accounts cover a two-year period and include two separate profit-and-loss accounts, for the years to 30 September 1896 and 1897 respectively.

2 Not shown in war years

Table 5. Fixed asset categories shown in Balance Sheet.

	Period covered by Balance Sheets	Omnibus	Leasehold Land and Buildings	Freehold Land and Buildings	Plant and Machinery	Fixtures, Fittings and Furniture	Patterns, Drawings, etc.	Jigs and Dies	Tools
Albert Eadie Chain Co. Ltd,	1898-1904	√							
Albion Motor Car Co. Ltd.	1915-21	√							
Austin Motor Co. Ltd.	1914-15		√	√	√		√		
Austin Motor Co. Ltd.	1916-23	√							
Birmingham Small Arms Co. Ltd.	1898-1906		√*		√				
Birmingham Small Arms Co. Ltd.	1908-23	√							
Brampton Brothers Ltd.	1899-1907	√							
Brampton Brothers Ltd.	1908-23		√		√				
Coventry Chain Co. Ltd.	1907			√			√		
Coventry Chain Co. Ltd.	1908			√		√			√
Coventry Chain Co. Ltd.	1909-23			√		√		√	
Daimler Motor Co. Ltd.	1897		√	√	√	√	√		√
Daimler Motor Co. Ltd.	1898		√		√	√	√		√
Daimler Motor Co. Ltd.	1899-1905		√		√	√	√		√
Daimler Motor Co. Ltd.	1906-07		√		√	√	√		
Daimler Motor Co. Ltd.	1908-09		√		√*	√*	√		
Deasy Motor Car Manufacturing Co. Ltd.	1907-10, 13-14		√				√		
Deasy Motor Car Manufacturing Co. Ltd.	1911-12	√							
Dennis Brothers Ltd.	1913-15			√	√	√			
Dennis Brothers Ltd.	1916-21			√		√			
Eadie Manufacturing Co. Ltd.	1898-1906	√							
Humber & Co. Ltd./Humber Ltd.	1897-1903	√							
Humber & Co. Ltd./Humber Ltd.	1904-21		√		√				
Joseph Lucas Ltd.	1903-17			√	√				√*
Joseph Lucas Ltd.	1918-21			√	√*				
D. Napier & Son Ltd.	1914-21		√	√*					
Riley Cycle Co. Ltd./Riley (Coventry) Ltd.	1897-1918		√				√		
Riley Cycle Co. Ltd./Riley (Coventry) Ltd.	1920-22	√							
Rolls-Royce Ltd.	1907-23	√							
Rover Cycle Co. Ltd./Rover Co. Ltd.	1898-1922		√		√*				
Singer Cycle Co. Ltd./Singer & Co. Ltd.	1897-1902	√							
Singer Cycle Co. Ltd./Singer & Co. Ltd.	1904-22		√		√				
Standard Motor Co. Ltd.	1913		√	√	√*		√		
Standard Motor Co. Ltd.	1914-22		√*				√		
Sunbeam Motor Car Co. Ltd.	1905-21			√	√*	√	√		
Triumph Cycle Co. Ltd.	1897-1922		√		√*		√**		
Vauxhall Motors Ltd.	1914-19		√*	√*	√*				
Vauxhall Motors Ltd.	1920		√*	√	√**				
Vauxhall Motors Ltd.	1921		√*	√**					

Notes:

