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The Importance of Company and Asset Characteristics in the Use of Leasing Finance in the United Kingdom: An Investigation

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Abstract

This study investigates the corporate use of leasing in the UK, incorporating into the analysis advances in capital structure theory. Prior to the mid-1990s, research in the area largely adopted the approach set out by Modigliani and Miller [1963], the assumption being the validity of perfect capital markets with the existence of corporate taxes. Such an approach underlay the influential leasing models of Myers, Dill and Bautista [1976] and the tax-based rationales for long-term leasing finance.

This analysis was developed on two main fronts: by utilising more comprehensive measures for the firm's tax liability; and, more fundamentally, by looking at issues arising from the environment in which leasing operates, in particular focusing on company and asset characteristics as determinants of the decision to use finance and operating leases.

A core sample of non-financial companies taken from the FT-All Share Index for the period 1993-5 was used, together with a smaller sample of companies recording operating lease commitments and, via a series of univariate and multivariate analyses, utilised a number of variables proxying for asset and firm characteristics.

The results highlight the multifaceted nature of the leasing decision in the UK today and are a reflection of the changing fiscal and legislative environment in which leasing operates. The traditional tax-based hypothesis of the use of finance leases was only marginally supported. The study also confirmed the substitutional relationship between finance leases and corporate debt finance. Finally, firm and asset characteristics such as the size, liquidity and profitability of a company, were also shown to be influential determinants of the use of finance leases. The use of operating leases, meanwhile appeared not to be influenced by a company's use of debt finance, nor of the lessee's tax position, appearing instead to be inversely related to size and liquidity.

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1. Introduction

1. Overview

The objective of this chapter is to set out the motivation for the study of the corporate use of leasing finance in the United Kingdom (UK), including a brief overview of the present state of the literature. In so doing I aim to introduce the reader to the key issues arising from the subject as well to place leasing in the wider context of our general understanding of corporate funding. This is followed by an introduction to some of the main terms and definitions related to leasing finance that will be analysed in greater depth in subsequent chapters. The final part of this introductory chapter provides an outline of the historical development of equipment leasing in the UK, together with an analysis of the major factors behind its growth in becoming an important component in the funding of UK equipment investment that it is today.

2. Rationale for the study

The principal motivation behind the present study, in common with the increasing number of published articles in the later 1990s by academics in both the USA and UK,[1] has been the desire to gain a broader understanding of the leasing decision, whilst also placing it in the wider context of research taking place in the field of capital structure. Placed in this context, leasing may be understood as just one of a number of forms of asset financing. That leasing is an important source of finance in the acquisition and use of capital equipment is confirmed by the fact that it has accounted for more than 15 per cent of total investment in capital equipment every year since 1984.[2]

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[1] In particular the research undertaken by Adedeji and Stapleton [1996], Adams and Hardwick [1998], Lasfer and Levis [1999] and Beattie, Goodacre and Thomson [2000] in the UK and Krishnan and Moyer [1994], Sharpe and Nguyen [1995] and Graham, Lemmon and Schallheim [1998] in the USA.
[2] See Table 1.1 for details.

As will be clear from the review of the literature in Chapter 3, until recently the standard approach to analysing leasing was to adopt the analysis formulated by Modigliani and Miller [1963]. This approach assumed that corporate financing decisions take place in a world of perfectly competitive capital markets with corporate taxation. Leasing is perceived in models developed in the 1970s[3] to also operate in such a scenario. However, as discussed in Chapter 3 sections 2 and 3, if both lessor and lessee are in a similar tax bracket it poses difficulties in understanding the growth of leasing over the last 30 years under these assumptions.

Research undertaken from the late 1980s has therefore sought to advance this investigation along similar lines as occurred within the broader analysis on capital structure by looking at the influence of market imperfections or asymmetries. Studies have therefore focused on the influence of bankruptcy potential and theories of agency and contracting. The aim of this study is to provide a broad synthesis of this work in relation to the use of finance and operating leases by UK non-financial companies, focusing on both similarities and differences between this work and previous (mainly US) studies in order to gain a broader and deeper understanding of the possible factors influencing the leasing decision in the UK today. Furthermore, in utilising data on annual operating lease commitments, I am attempting to provide a comprehensive analysis of the issue, highlighting the implications for policy makers and commercial practitioners.

Unsurprisingly, the decision to use finance and operating leases in practice is influenced by a broad range of firm- and asset-specific factors. What is also interesting, in light of previous work in the US and UK, is the fact that different factors influence a firm's use of finance leases from its use of operating leases. Companies seem to view finance and operating leasing differently, a fact that should be considered by policy makers in the UK, particularly in light of the rapid pace of change to the legislative and fiscal environment in recent years.

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[3] In particular, those developed by Myers, Dill and Bautista [1976], Lewellen, Long and McConnell [1976] and Miller and Upton [1976].

Before analysing the main UK institutional background, in terms of the legal, tax and accounting treatment of leases, the following two sections detail the main definitions of leasing before providing an overview of the historical development of leasing finance in the UK.

3. Definitions

Leasing finance, as we shall see, takes a number of forms, and these forms in turn are viewed as distinct types by both academics and practitioners. It is therefore desirable at this stage to set out a number of definitions, beginning with the definition of a lease itself. The main trade association concerned with equipment leasing in the UK, the Finance and Leasing Association (FLA), defines a lease as:

> '... a contract between a lessor and a lessee for the hire of specific assets selected from a manufacturer or vendor of such assets by the lessee. The lessor retains ownership of the asset. The lessee has possession and use of the asset on payment of specified rentals over a period.'[4]

To form a basic understanding of the lease transaction it is useful to consider the financial implications of such a transaction together with a comparison with a typical loan and repayment arrangement. Let us assume a situation where there are two companies, one a financial institution (Company A), the other a manufacturing firm (Company B). In a loan and repayment arrangement Company A lends Company B funds to purchase an asset. Company B, as the owner and user of the asset, claims any depreciation allowances arising from the asset plus corporate tax relief[5] on the loan interest payments. In a lease transaction Company A (the lessor), as owner of the asset, claims the depreciation allowances applying to the asset, whereas Company B (the lessee) uses the asset and claims Corporation Tax relief on the lease payments. Both deals have the same net effect; Company B acquires the use

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[4] Sowler, ICAEW [1996] Chapter 10, p. 3.
[5] Termed Corporation Tax in the UK.

of an asset for which Company A has provided the funding. The only difference relates to where the ownership of the asset lies.

In broad terms there are three types of contracts that entitle the equipment user to have use of an asset: i) finance lease; ii) operating lease; and iii) hire purchase or instalment sale contracts. Definitions of each type are the focus of the following paragraphs.

A finance lease is defined by the Finance and Leasing Association as:

> 'A contract involving payment over an obligatory period of specified sums sufficient in total to amortise the capital outlay of the lessor and give some profit.'[6]

The FLA in this definition stresses the role of the lessor as financier; the details of choosing the asset, organising purchase and delivery of the asset often rests with the lessee acting as agent for the lessor. The lessee of a finance lease will treat the leased asset in practical terms in much the same way as it would an owned asset; it would, for example, usually be responsible for the repair and maintenance of the asset.

The essential feature of operating leases is that they are often for a relatively short period in the life of a particular asset as, for example, when a company hires specialist equipment for a few weeks to perform a particular operation. The lessor may lease the same asset for many short periods to different lessees during its economically useful life and accordingly, the hire charge reflects the full use value of the equipment. The lessor may provide servicing facilities such as repairs and maintenance for the machinery or plant and may also insure it, covering the cost of doing so from subsequent hire agreements. Investments in so-called short-life assets,

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[6] *Op cit.* p. 5.

such as sophisticated electronic equipment subject to rapid technological obsolescence, often take the form of operating leases.

Under a hire purchase agreement the user has the option to acquire the legal title to the asset upon the fulfilment of the conditions stated in the contract. Such an agreement can be distinguished from other leasing contracts on both legal and tax grounds. Legally, it can be contrasted with a lease contract under which at no time does legal title of the asset pass to the lessee. Under UK tax law, a hire purchase contract will enable the lessee, and not the lessor (as is the case in a leasing agreement), to obtain the relevant capital allowances on the capital cost of the equipment. The capital allowances should be available to the lessee in full as long as it shall be, or may become, the owner.[7]

The definitions of the above types of leasing arrangements provided by the accounting standard relating to leases will be detailed in Chapter 2. Before that however, a brief historical overview of the rapid growth of the leasing industry in the UK is presented. The focus is on the various stages of this growth, how this growth mirrored similar developments in other countries and on the specific reasons behind this growth in the UK.

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[7] The UK taxation system and its impact on leasing is outlined in Chapter 2 Part C.

4. The Historical Development of Leasing

In this section, the growth of leasing from the earliest recorded contracts to the present day will be presented. The various stages of this growth will be outlined, together with the main factors underlying this growth. The leasing of land, animals and commercial property has been recorded as early as 3000 BC, however the leasing of moveable property only came into being comparatively recently, there being little capital equipment to supplement the use of human labour. In the Middle Ages, the leasing of land and buildings became popular in Europe due to the rigid land laws and restrictions on inheriting freehold property. During this period, equipment leasing in the British Isles grew out of the traditional leasing of land and buildings: the first statutory reference to equipment leasing was contained in the Statute of Wales in 1284.[8] As with all contractual arrangements, the essential condition for leasing agreements is commercial confidence in a legal system that can guarantee the lessor's entitlement to a rental income and the ultimate return of the assets held by the lessee.

Equipment leasing in its modern form occurred in Britain as a result of the start of the industrial revolution in the late eighteenth century and the gradual increase in the size of firms (and thus their capital requirements). By the mid-nineteenth century equipment leasing was particularly prevalent in the coal industry and in the leasing of rolling stock for use on the newly constructed railway network. Leasing companies, known as wagon companies, were among the first to be incorporated and take advantage of the general introduction of limited liability status in 1856. The world's first registered leasing company was the Birmingham Wagon Co., which leased railway wagons to coal and other mineral proprietors for fixed terms of between five and eight years. Eventually, limited liability allowed the railway and mining companies to expand their capital base and thus to acquire rolling stock on their own account. The wagon finance companies retained their role as asset-based financiers, but from the late 1860s their focus was switched towards hire

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[8] Soper et al. [1993] pp. 13-14.

purchase and, later, towards consumer hire purchase, particularly in the immediate post-Second World War period.

It was not until the early 1960s, therefore, that the beginnings of the modern UK leasing industry began to evolve with the formation of a number of leasing companies as subsidiaries of finance houses and banks. One of the major growth areas of this time was the leasing of office equipment, especially computers, which typically consisted of short-term operating lease contracts designed to offset the risk of technological obsolescence. Such leasing facilities enabled the nascent leasing industry to grow rapidly throughout the decade, although it was still small in relation to the overall UK economy.[9]

The level of leasing activity increased rapidly from the early 1970s and developed mainly as a form of asset financing, competing against other forms of asset finance so that, by 1980, the proportion of UK equipment investment funded by leasing finance was 11.6 per cent.[10] This development in the UK market followed the experience of the US and Australian leasing sector. However, this growth was stimulated by a number of factors that have become less important today.

The first factor was the introduction of a system of capital allowances that operated throughout the period from 1972 to 1984, with 100 per cent First-Year Allowances (FYAs) for investment in plant and machinery replacing the earlier system of investment grants. The new system meant that companies purchasing new plant and machinery, including leasing companies acquiring equipment for use in the trade of leasing, were allowed to claim the full cost of the asset against their taxable income in the first year of acquisition. The fact that all companies, leasing and non-leasing, could claim the first-year allowances on their capital expenditure implied

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[9] The total book value of equipment held on lease by UK finance houses and merchant banks has been estimated to have increased from £56 million in 1965 to £165 million in 1969. See *ibid.*, p. 18 and footnote 1, p. 28.

[10] See Table 1.1 below. The value of lease contracts taken out by FLA members rose sharply from £421m in 1976 to over £2,350m by 1980: See Soper et al. [1993] Table 3.1 p. 10 and Boobyer [1997] Exhibit 3.1 p. 36.

that the system was, on the whole, neutral. Thus it was, by itself, insufficient to explain the rapid increase in leasing activity during this period.

In practice, however, the system of capital allowances favoured the development of leasing by financial sector companies due to a lack of taxable capacity (i.e. the availability of sufficient taxable income against which allowances could be utilised) among industrial and commercial companies. The major factor behind this situation was the depressed level of profitability among UK non-financial companies in the 1970s due to the increase in foreign competition and the downturn in the world economy after 1973.[11] This resulted in their tax allowances exceeding their taxable income, a situation known as 'tax exhaustion'.

It was the combination of these two factors, together with the high corporate tax rates prevailing at the time, that the incentive of capital allowances available to businesses to invest in new assets was reduced. This is because it was precisely those businesses that did not earn enough profits to benefit from the incentive being offered. The banking sector, which counted a number of leasing companies and finance houses among its subsidiaries,[12] had not suffered a decline in profitability to the same extent as the manufacturing sector and was also not itself a major investor of plant and machinery qualifying for 100 per cent first-year allowances. It therefore had the taxable capacity that industrial and commercial companies lacked.

As outlined in general terms in the previous section, the leasing arrangement thus brokered meant that businesses with taxable income (e.g. a commercial bank) purchased an asset, transferred the right to use the asset (but not the legal ownership) to a tax exhausted company and charged periodic lease payments. Hence, the lessee/lessor arrangement could claim the capital allowance incentive, with the

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[11] UK gross domestic product contracted in 1974 and 1975 by 1.7 and 0.6 per cent, respectively. Source: Office for National Statistics [2001].