Albion Motor Car Co. Ltd.	1920-21	At cost less depreciation'
Birmingham Small Arms Co. Ltd.	1898-1906	* Two separate categories given are 'Land', and 'Buildings and Fittings'; Tools are included in 'Sundry stores and tools'; also a separate category
Birmingham Small Arms Co. Ltd.	1907-23	Land', 'Buildings & Fittings', 'Engines, Boilers & Machinery', 'Sundry Stores and Tools'
Brampton Brothers Ltd.	1899-1907	Includes Goodwill and Patents
Daimler Motor Co. Ltd.	1898	Also a further category: 'Fire engine and appliances'
Daimler Motor Co. Ltd.	1899-1905	Separate figures given for standard tools and loose tools, and for patterns and drawings
Daimler Motor Co. Ltd.	1906-07	Loose tools' also given separately
Daimler Motor Co. Ltd.	1908-09	*Plant now included with F, F & F; 'Loose Tools' still given separately
Humber & Co. Ltd./Humber Ltd.	1897-1903	*Includes 'Loose Plant'
Humber & Co. Ltd./Humber Ltd.	1904-21	*Includes 'Loose Plant and Tools'
Joseph Lucas Ltd.	1903-17	Includes Goodwill
Joseph Lucas Ltd.	1918-21	Goodwill, Trade Marks, Patents, etc.' given as a spearate category
D. Napier & Son Ltd.	1914-21	*Includes 'Tools'; note also that two separate leasehold premises are listed
Rolls-Royce Ltd.	1907-23	Includes Goodwill
Rover Cycle Co. Ltd./Rover Co. Ltd.	1898-1922	*Includes 'Tools'
Singer Cycle Co. Ltd./Singer & Co. Ltd.	1897-1902	Includes Patents, Trade Marks and Goodwill
Singer Cycle Co. Ltd./Singer & Co. Ltd.	1904-22	Patents and Trade Marks' and 'Goodwill' listed separately
Standard Motor Co. Ltd.	1913	*Includes 'Tools'
Standard Motor Co. Ltd.	1914-22	*Separate figures given 1920-22
Sunbeam Motor Car Co. Ltd.	1905-21	*Includes Tools
Triumph Cycle Co. Ltd.	1897-1922	*Includes Tools; **Includes Patents
Vauxhall Motors Ltd.	1914-19	*Property only'; Buildings, Tools and Goodwill included with Plant & Machinery
Vauxhall Motors Ltd.	1920-21	*Property only; **Includes 'Tools'

Table 6. Details presented in additional statements.

		CREDIT						DEBIT							
	P&L A/c	Revenue A/c	I&E A/c	Gross/ Trading Profit	Net Profit	Balance from P&L A/c	Interest/ Dividends Rceived	Transfer Fees	General Expenses	Mgmt. expenses and Directors' Fees	Maintenance of Buildings, Plant, etc.	Depreciation	Debenture and Mortgage Interest	Income Tax	Transfers to Reserves (including bad debts)	Proposed Dividend
Albert Eadie Chain Co. Ltd,	√			√				√		√	√			√	√	
Albion Motor Car Co. Ltd.	√				√*				√						√	
Austin Motor Co. Ltd.	*			√			√			√	√	√	√			
Birmingham Small Arms Co. Ltd.	NO															
Brampton Brothers Ltd.	√			√			√	√		√	√				√	
Coventry Chain Co. Ltd.	√*			√				√				√	√	√		
Daimler Motor Co. Ltd.	√			√			√	√		√		√	√	√		
Deasy Motor Car Manufacturing Co. Ltd.	√*															
Dennis Brothers Ltd.	√			√			√	√		√		√			√	
Eadie Manufacturing Co. Ltd.	√			√			√	√		√		√	√	√	√	
Humber & Co. Ltd./Humber Ltd.	√			√			√	√		√		√	√			
Joseph Lucas Ltd.	NO															
D. Napier & Son Ltd.	NO															
Riley Cycle Co. Ltd./Riley (Coventry) Ltd.		√*				√				√		√	√			
Rolls-Royce Ltd.	√*				√			√		√					√	√
Rover Cycle Co. Ltd./Rover Co. Ltd.			√	√				√		√	√		√	√		
Singer Cycle Co. Ltd./Singer & Co. Ltd.	√			√			√	√		√		√		√	√	
Standard Motor Co. Ltd.	√			√				√			√					
Sunbeam Motor Car Co. Ltd.	√			√			√	√		√	√	√	√			
Triumph Cycle Co. Ltd.	√			√				√		√		√		√	√	
Vauxhall Motors Ltd.	√									√		√	√	√		

Abbreviations used:
P&L - Profit-and-Loss Account
I&E - Income-and-Expenditure Account

Notes:
The table does not record every change, rather it focuses on the major items listed over the study period.

Albion Motor Car Co. Ltd.	*After depreciation, management expenses, and provisions for Munitions of War & Finance Acts
Austin Motor Co. Ltd.	*Only introduced in 1922
Coventry Chain Co. Ltd.	*First appears in 1914/15
Daimler Motor Co. Ltd.	The profit-and-loss account is very detailed to 1905 inclusive; thereafter less so
Deasy Motor Car Manufacturing Co. Ltd.	*1907/08 only
Riley Cycle Co. Ltd./Riley (Coventry) Ltd.	*1898/9-1909/10 only
Rolls-Royce Ltd.	*Referred to as 'Profit & Loss Appropriation Account'
Standard Motor Co. Ltd.	P&L accounts only start in 1913/14
Sunbeam Motor Car Co. Ltd.	No profit-and-loss account published after 1914/15

Table 7. Draft income tax returns, BSA, 1900/1-1903/4.

Tax year	Accounting Year	Taxable Profit (£)	Accounting Profit (£)	Depreciation (£)	Balance Sheet Profit Figure (£)
1900/1	1899	63,760	56,432	9,444	51,894
1901/2	1900	72,706	58,158	13,623	54,777
1902/3	1901	103,424	88,288	13,668	85,500
1903/4	1902	127,590	95,416	25,355	93,049

Sources: MRC, MSS.19A/2/38/71-73, 75, 77, 79, 81.

Note: Accounting profit as per profit-and-loss account.

Table 8. Depreciation rates (per cent) for main asset classes.

	Land and Buildings						Plant and Machinery										
	Coventry Chain	Daimler	Riley	Standard	Sunbeam	Triumph	Brampton Brothers	Coventry Chain	Daimler	Humber	Joseph Lucas	Riley	Rover	Singer	Standard	Sunbeam	Triumph
1897						2.4											12.3
1898		2.5				2.9			5.0								9.5
1899			2.3			3.0			5.0			4.9	6.1				12.4
1900			2.5			2.9			5.0			5.2	6.4				12.2
1901			1.7			3.1			5.0			5.1	5.7				15.1
1902						3.0			5.0			6.2	5.1				14.8
1903			1.6			4.1			5.8			6.3	7.6				16.1
1904			1.6			3.6			5.0		5.0	5.6	4.7				16.2
1905						3.5			10.0			5.0	5.0	10.4		7.5	19.3
1906						3.4					5.0	5.0	5.1	15.2		7.5	21.5
1907					2.5	3.8			12.5			5.1	5.4	10.8		7.5	26.2
1908						4.4	5.7				5.0	5.6	5.5				31.4
1909						7.5	5.4		10.0		5.0	5.4	18.0				32.6
1910		1.1				6.5	5.5				5.0	5.8	25.2				39.3
1911						13.0	5.4					7.1	18.3	7.2			48.6
1912						12.8	5.4			7.2		7.5	28.1	7.2			57.3
1913						13.2	5.4			9.2		10.0	24.5	7.2			52.0
1914				7.9		11.1	5.3			7.7		7.5	26.5	8.2	27.8		42.3
1915	2.1	2.5		7.6		8.4	5.4	9.6	12.5	10.5		7.5	30.2	8.4	21.6		32.0
1916	3.0			13.3			5.0	23.1		41.3			35.1	18.1	46.2		
1917	2.9	5.0		20.2		11.2	5.0	32.5	25.0	15.1			38.8	17.4	57.8		60.8
1918	3.1	5.0		17.8		6.2	10.0	23.8	25.0	20.9			38.1	17.5	92.4		25.3
1919	3.2			7.7		5.3	10.0	28.6		20.7			26.7	10.0	38.7		44.3
1920	3.1					6.5	10.0	17.1		10.4			48.1	10.0	28.2		25.4
1921	3.1			5.2		1.4	10.0	14.4		11.2			50.9	10.0	23.3		11.6
1922	3.1			5.5		2.0	10.0	10.8					23.9	3.8	25.5		7.8

Definitions used

Land and Buildings:

Coventry Chain - Freehold Land & Buildings

Daimler - 1898 - Leasehold Land & Buildings; 1915 on - Freehold Buildings

Riley - Freehold and leasehold works

Standard - Property

Sunbeam - Freehold Land and buildings

Triumph - Freehold and Leasehold Property

Plant and Machinery:

Brampton - Plant, Machinery and Tools

Coventry Chain - Plant, Machinery, Fixtures, Fittings, etc.

Daimler - 1898-1905 - Plant & Machinery; 1915-1918 - Plant, Machinery, Furniture & Fixings

Humber - Plant, Tools, Fittings, etc.

Joseph Lucas - Fixed Plant & Machinery

Riley - Fixed Plant and Machinery, Tools, Office Furniture, Fittings, etc.; later Plant, Machinery, etc.

Rover - 1899-1908, depreciation of Plant, Machinery, Tools, etc.; 1909 onwards - Maintenance and depreciation of Plant, Machinery, Tools, Patterns, Drawings & Furniture

Singer - 1905-1907 includes depreciation of freehold property and intangibles; 1911-1914 simply decribed as 'Depreciatio 1915 onwards - Plant, Machinery, Fittings and Furniture

Standard - Various definitions but later ones include jigs, dies, patterns, etc.