[12] Many of the early leasing companies were independent companies linked to the industry in which they leased equipment. The 1960s witnessed the birth of leasing companies set up as subsidiaries of banks and finance houses. Many of the finance houses were themselves, or would later become, subsidiaries of the banks.

allowance passed on to the lessee in the form of reduced lease rental payments, whereas a traditional loan and repayment scheme could not. In this way, the 'tax exhausted' business had in effect sold its capital allowance tax shield to the business with taxable income.

Another feature of the tax system at this time which also favoured leasing (that has outlived the system of first-year allowances but which had a more favourable impact throughout their existence) was the use of timing advantages under corporation group relief. Group relief will be looked at more fully in Chapter 2 Part C section 5.2. However, in essence it meant that financial companies were able to construct corporate structures consisting of individual companies each having different accounting year-ends. Equipment to be leased could be purchased by a group company close to its accounting year-end, thereby accelerating the date when the benefit of capital allowances could be obtained. Even if the lessee company had sufficient taxable profits and was itself part of a complex corporate group, it was prohibited under the tax system to assign the equipment to a company other than the one making use of it. However, the lessor, being in the trade of leasing, could arrange for any one of a number of leasing companies within its group to purchase the leased asset. With inflation and borrowing rates in double figures for much of the 1970s and early 1980s,[13] the timing advantage of accelerating the benefit of capital allowances by a few months could be significant.

It was not only taxation factors that provided the driving force behind the growth in leasing, however. Prior to 1984 there was, in addition, the attraction of leasing as a form of 'off-balance sheet' financing in which companies were not obliged to show leased assets and lease payment obligations on their balance sheet. (This is covered in more depth in Chapter 2 Part A section 1.1). Suffice it to say here

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[13] Except for a 15-month period at the end of the 1970s, the retail price index remained above 10 per cent between November 1973 and March 1982, peaking at 26.9 per cent in August 1975 and 21.9 per cent in May 1980. Source: Office for National Statistics [2001]. The Minimum Lending Rate (as the Base Rate was then called) followed a similar course, remaining above 10 per cent in the period 1973-77, peaking at 15 per cent in October 1976, and was greater than 10 per cent for the four years from mid-1978, peaking at 17 per cent in November 1979. Source: Bank of England [2001].

that the awareness of this off-balance sheet characteristic was gradually recognised by manufacturing companies and was actively promoted by some leasing companies.

By the early 1980s therefore, leasing finance formed an important part of UK investment in equipment largely as a result of what one could call arbitrary factors.[14] This situation was redressed in 1984, which saw the introduction of an accounting standard dealing with leasing (discussed in Chapter 2) which addressed, among other things, the off-balance sheet characteristics of leasing. In the same year changes were made to the system of corporation tax, chiefly that the level of corporation tax was reduced gradually from 50 per cent in 1984 to 35 per cent in 1986. In addition, the system of capital allowances was radically changed with first year allowances being phased out over the same three-year period to be replaced by a system of annual Writing Down Allowances (WDAs) of 25 per cent, calculated on the reducing balance method.

It was widely felt in the industry that the changes introduced in 1984, particularly in relation to the system of corporation tax, would have a detrimental effect upon the equipment leasing industry.[15] However, as is detailed in Table 1.1, the late 1980s witnessed instead a rapid increase in the level of leasing activity with the volume of leasing almost doubling in real terms between 1984 and 1990. The proportion of UK equipment investment funded by finance leases increased from 12.6 per cent in 1983 to 20.3 per cent in 1990,[16] outpacing both the growth rate of the booming UK economy and the increase in overall investment in these years, mirroring the growth in equipment leasing penetration in the USA.

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[14] It is worth noting that the growth in equipment leasing slowed dramatically in the period 1980-83. However, although the real volume of new business remained constant, it increased slightly as a proportion of total UK equipment investment (see Table 1.1 and Soper et al. [1993] Table 3.1 p. 10). This was largely due to the impact of the recession in this period, particularly within the UK manufacturing sector and also to the fact that the lessors of finance themselves (by this stage mainly consisting of the clearing banks) were close to a position of tax exhaustion.

[15] A survey of UK financial managers conducted in the late 1980s by Drury and Braund [1990] p. 188 revealed that a net 51 per cent of large companies (defined as companies having annual sales greater than £500m) intended to decrease their leasing activity as a result of the changes in capital allowances, although this was not reflected in the response of smaller firms.

[16] Excluding leases with purchase options. See also Soper et al. [1993], Table 3.1, p. 10.

Table 1.1 A Comparison of the Rate of Equipment Leasing Market Penetration in the UK and USA

Year	UK	USA	Year	UK	USA
1978	8.0	15.6	1987	17.5	31.5
1980	11.6	17.4	1988	20.2	32.3
1981	13.3	20.1	1990	20.3	32.0
1983	12.6	22.0	1992	18.6	32.3
1984	15.2	22.7	1994	15.8	28.7
1985	19.4	27.1	1995	17.9	28.0
1986	18.3	28.7			

Source: Abridged form of that reported in Boobyer [1997] Exhibit 1.4 p. 8

The leasing industry reacted to the changing environment in two main ways. Firstly, leasing companies saw their margins on new business decrease rapidly, indicating that a premium for the use of tax capacity was no longer being charged.[17] This can be seen by the significant reduction in their lease lending rates, particularly in 1984, to below those charged for bank loans as the market became more competitive.[18] Secondly, the leasing industry itself changed as new entrants have entered the market and competition among lessors has intensified. Small ticket leasing (leasing of assets up to ca. £50,000) has assumed greater importance as it was never tax-sensitive and is sold as an alternative to other forms of finance. The medium- to large-ticket leasing sector (assets over £20 million) - which remains tax-sensitive - has also continued to grow, largely as a result of competition among lessors driving down lease rates and also to the continued existence of the tax timing advantages mentioned earlier.

As the economy went into recession in the early 1990s, there was a sharp fall in both leasing activity (from £10,000m in 1990 to approximately £8,000m in the

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[17] See Boobyer [1997] Exhibit 3.2 p.37 for an overview of the decline in margins after 1976.
[18] See Soper et al, Table 5.1, p. 26 for a comparison between average leasing rates and average bank base rates over the period 1982-1991.

period 1992-94[19]) and in its share of capital investment (see Table 1.1). With the growth in the economy after 1993, the leasing industry resumed its growth and levels of market penetration, the value of leasing growing to $15,820m in 1995 and an estimated $17,400m in 1996 (see Table 1.2).[20]

Table 1.2 Volume, Growth and Market Penetration 1995 (ranked by volume)

Rank	Country	Annual volume (US$bn)	Growth 1994-95 (in %)	Market penetration (in %)
1	USA	160.70	14.6	28.0
2	Japan	71.99	6.8	9.4
3	Germany	33.80	9.5	16.9
4	South Korea	18.47	37.3	30.0
5	UK	15.82	17.6	17.9
6	France	13.30	8.4	15.2
7	Italy	11.71	32.7	16.8
8	Brazil	10.61	30.9	20.5
9	Canada	6.49	26.5	15.9
10	Australia	5.79	8.4	22.3

Source: London Financial Group Global Leasing report, reported in Boobyer [1997] Exhibit 1.3 p. 5

A further important development, post-1984, has been the rapid growth of operating leasing, particularly in the computing, aircraft and vehicles sectors. Unlike finance leases, operating leases continued to enjoy off-balance sheet characteristics after 1984 and it was widely expected that many companies would seek to turn finance leases into operating leases in order to maintain such an attribute.[21] Indeed, the Equipment Leasing Association, the trade body formerly representing equipment lessors in the UK and the forerunner of the Finance and Leasing Association, estimated that operating lease business increased from £73 million in 1985 to £270 million in 1986.[22] This is supported by statistics showing that by 1995 operating lease contracts comprised almost one-third of the market by number of contracts

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[19] Boobyer [1997] Exhibit 3.1, p. 36.
[20] If lease purchase was included these figures would be $26,712m in 1995 and $31,200m in 1996. *Ibid.*
[21] For evidence for this viewpoint, 44 per cent of the respondents to Drury and Braund's survey expected that firms would replace finance leases with operating leases. Note, however that the respondents were referring to other firms not theirs! Drury and Braund, *op cit.* p. 188.
[22] Soper et al. [1993] p. 27.

written.[23] However, due to the influence of the big-ticket sector to finance lease contracts, operating leases make up less than one-fifth of the market by value.

It is expected that the future will see a continued increase in the use of operating leases, matching the growth that has already taken place in the US of the 'true lease' concept. This increased use is expected to be largely as a result of the increasingly competitive nature (and consequent low margins) in the finance lease sector, and an increasing demand from companies for more sophisticated forms of leasing. This is confirmed by recent evidence in both the UK and the US which have highlighted the increasing importance of operating leases also as a major source of long-term finance.[24]

It is clear, therefore, that many of the factors that lay behind the dramatic growth of the equipment leasing industry are now no longer applicable. However, the very fact that such factors were in existence at a crucial time in the industry's development allowed it to become a permanent feature of the UK financial system and to respond to the many legal, fiscal and institutional changes that have occurred since the early 1970s, in addition to the fundamental changes of 1984.

Finally, in this review of the historical development of equipment leasing in the UK, the following figure provides an overview of the situation of the leasing industry within Europe in the mid-1990s, highlighting the importance of the vehicle rental market.

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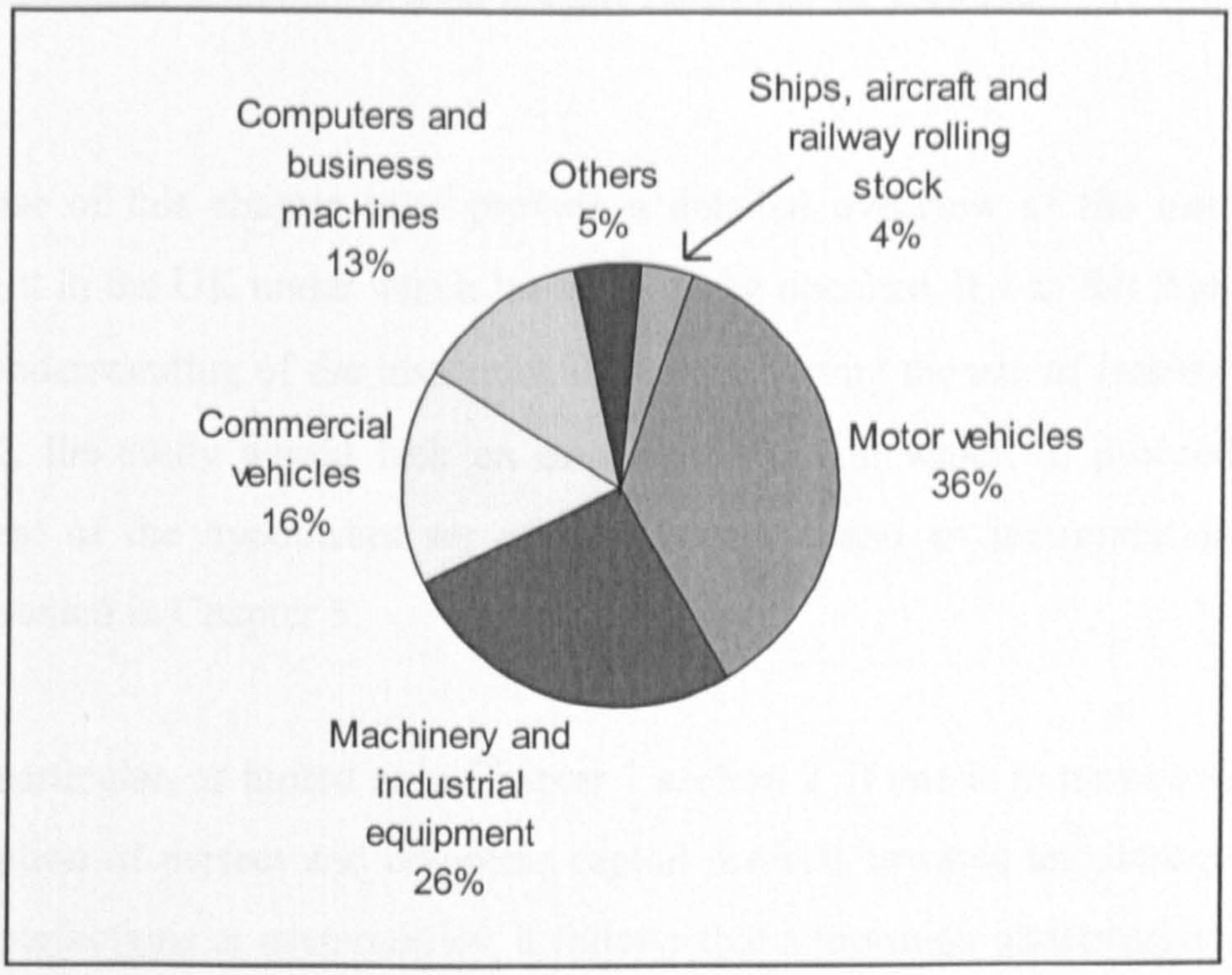
[23] See Boobyer [1997] Exhibit 2.1 p.20.
[24] For US evidence see Marston and Harris [1988] and Graham et al. [1998], for evidence from the UK see Beattie et al. [2000].

Figure 1.1 Europe 1995: Leasing by type of equipment



Source: Leaseurope Annual Report 1995, reported in Boobyer [1997] p. 16

The next chapter sets out the institutional background to leasing in the UK, with the focus being initially on the accounting treatment of leases. This is followed by a closer examination of the types of leases and lease contracts. The impact of taxation on leasing will then be analysed, with an overview of the main legal and statutory requirements completing the chapter.

2. Accounting, Taxation and Legal Aspects of Leases

The purpose of this chapter is to provide a detailed overview of the institutional environment in the UK under which leasing finance operates. It was felt that without a greater understanding of the institutional issues affecting the use of leasing finance in the UK, the study would lack an important base on which to proceed in the development of the hypotheses set out in Chapter 4 and an interpretation of the results presented in Chapter 5.

In particular, as hinted at in Chapter 1 section 2, if one is to move away from the assumption of perfect and complete capital markets towards an examination of market imperfections or asymmetries, it follows that a thorough understanding of the environment in which leasing finance operates is desirable. Therefore, I am seeking to answer the following: if the broad Modigliani and Miller [1963], and Myers, Dill and Bautista [1976] framework[25] is not totally satisfactory in explaining the growth and prominence of leasing finance in the UK, are solutions to be found from looking at issues arising from the capital structure framework or institutional issues which differentiate leasing from capital structure?

The initial focus of the chapter will be on the accounting disclosure requirements of lessees and lessors. Part B analyses a number of issues arising from the disclosure requirements, concentrating on specialised forms of lease contracts, variation clauses, and a comparison with two different yet influential accounting standards, the US FAS 13 and the international standard IAS 17. The final part of this section sets out a number of criticisms of the disclosure requirements in the UK, together with a discussion of future developments. An overview of the taxation system in the UK forms the first part of Part C, with the focus being on its impact on leasing. Finally, the impact of the legal framework currently operating in the UK on the use of leasing is the subject of Part D.

Part A The Accounting Treatment of Leases

1. Introduction

The discussion in Chapter 1 section 3 highlighted one of the major reasons put forward to explain the rapid growth of equipment leasing in the UK in the 1960s and 1970s, namely its attraction to lessees as a form of off-balance sheet financing. By leasing rather than purchasing, a lessee could keep the asset and liability thus created off its balance sheet. Most companies at the time therefore accounted for lease rental payments simply as a revenue charge in their profit and loss account. This is despite the fact that the lessee's rental payments and maintenance costs might have been similar in magnitude to the corresponding costs in the case of owned assets funded from net borrowings which would appear as liabilities on the balance sheet. The leasing option could therefore help such a company both in its access to lines of credit which may otherwise not have been available and also in some of its key financial performance indicators such as return on capital employed.[26]

By the mid-1970s concern began to grow among members of the accounting profession and financial analysts about the off-balance sheet leasing commitments of companies. This followed the lead taken by the United States, whose accounting body had issued a standard relating to leasing in 1976. It was argued that comparability between companies would require the capitalisation of finance leases by lessees and that readers of financial statements could not determine the economic substance of asset financing transactions from the financial statements. The case of Court Line Limited, a UK tour operator and airline group which collapsed in 1974 with undisclosed leasing obligations relating to assets costing £40 million highlighted

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[25] See Chapter 3 section 1 for an overview of the traditional approach to analysing leasing.

[26] By not disclosing the value of the leased asset on the balance sheet the denominator in the ratio 'return on capital employed' would be understated in comparison with an identical company which had purchased the asset. In practice, analysts are likely to have understood the implications of this. The study undertaken by Abdel Khalik [1981] in the USA, following the introduction of FAS 13 found that the market value of lessee companies were not adversely affected by having to bring leasing liabilities and leased assets into the balance sheet, suggesting that the effects of leasing were already fully reflected in market values.

the problems. It emphasised the importance of the need for changes in financial statement presentation in order that readers could fully understand the financial position of a company involved in leasing.

In response to the criticism of the existing accounting practices towards leasing, the accounting profession proposed that lessees enter their leased assets and liabilities on the face of their balance sheets in a similar way to those assets acquired by other means of finance. Following the approach taken by accounting bodies in the USA and Canada and later by an international accounting standard on leasing, it was thought that, in this way, the balance sheet would reflect a 'true and fair' view of the financial gearing and level of business operations.

In 1981 the Accounting Standards Committee (ASC) published its proposals to show the effect of finance leases on the lessee's balance sheet in the form of Exposure Draft 29 (ED 29). It met with considerable opposition from the leasing industry which argued that it would be misleading and incorrect to show items of plant and equipment on the lessee's balance sheet to which there was no legal title. It was also feared that a change in accounting practice might precipitate changes in taxation law whereby in the future finance leases would be treated in the same way as hire purchase contracts, with the lessee, not the lessor, receiving the capital allowances on the asset.

After a long drawn-out and often acrimonious consultation period, the ASC eventually issued SSAP 21 'Accounting for leases and hire purchase contracts', in August 1984. The standard requires, *inter alia*, that lessees capitalise finance leases and that lessors are to include in their balance sheet not the value of the fixed asset but the debtor for the net investment in the lease. At the time that it was issued, SSAP 21 was one of the most controversial accounting standards, as it in effect invoked a substance over form approach to give an accounting treatment possibly different from that of legal ownership. As was noted in Chapter 1 section 4, one of the changes that the leasing industry anticipated as a result of SSAP 21 was that

industrial companies would switch from finance leasing to operating leasing. Although there is some evidence that this has happened in recent years,[27] it is unclear as to whether this is motivated by the accounting treatment of operating leases or by other factors. It is worth noting that, after almost a decade of debate, the standard was issued just after the Finance Act 1984 had considerably reduced the tax advantages of leasing.[28]

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[27] See footnote 24 for the references providing evidence of this occurring in the USA and the UK in the 1990s.

[28] The impact of the changes in company taxation as a result of the Finance Act 1984 are detailed in Part C section 2.

2. SSAP21 'Accounting for leases and hire purchase contracts' (August 1984)

2.1 Basic outline of the standard

As indicated by its title, the standard covers leases and hire purchase contracts, and is applicable to accounts based on both the historical cost and current cost conventions.[29] It does not, however, apply to leases of the rights to exploit natural resources nor does it apply to licensing agreements for items such as motion pictures, videos, etc.

SSAP 21 is based on the concept that the accounting treatment of a lease should depend upon the substance of the arrangement between lessee and lessor. A finance lease in substance transfers to the lessee the majority of the risks and rewards associated with ownership of the asset (other than ownership itself). It is therefore treated by the standard as creating both an asset and a liability in the lessee's balance sheet. The asset represents the lessee's rights in the asset whereas the liability represents the lessee's future obligations under the lease. An operating lease, in contrast, gives the lessee the limited use of an asset for a short period of time. It therefore takes the nature of a contract to supply services rather than finance and is accordingly treated by the standard as an operating expense.

Stress is placed on the subject of materiality. In common with all standards, SSAP 21 does not apply to immaterial items. In this context the relevant criterion is the size of the lease (or leases in aggregate) in the context of the size of the lessee or lessor. In deciding whether or not a lease is material, attention should be brought as to the effect which treating the lease to the main requirements of the standard (i.e. capitalising it) would have on the financial statements of a company as a whole.

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[29] The Guidance Notes provide guidance on the procedures to be adopted for accounting for leased assets under SSAP 16 'Current Cost Accounting'. SSAP 16 was suspended in June 1985 and withdrawn in July 1988.

The following sections provide an outline of the provisions of SSAP 21 as they relate to lessees (section 3) and lessors (section 4), including definitions of some of the terms included in the standard, details of the accounting treatment of finance and operating leases and the relevant disclosure requirements.

3. The Lessee

3.1 Definitions

3.1.1 Types of leasing contract

The accounting treatment adopted for a lease under SSAP 21 will depend on whether the lease is a finance lease or an operating lease. Consequently, where leases entered into by a lessee are material the most difficult problem is to determine whether or not a lease falls into the definition of a finance lease. A finance lease is defined as:

> '... a lease that transfers substantially all the risks and rewards of ownership of an asset to the lessee.'[30]

All other leases are defined as operating leases. Under the majority of hire purchase contracts the 'risks and rewards' pass to the hirer and hence may be regarded as being similar to finance leases. In such cases SSAP 21 specifies that they should be accounted for in a similar way to the basis set out for finance leases. In exceptional circumstances, however, a hire purchase contract may be accounted for on the same principles as an operating lease. Because all leases transfer some risks and rewards of ownership to the lessee, in practice the distinction is one of degree. Consequently, the standard gives guidelines, under the guise of a present value test, for deciding whether 'substantially all the risks and rewards' have passed to the lessee. Only in those exceptional circumstances where it can be clearly demonstrated that the risks and rewards have not been transferred to the lessee should the present value test be overridden.

3.1.2 The present value test

Under the standard a lease transfers 'substantially all the risks and rewards' of ownership to the lessee:

> '... if at the inception of a lease the present value of the minimum lease payments including any initial payment, amounts to substantially all (normally 90 per cent or more) of the fair value of the leased asset.'[31]

It goes on to provide a 'rebuttable presumption' that the dividing line occurs where the present value of the minimum lease payments amounts to more or less than 90 per cent of the fair value of the leased asset. It is intended, therefore, that the 90 per cent test provides an important source of evidence. However, where other evidence contradicts the test an overall evaluation is required, based on all the evidence taken together.

Before discussing the present value test further, it is necessary to explain some of the terms used in the test as these terms have a precise meaning within SSAP 21 which are, in certain circumstances, different from their accepted commercial meanings.

3.1.3 The inception date of the lease

This is the earlier of the start date of the rental and the date on which the asset is brought into use by the lessee. For example, if a lease contract provides for a rental-free period at the start of the lease, the lessee would treat the inception date as the date from which he started to use the asset.

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[30] SSAP 21 para. 15.
[31] Ibid.

3.1.4 The fair value

This '... is the price at which an asset could be exchanged in an arm's length transaction less, where applicable, any grants receivable towards the purchase or use of the asset'.[32] An estimate of the fair value should be used if the fair value itself cannot be determined for the purposes of the 90 per cent test. This is more likely to be required for lessees who are unaware of the cost of the leased asset but is less likely for lessors.

3.1.5 The implicit interest rate

This is the rate of discount that, when applied at the inception of the lease to the amounts that the lessor expects to receive and retain from its investment in the lease, produces a present value equal to the fair value of the asset. The amounts that the lessor expects to receive and retain comprise the following:

(a) the lessee's minimum lease payments (all elements (a) to (c) at 3.1.7 below plus any further guarantees by third parties concerning the residual value of the asset); plus
(b) any unguaranteed residual value; less
(c) any part of (a) and (b) above for which the lessor is accountable to the lessee (for example, a rental rebate based on the proceeds of the sale of the asset).

In practical terms, if the implicit interest rate cannot be calculated due to inadequate information then an estimate may be used. As discussed in section 3.1.4 this will not usually apply to the lessor, as he is likely to have all the relevant information available. A lessee, however, may not have access to this information and may be unable to make estimates thereof. Where the lease is a full payout lease, the amount of the residual value of the asset may be assumed to equal zero and the implicit rate will be calculated using the relationship between rentals and the cost of the asset. However, where the residual value is expected to be significant the lessee

will need either to calculate the implicit rate using an estimate of the residual, or by reference to the rate that a lessee would be expected to pay on a similar lease.

3.1.6 The lease term

Since the lease term has an effect both on the calculation of the minimum lease payments and on the depreciable life of the leased assets, it follows that its precise meaning should therefore be clearly understood. In contrast to the normal commercial meaning of the lease term, which includes only the primary period of the lease, SSAP 21 defines the lease term as both:

(a) the period for which the lessee has a contractual obligation to lease the asset (the 'primary period'); and
(b) any further periods for which the lessee has the option to continue to lease the asset, with or without payment, provided that it is reasonably certain at the inception of the lease that the lessee will exercise that option.

It follows, therefore, that the lessee must look closely at those terms of the lease relating to the period of the lease, cancellation and options to extend before determining the lease term for accounting purposes.

3.1.7 The minimum lease payments

There are three possible elements:

(a) the minimum payments that the lessee is committed to make over the remaining part of the lease term;
(b) any residual amount guaranteed by the lessee or a party related to him; and
(c) any residual amounts guaranteed by any other party.

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[32] SSAP 21 para. 25.

The elements to be included depend on the intended use of the minimum lease payments calculation as follows:

(a) all elements are used in the calculation of the implicit interest rate (for use in the 90 per cent test);
(b) all elements are used in the 90 per cent test performed by the lessor. The total of these elements plus any unguaranteed residual value will represent the lessor's gross investment in the lease (see section 4.2.1 below);
(c) elements (a) and (b) are used in the 90 per cent test performed by the lessee. The present value of this minimum lease payments figure will represent both the lessee's capitalised fixed asset and initial finance lease obligation (see section 3.2.1 below).

The minimum lease payments should not include any contingent rentals, e.g. those dependent on the level of use of the equipment or that protect the lessor from interest rate changes or tax changes that could affect his return.[33] These clauses can be ignored because the present value test is performed at the date of the inception of the lease based on the information known at that date. If subsequent changes in rentals occur as a result of the effect of these contingencies they should be accounted for in the periods to which they relate. Similarly, rental rebates should not be anticipated in the calculation of the minimum lease payments unless they are known with certainty.