Sunbeam - Plant, Tools & Machinery

Triumph - Plant, Machinery, Loose Tools and Fixtures & Fittings

Note:

Daimler figures after 1906 derived from archival sources; all other figures derived from published accounts

Table 9. Depreciation rates (per cent), Daimler, 1898-1905.

	1898	1899	1900	1901	1902	1903	1904	1905
Furniture, Fixtures & Fittings	10	5	5	5	5.2	15	15	33.3
Standard Tools	-	10	10	10	10.5	21.1	16.67	35.9
Patterns	-	10	10	42.2	15	40	40	100
Drawings	-	10	10	32.9	25	41.3	40	50

Sources*:* Published Accounts: 1898-1904 - The Daimler Motor Co. Ltd.; 1905 - The Daimler Motor Co. (1904) Ltd.

Notes

[1] The companies in each 'year' sample were not necessarily identical.
[2] For the 1920-1950 period, Arnold and Matthews (2002, 5) identify five issues of financial disclosure widely discussed in the literature: accounting for fixed assets and the associated issue of depreciation; the forms of accounting for investments in other companies; the use of omnibus headings for large groups of assets; secret reserve accounting; and the treatment of taxation.
[3] Unless otherwise indicated, the information contained in this section is based on material contained in Thoms and Donnelly (1985, Introduction and Chapters One and Two). For further details regarding the origins of the British cycle industry and related industries see Harrison (1977; 1981; 1985).
[4] Starley's activities led ultimately to the formation of The Rover Cycle Co. Ltd. which subsequently went on to become a major motor car manufacturer.
[5] For further details of their involvement in the 1896-97 boom and those of the early 1900s, see Cottrell (1980, 173-176).
[6] The bulk of its output comprised the assembly of cars imported in kit form from the USA.
[7] Internal records show that between 1910 and 1914 inclusive, Daimler produced an annual average of 1596 cars (CA, PA594/2/1/2/28, f.5).
[8] The prime example here was Austin, which was forced into receivership in 1921 before being bailed out by financial institutions and going on to become a major player in the industry (Church 1979).
[9] Arnold (1997) uses both published and internal records, revealing the importance of the latter as a source of more detailed information for some companies, including BSA.
[10] Amongst companies formed at the beginning of our sample period, other intangibles mentioned were patents, trademarks, licences, etc.
[11] Promoted by E.T. Hooley and floated in 1896, Singer was one of those over-capitalised firms singled out by *The Economist* for the 'absurd amounts to the credit of goodwill' which appeared in its balance sheets. It reported that, at the company's 1898 AGM it was revealed that 'of £680,629 standing to the credit of freehold and leasehold properties, plant, machinery, patents, trade-marks and goodwill, no less that £620,752 represented goodwill' (*The Economist* 10 December 1898, 1761).
[12] The purchase price of £19,737 represented the amount the five individuals holding 14,990 of the 14,997 shares in H.H.P. Deasy & Co. Ltd. were prepared to accept for the business (*The Times* 22 February 1906, 13), which was still developing its vehicle, only commencing the supply of cars to the public in the summer of 1907.
[13] Coventry Chain is one of those companies for which it has been impossible to locate a copy of the 1907 IPO prospectus, though a copy of the 1915 prospectus has been examined.
[14] Prior to this, between 1898 and 1919, BSA had only resorted to loan financing during the three-year period 1906-1908, when a mortgage for £50,000 was obtained in conjunction with the purchase of the Sparkbrook small arms factory.
[15] In some cases, there were changes in the name of the auditing practice, due to changes in partnership arrangements or, for example, when Chas. Baker & Co. merged with Thomson McLintock & Co. in 1921/2, the latter replacing the former at the very end of the study period as the named auditors for three companies in our sample (Coventry Chain, Standard, and Triumph).
[16] Eadie Manufacturing, as previously noted, was absorbed by BSA in 1907, while Albert Eadie Chain Co. became Ecco Works Ltd. at the end of 1904, before merging with Abingdon Works Ltd. in 1906 to form Abingdon Ecco Ltd.
[17] Matheson's book, *The Depreciation of Factories*, was based on a series of articles published in *The Engineer* in 1883.
[18] In Napier's accounts for 1920-21, for the first time fixed assets were presented 'at cost, *less* Depreciation'.
[19] In its 1914 report, Austin's directors used the term 'appropriation' while in 1913-14 Napier's referred to depreciation as 'an allocation'. In its 1897/8 report, Riley's directors referred to the sum 'absorbed' by depreciation. Subsequently, depreciation was treated as a deduction in the profit-and-loss statement.
[20] In the foreword to a recent report on the subject of depreciation or capital allowances, published by the Office of Tax Simplification, it is stated that, if a new system was being designed from scratch, the former might make 'eminent sense', but rejected a move away from capital allowances on the grounds that the costs would outweigh the benefits (OTS 2018, 2).