3.1.8 Determining the lease type

It is important to note that although the 90 per cent test is important, there are a number of other factors which may influence the decision on whether substantially all the risks and rewards of ownership have passed to the lessee:

(a) Does the lessee bear any losses in residual value if he cancels the lease?

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[33] Variation clauses are the subject of Part B section 4.

(b) Will the lessee gain from any fluctuations in the market value of the residual by, for example, receiving a rental rebate equal to most of the sale proceeds at the end of the lease?

(c) Does the lessee have the ability to continue the lease for a secondary period at a nominal rental?

(d) Is the expected lease term equal to substantially all of the asset's expected useful life?

(e) Is the lessee responsible for insurance, maintenance, etc. of the leased asset?

If the answer to the above questions is affirmative then the lease contract is likely to be a finance lease. In order to evaluate the risks and rewards, the factors that are most likely to have an economic effect on the parties to the lease should be considered.

It should be understood, however, that the definition of a finance lease in the UK is based on a pragmatic view of whether substantially all the risks and rewards of ownership have passed to the lessee. The 90 per cent test can be viewed as a good benchmark against which to measure risk, because it measures the amount of residual risk retained by the lessor. However, if a lease is structured in a way that the lessee gains residual benefits and takes substantially all the residual risks, then, irrespective of the results of the present value test, the lease should be classified as a finance lease.

Furthermore, it is important to note that the 90 per cent test can result in different answers being given for the lessor and the lessee. For example, the test may indicate a finance lease for the lessor but an operating lease to the lessee. The most common reason for this occurs where the lessor receives a guarantee of the estimated (significant) residual value of the leased asset by a party other than the lessee. In this instance, use of the 90 per cent test may indicate an operating lease for the lessee whereas a finance lease is indicated for the lessor. A further reason may occur where the lessee does not have the full information available to the lessor and its estimates

of fair value or residual value may be so different from the correct figures that its classification of the lease is incorrect.

Once the 90 per cent test has been performed and the lease contract has been classified as either a finance or an operating lease both lessee and lessor must follow the appropriate guidelines as laid down in the standard. The accounting treatment of leases by the lessee is detailed in section 3.2, and in sections 4.2.1 and 4.4.2 for the lessor.

3.2 The accounting treatment of leases

3.2.1 Accounting for finance leases

Under SSAP 21 a finance lease should be recorded in the lessee's balance sheet as an asset and a liability. At the inception of the lease both the leased asset and the related lease obligation should be recorded at the present value of the minimum lease payments. In practice, the fair value of the asset will be a close approximation of the present value of minimum lease payments and, therefore, the standard permits its use as a practical substitute. Leased assets should be described as such in the balance sheet to distinguish them from owned assets.

Leased assets should be depreciated over the shorter of the lease term or the economic useful life of the asset using the lessee's normal depreciation policy for such assets. The principle is that depreciation should be based on the period over which the lessee expects to use the asset. Therefore, the lease term could include secondary rental periods if, at the inception of the lease, it is reasonable to expect the lessee to exercise its option, with or without further payment, to such periods. For example, a six-year lease term with a nominal secondary rental period of a further three years would mean that the lessee could depreciate the leased asset over nine years provided this was not longer than the normal economic life for such assets.

The difference (if any) between the total minimum lease payments and their present value at the inception of the lease represents a finance charge. Under SSAP 21 the lessee should allocate the total finance charge over the term of the lease so as to produce a constant rate of interest (or approximation thereto) on the remaining balance of the lease obligation. This is achieved via an apportionment of each rental payment between a finance charge and a reduction of the lease obligation. No particular methods are specified by the standard which are to be used for this purpose, however the accompanying Guidance Notes do set out three methods which are often used in practice: the actuarial method; the sum-of-the-digits method; and the straight-line method.

The actuarial method produces an accurate apportionment of interest cost over the term of the lease. The information required to adopt this method is often provided by the lessor to the lessee; alternatively computer spreadsheet programmes can be utilised to perform the necessary calculations. The sum-of-the-digits method, also referred to as the 'Rule of 78', normally provides a reasonable approximation of the results obtained via the actuarial method and is simpler to apply. Consequently, it is probably the method most frequently used in practice.[34] The straight-line method spreads the finance charge equally over the period of the lease. As it does not attempt to produce a constant periodic rate of charge, it does not comply with SSAP 21. The standard recognises, however, that there may be circumstances that make it appropriate. Therefore, there is a trade-off to be made between the costs versus benefits of achieving complete accuracy. In making this trade-off, the question of materiality is important because differences between allocated finance charges under the three methods may be immaterial, leading to the simpler methods being used for convenience. In practical terms, a large company may use the actuarial method for determining the finance charges on its large leases, but use the simpler straight-line method on its smaller, less significant leases.

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[34] For further discussion of these two methods see section 4.3 relating to the accounting treatment of hire purchase contracts by lessors.

It is worth mentioning at this stage that the charge to the profit and loss account in each period for finance charges and depreciation on leased assets will differ from the actual rental charges allowed for tax purposes. This is a result of the different rules allowed under the various accounting standards and the guidelines issued by the Inland Revenue, respectively. These differences represent timing differences and will need to be accounted for by the lessee in accordance with SSAP 15 'Accounting for deferred taxation'. This will be looked at in more detail in Part C section 4.3.[35]

3.2.2 Accounting for operating leases

The accounting treatment by the lessee in respect of operating leases is quite straightforward. Under SSAP 21, operating lease rentals should be charged to the profit and loss account on a straight-line basis over the lease term unless a more rational or systematic basis is more appropriate. Any difference between amounts paid and amounts charged should therefore be reflected as a prepayment or accrual.

The majority of operating leases are taken on a fixed rental basis and rentals are charged to the profit and loss account in the usual way. Where the lease is structured to include a rental-free period or has an uneven rental structure that is not representative of the service provided, the lessee should adjust the charges to the profit and loss account to reflect a 'normal' basis, with the straight-line approach being deemed the most appropriate method. If, however, a more systematic and rational basis is more appropriate, then that basis may be used. For example, if the level of the use of the leased asset determines the level of rentals, then it would be appropriate to charge rentals when incurred. The approach adopted by the lessee in practice will depend not only on the nature of the operating lease rentals, but also on the significance of those rentals within the context of the lessee's profit and loss account.

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[35] It is sufficient to note here that the deferred tax liability of a company is a measure of the extra tax payable in the future in excess of the tax immediately payable in respect of the year in question. SSAP 15 has been superseded from 23 January 2002 by FRS 19 'Deferred Tax'.

3.3 Disclosure requirements of SSAP 21: lessees

SSAP 21 issues minimum disclosure requirements that apply to lease and hire purchase contracts, relating to the disclosure of leased assets, lease obligations, etc. As will be discussed in the sections that follow, the standard permits a number of alternative ways in which the lessee can disclose this information.

3.3.1 Finance leases

(a) Disclosure of fixed assets and depreciation

The lessee can choose either to show the gross amount, related accumulated depreciation and the depreciation charge for the period for each class of leased asset separately or include this information within totals shown for each class of owned asset. If the lessee chooses the latter option it will also be necessary to disclose separately both the aggregate net book value and the depreciation charge in respect of assets held under finance leases. A suggested description for capitalised leased assets is 'assets held under finance leases and hire-purchase contracts'.

The approach adopted in practice will often depend on the materiality of the leased assets. Where the amount of leased assets is an insignificant part of total assets then aggregation of information with owned assets will be the norm. However, where leased assets form a substantial part of total assets then separate disclosure would be the desired option.

(b) Disclosure of obligations

The lessee must disclose the net liability for obligations related to finance leases separately from other liabilities. This may be entered on the face of the balance sheet or in the notes to the financial statements. The lessee must also give a maturity

analysis of the financial lease obligations in the notes to the financial statements, which can be done in three alternative ways:

(i) The lessee can show separately the net obligations (net of finance charges) under finance leases analysed between amounts payable within one year, in two to five years inclusive, and amounts payable thereafter. Companies listed on the London Stock Exchange are required to provide a more detailed breakdown, disclosing the payment due in the second year separately.

(ii) If the lessee includes the net obligations under finance leases within the totals of other liabilities (for example, bank loans) on the face of the balance sheet then it may give an equivalent analysis of the combined balance sheet amount as an alternative to separate disclosure. The lessee, however, is still required to disclose the total net liability in respect of finance leases.

(iii) If the lessee discloses the net obligations under finance leases separately from other liabilities, it may present an analysis of the gross obligations, with the future finance charges being separately deducted from the total. This form of disclosure is adopted by the US accounting standard FAS 13, although the US standard requires in addition a more detailed maturity analysis (this is referred to in Part B section 6.1).

(c)Profit and Loss disclosure

SSAP 21 requires the separate disclosure of finance charges, usually disclosed in the notes to the financial statements either as part of a separate note showing an analysis of interest charges, or as part of the statutory disclosure note of items charged in arriving at the trading profit for the year.

(d) Other disclosure requirements for finance leases

The lessee must show by way of a note the amount of any commitments for finance leases entered into at the balance sheet date but whose inception occurs after the year end. The standard also requires the lessee to disclose the accounting policies adopted for finance leases. Finally, it is important to note that Statements of Standard Accounting Practice set out minimum disclosure requirements. Company law

requires companies to show a true and fair view of the business and there may be circumstances where additional disclosure is required in order to do so.

3.3.2 Operating leases

The lessee is required to disclose the following items in respect of operating leases:

(a) Disclosure of operating lease charges

The standard requires the lessee to disclose the total operating lease rentals charged as an expense to the profit and loss account, analysed between amounts payable in respect of the hire of plant and machinery and in respect of other operating leases. The disclosure requirements of SSAP 21 therefore go further than those of the Companies Act 1985 (see 3.3.3 part (a) below).

(b) Disclosure of operating lease commitments

The Companies Act 1985 requires disclosure of future financial commitments. SSAP 21 requires a more detailed breakdown in that it requires an analysis of the operating lease payments which the lessee is committed to make during the next year, analysed according to the period in which that annual commitment expires. These commitments should be analysed between those relating to lease terms that expire within that year, those which expire within the next two to five years inclusive, and those expiring more than five years from the balance sheet date. Commitments in respect of land and buildings should be shown separately from those of other operating leases.

It is important to note that it is not the total amount payable under operating leases which is disclosed and split by time periods (as required for finance leases), but instead it is an analysis of annual changes according to the time scale in which they expire. This form of disclosure is also different from that adopted under the US accounting standard FAS 13, which requires an analysis of the total commitment under operating leases (see Part B section 6.1 for more details of the comparisons between FAS 13 and SSAP 21).

As with finance leases, the lessee will need to disclose its accounting policy in respect of operating leases.

3.3.3 Other disclosure requirements

In the above discussion on the disclosure requirements of lessees in respect of finance and operating leases mention was made of the Companies Act 1985. This Act details certain disclosure requirements that are relevant to obligations under leases as follows:

(a) It requires the disclosure of the amount charged to revenue in respect of hire of plant and machinery. This requirement is met by requirements set out in 3.3.1 (a) and 3.3.2 (a) above.[36]

(b) It requires details to be provided of any other financial commitments that have not been provided for and are relevant to assessing the company's state of affairs. This is met by requirements 3.3.1 (d) and 3.3.2 (b) above. The lessee will also need to consider whether any additional matters need to be disclosed in order to show a true and fair view; for example, if future (operating) lease rentals were material and contingent on profits or performance, the nature of the arrangements may need to be disclosed.[37]

4. The lessor

4.1 Introduction

The previous sections highlighted the fact that SSAP 21 brought about radical changes in the way lessees accounted for finance leases, though less so for operating leases. The effect of the standard on lessors was, however, less dramatic. Although it

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[36] Schedule 4 para 53(6).
[37] Schedule 4 para 50(5).

brought about some changes to the way lessors disclosed leased assets in their balance sheets, it had few other effects on existing accounting practices.

The approach required by SSAP 21 to finance leases is to recognise the substance of the transaction; that the lessor is providing finance to the lessee to enable the latter to obtain use of a particular asset. It follows, therefore, that the asset recognised by the lessor under a finance lease is the amount receivable from the lessee rather than the asset which is the subject of the lease. In contrast, under an operating lease the leased asset is treated by the lessor as a fixed asset subject to depreciation and the rentals received as income.

The circumstances under which a lease is classified as a finance lease are the same for a lessor as for a lessee (see 3.1.1 above). However, as was discussed in section 3.1.8 there are certain differences in circumstances, including consequent differences in cash flow, which may result in the lessor treating a lease in a different manner from the lessee; in particular, leases which are classified as finance leases by lessors may be classified as operating leases by the lessee.

4.2 Finance leases

4.2.1 Balance sheet presentation

The lessor should record the net investment in the lease in the balance sheet as a debtor after making any necessary provisions for bad and doubtful debts. Initially, the net investment is the cost to the lessor of the leased asset less any grant receivable. The net investment in the lease is reduced over the lease period by the proportion of rental income, which is treated as repayment of the debtor balance.

The rentals received by the lessor (net of any charges for services provided to the lessee, etc.) should be apportioned between finance income to the lessor and repayment of the debtor balance. Over the lease term the finance income equals the gross earnings from the lease, i.e. the amount by which the total receipts expected by

the lessor exceeds the cost of the leased asset (less any grants receivable towards the purchase or use of the asset). The lessor's receipts will consist of the total rentals payable by the lessee together with any residual value of the asset that is receivable by the lessor, whether or not the residual value is guaranteed.

4.2.2 Allocation of gross earnings

The total gross earnings on a lease is reasonably easy to calculate since the minimum lease payments will be known and the residual value, if any, can normally be estimated. The difficulty lies in allocating the gross earnings to the different accounting periods. SSAP 21 follows existing practice in the leasing industry by specifying that (other than in the case of hire purchase contracts) the gross earnings should be allocated over the lease term so as to produce a constant rate of return (or reasonable approximation thereto) on the lessor's net cash investment in the lease. This allocation should take account not only the cost of the asset and the rentals received but also of the cash flows associated with the lease, such as the tax cash flows arising from capital allowances claimed by the lessor. This involves the use of an 'after tax' method of allocation which differs from that used in hire purchase contacts (see section 4.3 below) due to the differences in the tax treatment of finance leases and hire purchase contracts as noted in Chapter 1 section 3.

The net cash investment can be more easily understood by assuming that the lessor establishes a separate company for each lease and by then estimating the cash inflows and outflows of that company. The net cash investment is thus defined as the balance of cash, which might be positive or negative, in the company at any point in time. SSAP 21 defines[38] the net cash investment at any given time as:

a) the net investment at the start of the lease (i.e. the cost of the asset less related grants); plus
b) the following related payments:

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[38] SSAP 21 para. 23.

(i) taxation payments on the rental income;

(ii)interest payments on related borrowings; and

c) profit taken out of the lease; less

d) the following related receipts;

(i) rentals received (excluding charges for services etc.);

(ii) interest received on any cash surplus;

(iii) taxation receipts, including reductions in taxation liabilities as a result of capital allowances on the leased asset (to the extent that these are given to the lessor); and

(iv) any amount received for the sale of the asset at the end of the lease term or, if no amount is received, its residual value (if any) at that time.

4.2.3 Methods of allocation

The Guidance Notes to SSAP 21 set out two methods that are commonly used by leasing companies of allocating the gross earnings so as to give a constant rate of return on the net cash investment:

(a)Actuarial Method After Tax (AMAT); and

(b)Investment Period Method (IPM).

Both methods allocate gross earnings on a basis which takes into account the tax effect on cash flows and is the approach used because, as outlined in points (a) to (d) in the preceding section, the objective is to match the revenue recognised under the lease with the expenses incurred in funding the lessor's investment in the lease.

Prior to the introduction of the standard, there was considerable debate among leasing companies as to which of the two methods was the most appropriate with both methods having their advocates and both methods having advantages and disadvantages (as will be discussed below). One might have expected, therefore, that SSAP 21 would have made a clear choice between the alternative methods. In order to understand why this was not the approach taken by the standard it is important to

recognise that SSAP 21 is a lease accounting standard not a standard for the leasing industry. Accounting standards are issued in the UK in order to set out basic accounting principles and minimum disclosure requirements for accounting problems that are generally applicable to all companies. In the UK it is not generally the practice for the Accounting Standards Board (as was similarly the case for its predecessor, the Accounting Standards Committee) to prescribe specific practices for particular industry problems and it is left to the industries concerned to establish appropriate accounting practices.

SSAP 21 thus permits any method (including, but not limited to, AMAT and IPM) that seek to allocate gross earnings in such a way that net earnings (gross earnings less anticipated interest costs) are allocated on a systematic basis. Whichever method a lessor chooses will need to be disclosed in the accounting policy notes to the financial statements and will need to be applied on a consistent basis from year to year.[39]

Under the actuarial method gross earnings are allocated to each accounting period in such a way that the anticipated after-tax profit for each period represents a constant rate of return on the lessor's net cash investment in the lease. To achieve this the anticipated after-tax profit for each period is grossed up for tax and estimated interest costs to give a derived apportionment of gross earnings in each period. The phrase 'after-tax' does not imply that it is after-tax profit that is allocated but simply that the cash flows are included in the measurement of the net cash investment.

Under the investment period method the net cash invested is calculated as for the actuarial method. The gross earnings are then allocated to those periods in which the lessor has a positive net cash investment balance. This allocation is made in proportion to the net cash invested in each period.

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[39] The ICAEW's survey of published financial statements for 1987/1988, the first year in which SSAP 21 was fully implemented, indicated that 15 of the 51 companies with evidence of lessor activity did not disclose their income recognition policies. A possible reason for this may have been that the

The two methods will generally lead to similar results. The actuarial method after tax procedure seeks to produce a constant after-tax rate of return on the net cash investment in the lease. The investment period method in contrast produces a constant rate of gross earnings on the net cash investment in the lease, which, after taking interest into account, usually produces a result that approximates closely to a constant pre-tax rate of return on the net cash investment in the lease. When tax rates are consistent throughout the lease term the pattern of after-tax profits will be proportional to the pattern of pre-tax profits, resulting in no significant differences arising between the two methods.[40]

Where tax rates change during the lease term, however, as occurred during the period 1984-86, cash surpluses may arise in certain periods and the methods may produce different results. As the Guidance Notes state,[41] using the actuarial method after tax procedure, the interest received on the cash surplus (the re-investment income) is brought back and recognised in the periods when the lessor has funds invested in the lease, rather than taken to income when it arises. Therefore, no profit is recognised in the period when the lease is in surplus. As a result, the lessor may be in an exposed position in this period in the event, for example, of early termination of the lease by the lessee. If this method is used, it may therefore be necessary to make an appropriate provision for early termination losses so that the net investment in the lease never exceeds the termination value. Under the investment period method, any re-investment income is recognised when it arises: i.e. it is not brought back and recognised in the periods in which the lessor has funds invested in the lease. Therefore, where cash surpluses arise, the investment period method is more conservative than the actuarial method after tax, despite the latter method's greater accuracy.

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leasing activity was thought to be immaterial in relation to the companies' other activities. See Arthur Young [1989] p. 784.

[40] For an example of the application of the two methods see *ibid.* Example 19.4, pp. 785-7.

[41] Guidance Notes para. 121.

The apportionment of gross earnings under either the actuarial method after tax or the investment period method will, of course, only be as valid as the assumptions on which the lease cash flow forecast is based. Lessors should therefore review their cash flow assumptions regularly and provide against any potential losses or major uncertainties.

In spite of their differences in the way gross earnings are allocated, both the above methods use the same assumptions and processes to calculate the net cash investment at the end of the relevant period. The principal assumptions used in the calculation of the net cash investment are as follows:

a) sufficient taxable capacity will exist to relieve any tax deductible expenses and capital allowances in the forecast period;
b) borrowing and re-investment interest rates and levels of taxation will be as predicted;
c) defaults or termination of the lease will not occur; and
d) administrative costs will be negligible.

If any of these assumptions ceases to hold, and the effect on the calculated allocation of gross earnings to accounting periods is material, then the calculations should be re-performed from the date when the change in assumptions is made.

Finally, it is worth considering that a lessor is concerned with both the net cash investment in a lease for allocating gross earnings to accounting periods and, also, the net investment for calculating the finance lease receivable in its balance sheet (see section 4.2.1 above). These amounts are quite different in their calculation and use. As explained in the following section, owners under hire purchase contracts use the net investment in the contract for both the above purposes. The use of both net investment and net cash investment for finance leases but not hire purchase contracts was explained in the standard by the less important tax effects of hire purchase contracts compared to finance lease contracts for lessors (discussed in the

following section). As was mentioned in Chapter 1 section 4, the importance of these tax effects was reduced by the Finance Act 1984, which lowered the rates of both capital allowances and corporation tax. At the present time, it is arguable as to whether the extra complexity of the net cash investment approach of allocating gross earnings by lessors with respect to finance leases is justified.

4.3 Hire purchase contracts

Para. 39 of SSAP 21 specifies that in the case of hire purchase contracts which are treated similarly to finance leases (the vast majority of them), gross earnings can be allocated on the basis of the company's net investment. This is justified by the fact that capital allowances on an asset subject to a hire purchase contract usually accrue to the hirer not the owner, resulting in a reduced impact of tax effects on the lessor's net cash investment (see section 4.2.2 above). When SSAP 21 was introduced this meant that taxation (under the pre-1984 tax regime) was not such a major factor in the owner's evaluation of cash flows under a hire purchase contract as it was in the lessor's evaluation under a finance lease. Consequently, an allocation of gross earnings so as to give a constant rate of return on the net investment (i.e. the balance sheet carrying value of the debtor before any provision for bad and doubtful debts) will usually be an acceptable approximation to an allocation based on net cash investment.

The Guidance Notes contain examples of two net investment methods of allocating gross earnings: the actuarial method before tax and the sum-of-the-digits method. The first method involves an analysis of the net investment in a contract for each period. The gross earnings percentage is then calculated in such way that when it is applied to the net investment figure in each period (to give a gross earnings allocation for each period) the net investment at the end of the hire term is zero. The sum-of-the-digits method simply apportions gross earnings over the hire purchase period in proportion to the number of future rentals receivable. Both methods usually ignore notional interest payments/receipts, with the result that the calculations are performed exactly as when calculating the allocation of the finance charge for a

lessee. With hire purchase contracts, therefore, the net investment in the lease/hire is used for both the allocation of gross earnings to accounting periods and the calculation of the lease/hire receivable in the owner's balance sheet, and contrasts with the position for finance leases.

4.4 Operating leases

4.4.1 Introduction

The term 'operating lessor' is often used in a more general sense within the leasing industry to describe those lessors who provide a specialist range of leasing services to customers.[42] These lessors tend to be specialists in the assets they lease and their profits depend as much on their buying and selling skills and on the additional services they provide as on their leasing activities. In particular, an operating lessor's profitability is dependent upon its ability to predict accurately future residual values and to re-lease or sell the asset at the end of the lease term. The amount of residual exposure the lessor takes will depend upon the nature of the industry and the type of business written and may also vary across a lease portfolio, with a mixture of long and short leases being written within the same asset class. Some of these leases may have little residual exposure and would be classified as finance leases for accounting purposes, whereas other leases with significant residual exposure would be classified as operating leases. The difference in the accounting treatment of operating leases and finance leases means that it is important that such lessors classify their leases correctly.

4.4.2 Balance sheet presentation and accounting treatment

SSAP 21 states[43] that assets held under operating leases should be recorded as fixed assets on the balance sheet and depreciated over their useful lives. The method of depreciation should reflect the pattern of usage of the asset: for example, a straight-

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[42] The leasing activities of manufacturers and dealers, both of finance leases and operating leases will be discussed in Part B section 3.1.

line basis where the asset is used evenly over its life, or a usage basis where the pattern of the rental is uneven.

The methods of income recognition that the standard requires for operating leases are based on a simple accounting principle. The service provided by the lessor to the lessee is the use of the asset for a limited period of time. Consequently, the method of recognising rental income should reflect the amount of service provided. SSAP 21 therefore requires that rental income from an operating lease, excluding charges for services such as insurance and maintenance, should be recognised on a straight-line basis over the lease term, even if the payments are not made on such a basis. It is an attempt by the standard to ensure a proper matching of revenues with associated costs. An exception is made where another systematic basis is more representative of the time pattern in which the lessor receives the benefit of the leased asset. Neither the standard nor the accompanying Guidance Notes give examples of alternative bases. Such a basis, however, might be appropriate where, for example, operating lease rentals are dependent on the level of use of the leased asset. In this case, rentals should be recognised in the periods they become receivable.

Initial indirect costs in arranging the lease may either be written off immediately or deferred and amortised over the lease term. The accounting treatment for a simple operating lease is therefore straightforward. Rentals are recognised on a straight-line basis over the lease term. The depreciation charge is calculated as the difference between the cost of the asset and a conservative estimate of residual value and is allocated over the lease term, usually on a straight-line basis. Interest costs are recognised as incurred. The residual value, therefore, has an important effect on the amount of profit that is recognised for accounting purposes during the lease term.

Most major operating lessors recognise residual values in their accounts, but adopt a prudent approach to their valuation. Furthermore, it is normal practice for

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[43] SSAP 21 para. 42.

such companies to review their estimates of residual value at periodic intervals and, where necessary, to adjust depreciation rates and to provide against future losses that arise as a result of a deterioration in residual values forecast since the original accounting estimates were made. These arrangements are suitable for most simple operating lease contracts. However, many of the arrangements that such companies enter into are more complex with implications as to how SSAP 21 should be interpreted. This subject is discussed further in Part B section 3.1 which looks at 'non-standard' lease arrangements.

4.5 Disclosure requirements of SSAP 21: lessors

Both SSAP 21 and SSAP 2 ('Disclosure of accounting policies') require lessors to disclose their policies in respect of finance and operating leases. The standards place particular emphasis on the detailed disclosure of the policy adopted for the recognition of income from finance leases. Therefore, the policy might disclose not only the basic method of income recognition (for example, IPM or AMAT), but also the treatment of other significant factors such as initial direct costs, residual values, government grants and tax rate changes.

Prior to SSAP 21, leased assets were treated by lessors as fixed assets for accounting purposes and were shown on the balance sheet at cost less accumulated depreciation. This treatment was based on the fact that the lessor had legal title to the assets, and that the basis was consistent with the tax treatment of the assets, with the lessor claiming capital allowances. As we have discussed in previous sections, under SSAP 21 the treatment of leased assets on the balance sheet depends on whether they are leased in the form of finance or operating leases.