[21] A note added to the draft return for 1901-02 indicates that the company intended to deduct £8600 from its return of taxable profit, even though plant and machinery only stood in the company's books at a value of £156,685.

[22] In an editorial in *The Accountant* on 15 November 1884, Matheson (1884) was criticised for not providing exact rates for different classes of plant to which he responded (3 January 1885) to the effect that to try to provide exact rates 'would be more likely to mislead than inform', considering fixed rules to be 'impossible, and examples, if offered for imitation, dangerous'. Indeed, he considered that there were 'about ten variables [that] are relevant to the determination of the proper rate of depreciation' (quoted in Brief 2020, 134).

[23] This convention was criticised by Matheson who felt that it needed to be recognised that the value of land could depreciate as, for example, in the case where a factory built on a specific piece of land was rendered obsolete and had no alternative use, thereby reducing the value of the land itself since the factory would need to be cleared away before the land could be used for any other purpose (comment on Hammond 1907, 288).

[24] It is interesting to note that in the issue prospectus associated with the conversion of Dennis Brothers to a public company, it was stated that the profits of the former private company for 1910-12 were given without any allowance having been made for the depreciation of buildings since it had been considered that 'the Freehold Land on which the Buildings have been erected has appreciated to an extent equal to any Depreciation on the Buildings themselves', a view that was echoed in the external valuation carried out by Messrs. Alex H. Turner and Co. (*The Times*, 10 March 1913, 17).

[25] Norton in the context of a textile business, suggested the following rates (1900, 236):

Warehouses, offices and cottages	2½ per cent - 4 per cent
Mill Buildings, exclusive of motive plant	2½ per cent - 5 per cent
Motive Plant	5 per cent - 7½ per cent
Plant & Machinery	5 per cent - 10 per cent
Furniture & Fixtures	7½ - 10 per cent

These rates assumed that all assets, especially machinery, were kept in efficient repair and that normal operating conditions pertained, Norton recognising that they may need to be varied in line with changes in economic conditions.

[26] In this context, it is interesting to note that Matheson (1884, v-vi) considered the determination of the appropriate rates to be charged to be a role for 'those technically acquainted with the operations of manufacture', i.e. engineers or valuers, the role of accountants being simply to allot the sums so determined to Capital and Revenue. Edwards (2019a, 291-295) notes that it was the engineer Armstrong who determined the depreciation rates used by the Staveley Coal and Iron Co. in most of the years up to 1877.

[27] The first British motor show was held in 1896, but it was in 1903 that the Society of Motor Manufacturers and Traders held the first of its annual shows.

[28] Internal balance sheets indicate that this practice continued after Daimler became a private company following its acquisition by BSA in late 1910.

[29] As the motor car industry developed, what had initially formed *The Economist*'s annual review of the results of cycle companies in turn became a review of motor and cycle companies and, eventually, of motor manufacturing companies. Some, but not all, of the companies analysed in the review remained the same as they evolved from cycle manufacture, through making motorcycles to manufacturing cars.

[30] BSA's balance sheet at 31 July 1919 shows 'Freehold Land and Buildings, Plant, Machinery and Tools at Small Heath, Sparkbrook and Redditch' at £1,353,231, the figure rising to £3,100,096 as at 31 January 1921.

[31] No reference is made to this revaluation in the directors' report for 1920-21, the balance sheet figure of £240,226 being given as 'at cost, *less* Depreciation', suggesting depreciation for the year of £12,869 or 5.1 per cent.

[32] While companies often wrote off the expenses of share or loan capital issues to profits in the year of issue, no examples of the immediate write-off of capital expenditure have been found in the published accounts examined. However, in the abridged prospectus for Vauxhall (*The Times* 18 May 1914, 19), it was noted by the company's auditors that the fall in profit indicated between 1911 and 1912, when it was a private company, was 'due to the payment out of revenue of the expenses involved in reorganizing the Works'.

[33] The accounts of the 21 sample companies were audited by 18 different firms of chartered accountants, three of which, all based in Birmingham, audited two of the sample companies: Agar, Bates & Co. (Albert Eadie

Chain and Eadie Manufacturing); Charles Baker & Co. (Coventry Chain and Triumph); and Carter & Co. (Austin and BSA).

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