4.5.1 Finance leases

(a) Balance sheet disclosure

The standard requires that the lessor disclose the net investment in finance leases and hire purchase contracts as receivables, showing the amount in respect of each

separately. The company must also comply with the requirements of Schedule 4 of the Companies Act 1985. The lessor will consequently need to include the amounts receivable in respect of finance leases and hire purchase contracts in current assets under the heading 'Debtors'. These amounts should be analysed between amounts receivable within one year and those amounts receivable thereafter.

As will be seen from the discussion in Part B section 6.1 the disclosure requirements of SSAP 21 are simpler than those of its US counterpart. However, in the UK there is an overriding requirement that accounts show a true and fair view. Consequently, if additional information is of such relevance to the users of financial statements that it affects their overall understanding of the accounts, then such information should be disclosed.

(b) Turnover and activity

Schedule 4 of the Companies Act 1985 requires in addition that companies should disclose 'turnover'. Although the term turnover is not normally used in the leasing industry, paragraph 3(3) of the said schedule allows companies to adapt headings where the special circumstances require such an adaptation. For finance leases, lessors will need to disclose 'gross earnings' as turnover. This is because the activity of a finance lessor is analogous to a lending activity, and a lessor's gross earnings are analogous to 'interest receivable'. The term 'gross earnings' can therefore be substituted for 'turnover' to present a more meaningful profit and loss account.

SSAP 21 furthermore requires that lessors should disclose both the aggregate rentals receivable in respect of the relevant accounting period from both finance leases and hire purchase contracts and the cost of assets acquired for the purpose of leasing under such contracts. The accounts of a finance lessor must therefore show three different bases of activity: gross earnings, rentals receivable and new business acquired.

4.5.2 Operating leases

(a) Balance sheet disclosure

Under SSAP 21, the balance sheet disclosure of assets held for use in operating leases is similar to that required for other fixed assets. The standard requires that the gross amount (the original cost or a valuation) and the related accumulated depreciation of assets held under operating leases should be disclosed. This information may either be contained in an additional column in the normal balance sheet note for fixed assets, or shown as a separate note. However, banks should not combine information about assets held for use under operating leases with any infrastructure assets, as they are classified differently in determining their capital adequacy.[44]

(b) Turnover and activity

A lessor should disclose the aggregate rentals receivable in the accounting period in respect of operating leases as turnover.

In addition to the above disclosures the lessor must also comply with SSAP 15 'Accounting for deferred tax' which requires all companies to provide for deferred tax. Part C Section 4 discusses these provisions further and also provides an analysis of the particular problems faced by lessors in this respect. It also briefly discusses the main changes arising from FRS 19 'Deferred Tax' which has recently superseded SSAP 15.

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[44] Capital adequacy is the requirement that banks maintain a minimum level of capital to withstand a loss without endangering depositors' funds.

Part B Issues arising from the introduction of SSAP 21

The objective of this section is to highlight a number of areas of interest relating to lease classification under SSAP 21. This includes focusing on particular types of assets, such as land and buildings, more complex lease arrangements, variation clauses, and the termination of lease contracts. In light of the study undertaken, it was felt a section detailing comparisons with the US lease accounting standard (FAS 13) in particular, and also the international accounting standard (IAS 17) would provide a foundation to the discussion contained in subsequent chapters. This is followed by a section looking at controversies surrounding lease accounting, together with an analysis of future developments.

1. Lease definition and classification

The classification of leases was outlined in Part A section 3.1.1 above. The definition of a finance lease provided by SSAP 21 involves considering whether 'substantially all the risks and rewards' of ownership of the asset are transferred to the lessee, with the presumption that this transfer occurs if, at the inception of the lease, the present value of the minimum lease payments amounts to (normally) 90 per cent or more of the leased asset's fair value. Since the balance sheet effect of the classification of a lease as either a finance or operating lease is significantly different, lessees (supported by the lessor) may be anxious to see a lease classified as operating. Consequently, the stage of classifying a lease will play an important part in the overall accounting and auditing procedures.

It appears that in practice the 90 per cent test has been used as a fairly definitive test instead of being one factor in deciding upon the correct classification (see Part A section 3.1.8 above). It therefore seems that the 90 per cent test has been widely interpreted as a rule rather than a guide.

The phrasing of the 'rebuttable presumption' (see Part A section 3.1.2) within the standard lies behind the adoption of the 90 per cent test as a rule. SSAP 21 states

that the 90 per cent test may 'in exceptional circumstances be rebutted if it can be clearly demonstrated that the lease in question does not transfer substantially all the risks and rewards of ownership... to the lessee. Correspondingly, the presumption that a lease that fails to meet the [90 per cent test] is not a finance lease may in exceptional circumstances be rebutted.'[45] It is the phrase 'in exceptional circumstances' which has led to the 90 per cent test being taken as a firm rule. As a result, certain lessors have used this to their advantage by structuring leases to give a present value of minimum lease payments for the lessee, which is just below 90 per cent. Only in exceptional circumstances could the lessee classify the lease as a finance lease.

The ICAEW published Technical Release 664 (TR 664) 'Implementation of SSAP 21' in an attempt to influence the practice of interpreting the 90 per cent test as a firm rule. It stated that the evaluation of a lease agreement should involve an overall examination of substantial risks and rewards. In order to give a 'true and fair view', aspects of the leasing contract which have a commercial effect in practice should be given greater weight in the analysis. The 90 per cent test '... does not provide a strict mathematical definition of a finance lease. Such a narrow interpretation would be contrary to the spirit of SSAP 21 and SSAPs generally.'[46] TR 664 is indicative of good practice; however, it does not have the same mandatory status as an accounting standard and it is therefore uncertain as to whether it will affect the way companies use the 90 per cent test.

Some lessees may prefer not to capitalise leased assets, since the capitalisation of finance leases will affect the lessee's gearing and return on assets. Therefore, the pressure from accounts preparers is usually in favour of classifying the lease as operating, leading to instances where the 90 per cent test is exceeded (indicating a finance lease), but where other evidence is used to support treatment as an operating lease. This contrasts with the situation whereby the test indicates,

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[45] SSAP 21 para. 16.

however marginally, an operating lease. In such circumstances, there may be a less robust attempt to rebut the assumption that the lease is an operating lease. In general, auditors have not challenged the disparity of this approach. This feature is particularly apparent in motor car leases where, due to the predictable nature of residual values, the balance of risk/reward between lessee and lessor falls below the 90:10 ratio. However, in reality, all genuine risk of variation in residual values is often borne by the lessee.

The above problems of interpretation are largely due to the 'all or nothing' approach taken by SSAP 21: a leased asset and related obligation to pay rentals remain wholly off-balance sheet until a threshold is passed. At this point, the full fair value of the asset, and an equal liability, is disclosed on the balance sheet.

This approach contrasts with that adopted by Financial Reporting Standard (FRS) 5 'Reporting the substance of transactions' (1994) which allows an asset to be analysed into different rights (the 'property rights' approach) and has implications for the distinction between finance and operating leases. Under this approach it is possible, therefore, to recognise only those rights that have been acquired. The standard directly addresses the issue of off-balance sheet finance, requiring the substance of an entity's transactions, rather than the legal form, to be reported in its financial statements. This approach thus ceases to distinguish between finance and operating leases as it would require the present value of all lease obligations to be recorded on the balance sheet. It is expected that, in the not-too-distant future, SSAP 21 will be revised and brought into line with the approach of FRS 5.

In the meantime, there is the question as to whether the requirements of SSAP 21 are overridden by those of FRS 5. According to FRS 5, the standard or statute that contains the more specific provision(s) should be applied.[47] Therefore, in practice stand-alone lease transactions falling wholly within the parameters of SSAP 21 will

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[46] Technical Release 664, Implementation of SSAP 21., paras. 4 and 5, extract taken from Arthur Young [1989] p. 794.

be dealt with under that standard, whereas with more complex transactions (for example, a financing arrangement containing a lease element where the transactions are not wholly covered by the parameters of SSAP 21), the requirements of FRS 5 should be applied to the entire transaction. In particular, sale and leaseback transactions (the subject of section 3.2 below) which formerly resulted in operating leases may now more appropriately be treated as finance leases, with appropriate adjustments being made to the balance sheet, including the restoration of the asset and recognition of the liability thus created.

2. Land and buildings

The Guidance Notes accompanying SSAP 21 state that the criteria used for land and buildings, which are subject to lease agreements, should be the same as for other assets. Therefore, as with all types of lease, when deciding on whether a lease of land and buildings is a finance or an operating lease it is important to consider whether or not substantially all the risks and rewards of ownership are transferred to the lessee, with the threshold maintained at 90 per cent. As with other types of leased asset the 90 per cent test may be rebutted if the lease does not transfer substantially all the risks and rewards of ownership; for land and buildings this may occur due to the prevalence of rent reviews which divert some of the principal rewards of ownership to the lessor.

Most leases involving land and buildings are classified as operating leases. This is because many leases of such assets are for only a small part of their useful life and the lessee does not obtain the economic benefits of ownership arising, for example, from any increase in value. In addition, and as noted above, the leases usually provide for regular rent reviews whereby the rent payable is brought up to current market values. Such leases therefore have the characteristics of a provision of a service rather than of a financing arrangement. Where there are instances whereby a lease of land and buildings has the characteristics of a financing arrangement the

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[47] FRS 5 'Reporting the substance of transactions' 1994, para. 18.

lease would normally be classified as a finance lease. Examples of such arrangements include leases of buildings with relatively short useful lives or certain sale and leaseback arrangements (see section 3.2 below).

3. Non-standard leases

3.1 Leasing by manufacturers and dealers

Manufacturers or dealers may offer leasing terms as an option to normal selling terms. Where this occurs, a question arises as to whether or not an immediate selling profit should be recognised when the asset is first leased. The answer depends on whether there has been, in effect, a disposal of the asset, which in turn depends on whether the lease is an operating lease or a finance lease.

In an operating lease, the manufacturer or dealer has retained ownership of the asset with a view to using it to generate rental income and few, if any, of the risks and rewards of ownership have passed to the lessee. As a consequence, therefore, no selling profit should be recognised and the asset should initially be disclosed in the balance sheet at its purchase price or production cost.

In a finance lease, there are two types of income associated with the arrangement: a profit on the 'sale' of the asset and rental income over the period of the lease. The selling profit should be recognised at the start of the lease. The amount of the selling profit, however, should be restricted to the excess of the fair value of the asset (i.e. its normal selling price, adjusting for appropriate discounts and current market conditions) over its cost to the lessor (net of grants receivable by the lessor). The lessor will often allow some degree of discount on the normal selling price in order to obtain the overall contract. Therefore, the assessment of the fair value of the asset should be calculated to ensure that the finance income under the lease is based on a normal rate of interest.

3.2 Sale and leaseback transactions

3.2.1 Introduction

SSAP 21 makes specific reference to sale and leaseback transactions which are characterised by a linked agreement whereby the vendor/lessee sells an asset but continues to have the use of it on the basis of a lease granted by the purchaser/lessor. The subject of the sale and leaseback is often a property but may be another fixed asset. Instead of selling the asset outright, the original owner may sometimes lease the asset to the other party under a finance lease and then lease it back. This type of transaction is known as a 'lease and leaseback' and is similar to the sale and leaseback, with the result that the term 'sale and leaseback' is often taken to include such transactions.

No problems arise with regard to the treatment of a sale and leaseback transaction in the accounts of the purchaser/lessor who will record the asset purchased at cost and then, depending on the nature of the lease will follow the provisions of SSAP 21 in the usual manner. The vendor/lessee is in a somewhat different position in so far as there are certain circumstances where the sale and leaseback transaction requires to be accorded special treatment. The nature of the circumstances depends on the type of lease, as discussed below.

3.2.2 Leaseback under a finance lease

To reiterate, the key characteristic of a finance lease is that the 'risk and reward' associated with the asset rests with the lessee. Consequently, when a vendor enters into a sale and leaseback transaction, he retains the risk and reward. Where the leaseback is of a finance nature and the sales value is greater than the written down value, then this apparent profit should not be taken to the profit and loss account at the time of the transaction. This is because it would be inappropriate to show a profit on the disposal of an asset, which has then, in substance, been re-acquired under a finance lease.

The apparent profit may be treated in one of two ways:

a) the asset is treated as sold in the usual way except that the apparent profit should be deferred and amortised in the profit and loss account of the vendor/lessee over the shorter of the lease term and the asset's useful life. The asset and the obligation under the lease are recorded at the sales value; or

b) the asset may remain in the vendor/lessee's books at the written down value with the sales value being treated as a creditor. This creditor balance, therefore, represents the finance lease liability under the leaseback. When lease payments are then made, they are treated partly as repayment of the creditor, and partly as a finance charge to the profit and loss account in the usual way for finance leases.

The second treatment better reflects the substance of the transaction whereby, in effect, a loan is being raised that is secured on the asset, which was previously owned.

If the sales value is less than the written down value of the asset in the vendor/lessee's books, the apparent loss arising on the sale should again not be taken to the profit and loss account at the time of the transaction, but should be accounted for in the same way as for apparent profits. If the low sales value, however, demonstrates that a permanent diminution in value has occurred (i.e. that the fair value of the asset is below its written down value), this should be reduced accordingly by an immediate charge to the profit and loss account.

3.2.3 Leaseback under an operating lease

In the case of an operating lease the 'risks and rewards' are transferred along with the legal title to the asset. Therefore, (i) the original asset should be treated as having been sold, and (ii) the operating lease should be accounted for under the provisions of SSAP 21 (see Part A section 3.2.2). It is necessary to determine the fair value of the asset and compare this with the contract sale price. Since the sale and leaseback transactions are connected, the sale may be arranged at other than the fair value with

the effect of any difference being recognised in the rentals payable. The appropriate accounting treatment is as follows:[48]

1. if the sale price is equal to fair value, any profit or loss on sale should be recognised in the profit and loss account immediately;
2. if the sale price is above fair value, the profit to be recognised immediately should be restricted to any excess of the fair value over book value. The excess of the sale price over fair value will be reflected in higher rental charges and should therefore be carried forward and amortised over the period to the first rent review or, if there is no rent review, over the period of the lease;
3. if the sale price is below fair value, then fair value may be ignored; any excess of the sale price over book value should be recognised immediately. If the sale price is below book value, however, the shortfall will be compensated by lower rentals in the lease agreement and it may therefore be carried forward and charged to the profit and loss account over the period to the first rent review or over the lease period if there is no rent review. (The fair value cannot be below book value because the book value of the asset must first be adjusted as discussed earlier.)

As mentioned earlier in section 1, the adoption of FRS 5 'Reporting the substance of transactions' impacts upon the way in which companies account for leased assets. Previously, many large organisations entered into sale and leaseback transactions that resulted in operating leases. Now, by adopting FRS 5, the accounting treatment of operating leases has changed. It encourages companies to look behind the definitions laid down in SSAP 21 in determining lease type to identify the substance rather than the form of transactions. While it confirms that the terms of any standard which contains 'more specific provisions' should be applied, FRS 5 states that when a transaction involving a previously recognised asset results in no significant change in a company's rights or other access to benefits, 'the entire asset should continue to be recognised'. Many companies, when reviewing the SSAP

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[48] Examples of the correct treatment for these scenarios can be found in the Guidance Notes, paragraphs 157-160.

21 treatment of sale and leaseback transactions in the context of FRS 5, are therefore likely to consider that the leaseback is more appropriately treated as a finance rather than an operating lease.

3.3 Sub-leases and back-to-back leases

3.3.1 Introduction

The main provisions of the standard and the accompanying Guidance Notes principally deal with leases involving only two parties, the lessee and the lessor. However, situations arise when there are more parties to a lease arrangement. Although the discussion below relates to situations involving an original lessor, an intermediate party and an ultimate lessee, there are many different types of arrangement in practice. The intermediate party may act either as both a lessee and a lessor of the asset concerned or, alternatively, as an agent of the lessor in the transaction.

Sub-leases and back-to-back leases both involve the intermediate party acting as both lessor and lessee of the asset. The two types of contract are different: under a back-to-back lease the terms of the lease contract match to a greater extent than is the case for a sub-lease arrangement. This difference is therefore only one of degree, and the important decision to be made concerns whether the arrangement is one of agency or, rather, that the intermediate party is acting as both lessee and lessor in two related but independent transactions.

3.3.2 The original lessor and the ultimate lessee

The existence of sub-leases or back-to-back leases will not affect the accounting treatment adopted by these parties. The original lessor has an agreement with the intermediate party, which is not affected by any further leasing of the asset unless the original lease agreement is replaced by a new agreement,.

Similarly, the ultimate lessee has a lease agreement with the intermediate party. The ultimate lessee will have use of the asset under that agreement and must make a decision as to whether the lease is a finance lease or an operating lease in the usual way as set out in the standard.

3.3.3 The intermediate party

The appropriate accounting treatment by the intermediate party depends on the substance of the series of transactions. This in turn depends on whether the intermediate party is acting as an agent/broker for the original lessor or as a principal in both transactions. If it is the latter, the intermediate party will act as a lessee to the original lessor and lessor to the ultimate lessee. The question of recourse is important in determining the role of the intermediate party. If, for whatever reason, the ultimate lessee defaults on his lease obligations, does the original lessor have recourse against the intermediate party for the outstanding payments under the lease?

Another important factor in the decision of how the intermediate party should account for the transaction is what happens if the original lessor defaults, for example through its insolvency. If the intermediate party is only a broker/agent, then he will suffer no loss upon such default, and the ultimate lessee would have a claim against the original lessor only.

If these factors indicate that the intermediate party is acting only as a broker or agent for the original lessor, he should not include any asset or obligation relating to the lease contract in his balance sheet. The income received by such an intermediary should be taken to the profit and loss account on a systematic and rational basis.[49] On the other hand, if the intermediate party is taken to be acting as both lessee and lessor in two independent though related transactions, he should recognise his assets and obligations under finance leases in the normal way.

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[49] Guidance Notes, para. 165.

4.1 Tax variation clauses

The levels of rentals in a lease contract are determined using the tax regime which exists at the time the lease terms are agreed. Tax variation clauses are common in finance leases and are designed to protect the lessor from any adverse changes in the capital allowance or rates of corporation tax which are assumed by the lessor to exist when the level of rentals are agreed.

4.1.1 Adjustments

The rental adjustment when a tax variation clause takes effect may be made via:

a) lump sum payments as and when the lessor pays the new higher or lower tax charges for any period; or
b) the future rentals including stepped increases or decreases to reflect the changes; or
c) a new fixed rental being calculated to be paid over the remaining primary lease term.

4.1.2 Lessee

Any change in the total rentals payable by the lessee represents an alteration to its remaining finance charges under a lease. These changes should be accounted for by spreading the revised finance charges over the remaining lease term using any one of the methods outlined in Part A section 3.2.1 above. However, where the calculations of lump sum payments are not made until the relevant tax calculation is made by the lessee, as in 4.1.1 (a) above, then the modified rentals should be accounted for in the periods in which they arise. This approach is justified, despite the fact that a constant rate of charge on the lessee's remaining liability will not result, because the lessee does not know what the future rentals will actually be.

Under either approach, if any reduction in rentals exceeds the finance charges which were expected to accrue, then the Guidance Notes suggest that the excess

The intermediate party's recognition of income as a lessor will be affected by the lease from the original lessor. If the intermediate party had purchased the asset concerned outright, then his income recognition as a lessor would be on the usual net cash investment basis as explained in Part A section 4.2.2 above. However, since the asset has been obtained under a finance lease, income recognition will be based on the net investment in the lease. This is because the intermediate party's investment in the leased asset will be shown as the present value of minimum lease payments, reduced throughout the lease by the capital portion of total rental payable to the original lessor. Therefore, there are no major tax consequences of the lease from the original lessor. The net investment approach to income recognition used for hire purchase contracts (see Part A section 4.3 above) will be the appropriate method.

In practice it is unlikely to be the case that all situations encountered can be relatively easily allocated as one of either broker/agent or lessee/lessor in nature, as the risks and rewards will probably be spread between the parties involved. This is especially likely to be the case where more than three parties are involved. In all cases, it is a question of judgement as to whether substantially all the risks and rewards of ownership from the asset can be attached to any party under the arrangement.

4. Variation clauses

The various payment patterns so far described are equally applicable to rentals fixed at the commencement of the lease contract for the whole of the primary period and to floating rentals, i.e. those that are subject to variation during the lease period. Although there are no statistics for the proportion of fixed and floating rentals, it is likely that the majority (by number) of finance leases executed are on fixed rentals. Rentals vary most frequently for corporation tax and interest rate changes but leasing agreements may also provide for adjustments in the amount of rental for several other factors such as the lessor's entitlement to writing down allowances or government grants.

should be deducted from the capitalised cost such that future depreciation charges are lower than they would have been.[50] Negative finance charges are not permitted under the standard.[51]

4.1.3 Lessor

To take account of changes in the rate of corporation tax, lease arrangements provide for rentals to be adjusted either by stating that the lessor's rate of return is to be maintained, or by reference to a formula showing the amount of increase or decrease for each one per cent change in the rate of corporation tax applicable to each fiscal year.

Any variations in taxation and rentals due to a tax variation clause which materially affect the lessor's analysis of its net cash investment in the lease over its remaining term will affect both the total future gross earnings and also their allocation to accounting periods. This will therefore affect the reduction in the net investment in the lease over its remaining term, shown as a receivable in the lessor's balance sheet.

4.2 Interest variation clauses

Leasing companies may use any one of several bases for calculating interest adjustments, apart from the broad approach of maintaining rates of return:

a) Rentals may be fixed in relation to a specified lending rate at the date of expenditure on the leased equipment. Once determined, rentals would remain at the same level throughout the lease period. Lending rates prescribed include Finance House Base Rate, London Inter-Bank Offered Rate and the base rate of the bank specified by the lessor.

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[50] Guidance Notes, para. 38.
[51] See SSAP 21, para. 34 for details.

b) The lease contract may instead provide for a specifically calculated periodic adjustment for the difference between the actual lending rate and the rate of interest used in the calculation of rentals. Such adjustments are usually made quarterly, semi-annually or annually by applying the average difference in interest rates over that period to the amount of the lessor's cash investment in the lease.

c) Alternatively, the lease contract may contain a formula setting out the amount by which rentals are to vary for each one per cent change in the average lending rate over the primary lease period. The amount of the percentage adjustment may be fixed throughout the lease term, or may vary year by year, reflecting the lessor's reducing cash investment over the primary period of the lease.

In connection with any of these methods, the lease contract may specify either a range of interest rates inside which there is to be no rental adjustment or a maximum and/or minimum lending rate above or below which rentals are not to be adjusted.

The Guidance Notes stipulate that where a lease contains an interest variation clause which adjusts the rental by reference to a specified lending rate as discussed in (a) above, no adjustment need normally be made to the calculations (as discussed in Part A section 3.2.1) carried out at the start of the lease. Any increase or reduction in rentals should be accounted for as an increase or reduction in the finance charge in the period in which it arises.[52]

5. Termination of leases

5.1 Introduction

A lessor entering into a finance lease looks to the lessee for the recovery of the full amount (or at least a major part) of the outlay on the leased asset. The lessor needs to be assured that the user of the equipment is in a position to meet the rentals payable

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[52] Guidance Notes, para. 37.

during the primary lease period as they fall due. At the inception of the lease the lessor will generally not anticipate termination during the primary lease term as the lessee can be assumed to be using the asset at least for that period. In addition, such an early termination will be unlikely as a termination payment is usually required to provide the lessor with an amount equivalent to most or all of the rental receipts which would have been received if no termination had taken place. The following two sections detail the impact of the termination of finance leases from the lessee's and lessor's viewpoint, respectively.

5.2 Finance leases - lessee

In the event of premature termination of the lease before the end of the primary period (through default by the lessee or a total loss of the equipment) the lessor will require the outstanding capital cost of the equipment to be paid as a lump sum. In the absence of insurance proceeds, the lump sum terminal payment must be paid by the lessee. The terminal payment is usually calculated by discounting future rentals from their due dates to the date of default at a rate stipulated in the lease contract and, except in the case of a total loss of the leased equipment, by deducting therefrom an amount related to its then market value. Any payment made by the lessee will reduce the lease obligation on the balance sheet. If either a part of this obligation is not eliminated or the termination payment exceeds the previously existing obligation, then the remainder or excess will be included as a gain or loss, respectively in calculating the total gain or loss arising on the disposal of the asset.

A similar accounting treatment is required where the lease terminates at the expected date and there is a residual at least partly guaranteed by the lessee. A payment made under such a guarantee will reduce the lessee's obligation to the lessor as the guaranteed residual would be included in the lessee's finance lease obligation. If any part of the guaranteed residual is not called upon, then the lessee would eliminate it by transferring it to the calculation of the profit or loss on disposal of the leased asset.

5.3 Finance leases - lessor

Termination payments received by the lessor upon an early termination will reduce the lessor's net investment in the lease shown as a receivable. If the termination payment is greater/less than the previously shown net investment, then the lessor will show a profit/loss respectively on termination of the lease. Such a loss is usually deducted from finance lease income unless exceptionally large, in which case it is disclosed separately.

In most circumstances it is unusual that any loss will arise on termination because a finance lease contract is likely to contain termination clauses such that the lessor is fully compensated for early termination and the lessor has legal title to the asset. Since the lessor has title, it can continue to include the asset in the balance sheet under current assets as a receivable to the extent that sales proceeds or new finance lease receivables are expected to arise. If the asset is then re-leased under an operating lease contract, the asset should be transferred to fixed assets and depreciated over its remaining life.

The two reasons for losses on termination not arising (full compensation and legal title remaining with the lessor) are, to some extent, complementary. If the termination payment is intended to give full compensation, then the asset may be retained by the lessee and sold with any proceeds going to him. On the other hand, if the termination payment is not so structured the lessor will re-possess the asset and either sell or re-lease it.

6. Comparisons with international accounting practice

In principle, SSAP 21 closely resembles the equivalent accounting standards dealing with leasing produced by all the major English-speaking countries. Such standards distinguish between finance and operating leases, stipulate that finance leases should be capitalised by the lessee, and that rentals under operating leases should be written off on a systematic basis. As one would expect, however, given the differences in

accounting procedures, there are a number of minor differences in the definitions offered, the range of accounting methods permitted, and the nature and extent of the disclosure required. These differences are the subject of this section and are discussed below with reference to the two most representative standards, International Accounting Standard (IAS) 17 and the US accounting standard Financial Accounting Standard (FAS) 13.

6.1 United States: FAS 13 'Accounting for Leases'

The USA was the first country to adopt a lease accounting standard, with FAS 13 'Accounting for Leases' becoming effective for leases entered into on or after January 1, 1977. Since it was introduced the concept of lease capitalisation has subsequently been adopted both in an International Accounting Standard and also in the national accounting standards of many countries, including the UK.

The US standard is the lengthiest and most prescriptive of the standards. In a similar way to SSAP 21, FAS 13 defines a capital lease (which is equivalent to a finance lease in the UK) as one that transfers substantially all of the risks and rewards of ownership to the lessee, and states that such leases should be capitalised by the lessee so that the level of the company's economic resources and financial obligations shall not be understated. The US standard is much more prescriptive than SSAP 21, however, in its definition of what constitutes a finance lease, FAS 13 provides four classification criteria: if any of these criteria are met then the lease is a capital lease. Thus, a capital lease is defined as one that satisfies one or more of the following criteria at the start of the lease:

a) The present value of the minimum lease payments is equal to at least 90 per cent of the fair value of the asset at the start of the lease period. This is therefore similar to the 90 per cent test in SSAP 21. However, the 90 per cent test is more accurately described as a rule in the USA because if the test indicates a capital lease under FAS 13, then no other factors can change this classification. As was discussed in Part A section 3.1.8, the 90 per cent test in SSAP 21 gives a

rebuttable presumption of a particular lease classification (as a finance or operating lease).

b) The lease transfers ownership of the asset to the lessee by the end of the lease period.

c) The lease contains a bargain purchase option. This is a provision allowing the lessee, at his option, to purchase the asset at a price sufficiently lower than the fair value at the exercise date, such that it is reasonably assured that the option will be exercised.

d) The lease term is equal to 75 per cent or more of the estimated remaining economic life of the asset. If, however, the lease term begins within the last 25 per cent of the total economic life of the asset, then this criterion should not be used for the purpose of classifying the lease.

As a consequence, it is possible for a lease to be classified as a finance lease under FAS 13, using criterion (d) for example, and as an operating lease under SSAP 21 because criterion (a) is not satisfied. The US rules are also less flexible than those of the UK. An example of this relates to leases of commercial property. In the UK most such leases would be classified as operating leases because they contain rent review clauses which mean that the lessor retains the economic benefits from the asset. The approach in the US, however, is to apply strict rules to leasehold properties and to classify according to those rules.

The initial amount capitalised under SSAP 21 and FAS 13 may also differ slightly. The UK standard states that at the inception of a finance lease the lessee should capitalise the asset and the obligation at the present value of the minimum lease payments, whilst the fair value of the asset may be used as an approximation to this figure. FAS 13 specifies that the lower of the present value of the minimum lease payments and the fair value of the asset must be the figure used. In addition, whereas SSAP 21 stipulates that the lessee should use the interest rate implicit in the lease to arrive at the present value of the minimum lease payments, FAS 13 states that the lessee must use the lower of the lessor's implicit rate (if this is known) and his own

incremental borrowing rate. The latter is effectively the rate at which the lessee could borrow funds in the market to finance the purchase of the asset to be leased. Another difference between the two accounting standards relates to the methods used by lessors to allocate gross earnings to accounting periods. FAS 13 requires the use of the net investment method, whereas the net cash investment method is required under SSAP 21, the former being reserved for hire purchase contracts only.

The US standard, in common with SSAP 21, defines operating leases by default as all leases other than finance leases. Both standards also prescribe that lessees should write off the rentals payable under operating leases on a systematic (normally straight-line) basis over the lease term, whether or not the payments are made on such a basis.

There are also differences between FAS 13 and SSAP 21 in the disclosure requirements for finance and operating leases with the principal differences summarised as follows:

a) FAS 13 specifies that future minimum rental payments are disclosed gross and future finance charges be deducted therefrom to arrive at the liability in the balance sheet. SSAP 21 permits the use of either this method or the disclosure of the net liability (net of finance charges).
b) FAS 13 requires future rental payments to be analysed for each of the five years after the balance sheet date, and then in total for subsequent years. SSAP 21 specifies that this analysis may be either gross or net of future interest charges and shows less detail by aggregating amounts payable between two and five years.
c) FAS 13 requires disclosure of all future minimum rentals payable under non-cancellable operating leases analysed for each of the five years following the balance sheet date, and in total thereafter. SSAP 21 requires disclosure of the operating lease rentals payable in the year following the balance sheet date analysed between the periods in which the operating lease commitments expire.

Finally, as in most areas, the US Financial Accounting Standards Board have issued more detailed and definitive guidance than the UK Accounting Standards Committee (now Board) which serves as a useful source of information in areas of lease accounting not specifically covered by SSAP 21 and its Guidance Notes.

6.2 International Accounting Standard: IAS 17 'Accounting for Leases'

IAS 17 was issued in September 1982 for accounting periods beginning on or after January 1, 1984. Its basic requirements are similar to SSAP 21 and FAS 13. However, on the subject of accounting for leases and in comparison with the two national standards, the International Accounting Standard is brief and general in its approach and, as a result, avoids significant contradiction of any of the major national accounting standards.

In a manner similar to SSAP 21 and FAS 13, it defines a finance lease as one that transfers substantially all of the risks and rewards of ownership to the lessee. IAS 17 does not specify any criteria to be used in order to identify a finance lease other than to state that such a lease is normally non-cancellable and secures for the lessor the recovery of capital outlay plus a return on the funds invested. The standard does give examples of situations where a lease would normally be classified as a finance lease, one of which is a 'present value test' which makes no reference to a specific percentage, such as the 90 per cent mentioned in both SSAP 21 and FAS 13.

IAS 17 is consistent with FAS 13 in requiring that finance leases be capitalised by the lessee at the inception of the lease at the lower of the present value of the minimum lease payments and the fair value of the leased asset. As was noted in the previous section, this is different from SSAP 21, which requires the present value of the minimum lease payments to be capitalised but recognises that the fair value can be used as a reasonable approximation. These differences in the amount capitalised will in practice usually be insignificant within the context of the lessee's financial statements. IAS 17 states that, where practicable, the interest rate implicit in the lease shall be used to calculate the present value of the minimum lease payments.

Where this is impracticable the lessee's incremental borrowing rate should be used. SSAP 21 instead requires the use of the former rate, while FAS 13 requires that the lower of the two rates be used.

The disclosure requirements of IAS 17 for lessees are similar but less detailed than those in either SSAP 21 or FAS 13. The amount of assets acquired under finance leases and the amount of the related current and long term liabilities should each be disclosed. The periods in which this long term liability and commitments under non-cancellable operating leases of more than one year fall due should be disclosed.

The IASC in 1989 published an exposure draft, E32 'Comparability of Financial Statements' which proposed to amend, *inter alia*, the requirements of IAS 17. The main changes were proposed as follows:

a) for finance leases other than leveraged leases, lessors are to recognise finance income to reflect a constant periodic rate of return on the net investment in the lease. The use of the net cash investment in the lease (required by SSAP 21) will no longer be available;[53]
b) leveraged leases are to be distinguished from other types of finance lease; and lessors are to recognise finance income on leveraged leases to reflect a constant periodic rate of return on the net cash investment in the lease during periods in which the net cash investment is positive.

IAS 17 was eventually revised and reformatted in 1994 and is presented in the revised format adopted for International Accounting Standards as from 1991. Although certain terminology was changed to bring it into line with current IASC practice, no substantive changes were made to the original approved text, with the result that the proposed amendments (points a) and b) above) were not incorporated

into the new standard. It was further revised in November 1997, without changing the 'all-or-nothing approach' to classification.

6.3 A comparison between the approaches adopted by the three major accounting standards

This section contains a discussion of the issues arising out of the differences in approach adopted by the three lease accounting standards (SSAP 21, FAS 13 and IAS 17) outlined in the preceding sections.

The simple definition of a finance lease given in IAS 17 and SSAP 21, that it is "a lease that transfers substantially all the risks and rewards of ownership" to the lessee, can be contrasted with the detailed criteria contained in FAS 13. From the outline sketched earlier, it is readily apparent that the two approaches differ to a significant degree. The approach adopted by FAS 13 has the advantage that it minimises any ambiguity and, hence, maximises the likelihood that similar leases will be accounted for in a consistent manner. In contrast, the IAS 17 approach does not attempt to minimise the scope given for judgement and thus similar leases may not be accounted for in the same way.[54] The effect of the IAS 17 approach may be to encourage lessees to interpret the standard as permitting the non-capitalisation of leases which transfer to the lessee substantial risks and rewards of ownership, thus avoiding the higher reported borrowing levels and reduced levels of reported return on capital employed that capitalisation would entail. It follows that, particularly in marginal cases, heavy reliance is placed on the responsible exercise of judgement.

The requirement to use judgement rather than rely on a rigid set of rules has been reinforced in the United Kingdom by the issue of FRS 5 on reporting the substance of transactions. This standard applies the principle of substance over form

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[53] Prior to this date, IAS 17 allowed lessors accounting for finance leases to recognise finance income to reflect a constant periodic rate of return on either the net investment or net cash investment in the lease. The definitions of these terms are essentially the same as those in SSAP 21.

[54] It should be noted, however, that within any one set of financial statements (and in financial statements for different years for a particular entity) a consistent treatment should be adopted.

to all transactions, not just leases. As pointed out in section 1, although FRS 5 does not amend SSAP 21, it states that the general principles contained in FRS 5 will be relevant in determining the substance of leases.

The approach adopted by FAS 13 does, however, suffer from the disadvantage that lessees eager to avoid capitalisation are incentivised to try to negotiate leases which fall outside the definition of a finance lease while still, as far as possible, retaining the benefits of finance leases. The leases which emerge as a result of such negotiations may have many of the features of finance leases and yet cannot under FAS 13 be reflected as such in the financial statements. The rigid definition embodied in the US standard could thus be giving rise to a large amount of ingenuity being applied to drafting lease agreements.[55]

7. Criticisms of SSAP 21 and future developments

From our discussion of SSAP 21, it is evident that the standard has been subject to much criticism since its introduction. As we have seen, a considerable amount of the criticism centred on the classification of leases and the details of the 90 per cent test, with the contrast being highlighted between the more detailed US accounting standard's approach to lease classification and that of the UK with its 'rebuttable presumption'.

Criticism has also focused on the requirements to capitalise leased equipment in the accounts of the lessee. In particular, Leaseurope (the association of the equipment leasing companies of most European countries) has pointed out that in some continental countries (notably Germany) such treatment would be illegal, despite the fact that it is required not only by SSAP 21 and FAS 13 in the USA but, more importantly, by IAS 17. Leaseurope is in the process of conducting a consultation exercise with its member associations on the standardisation of notes to accounts. It is perhaps an interesting point to make that, if SSAP 21 had been

produced by the leasing industry, there would no doubt have been more flexibility in the standard to enable it to accommodate different approaches to accounting for leases in the accounts of the lessor.

Furthermore, it has been argued that the requirement that lessees under finance leases should capitalise leased equipment ignores the legal form of the leasing transaction, under which the lessee never actually owns the asset, and it is therefore technically incorrect to regard it as a capital asset of the lessee. Proponents of this view argue that the data required to be shown in the balance sheet of the finance lessee could equally well have been required to be disclosed in notes to the accounts without the requirement to capitalise assets that are not owned.

There are, however, a number of reasons why this is an unsatisfactory way to present the information. Firstly, the income statements and balance sheets generally have a far greater impact on the reader of an annual report than information provided by way of footnotes. Secondly, it can be argued that notes to financial statements should be used to supply additional information that cannot easily be provided in the body of the financial statements. The use of disclosure in the notes as an excuse for failing to reflect material items in the financial statements is generally regarded as erroneous. A further argument against leaving disclosure to the footnotes was provided by a discussion paper entitled 'Accounting for Leases: A New Approach'.[56] This paper includes a table highlighting how important lease finance is to the airline industry (an admittedly fairly extreme example), with the sample of airlines showing operating lease commitments far in excess of those of finance leases.[57] Such relative figures for operating lease versus finance lease commitments make it difficult to argue a case that the inclusion of the former by way of footnote is merely supplementary information.

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[55] It was noted in Chapter 1 section 4 that there has indeed been a trend towards the greater use of operating leases. See footnote 24 for details of sources cited.

[56] The discussion paper was produced by the accounting standards bodies of the United States, the United Kingdom, Canada and Australia and was issued in July 1996.

The Finance and Leasing Association is also currently considering introducing a Statement of Recommended Accounting Practice which would cover some of the aspects of leasing that are not necessarily covered in SSAP 21 or in the accompanying Guidance Notes, or that have arisen through subsequent developments in the industry. Indeed, Part B section 1 contained a discussion of the probable change in SSAP 21 in the future to accommodate the reporting approach adopted by FRS 5 'Reporting the substance of transactions' (1994) and the possible ending of the distinction between finance leases and operating leases, at least in its current form.

The above mentioned discussion paper, 'Accounting for Leases: A New Approach', identified a number of contentious areas within current lease accounting, in particular the somewhat arbitrary distinction that has to be made at a certain point between finance and operating leases and the fact that this lack of certainty has been exploited by the finance industry in devising off-balance sheet structures. A solution is proposed by the paper, namely that no further distinction is to be made between finance and operating leases and, instead, all leases are capitalised in the accounts of lessees.

The discussion paper argues that, since it is clear that all lease contracts give rise to assets and liabilities (i.e. a lease gives the lessee a valuable right to use the leased asset for a period of time and the lessee has an obligation to pay certain lease rentals), all leases should give rise to the recognition of assets and liabilities. This is a fairly controversial proposal, since any contract (for example a purchase commitment) not just a lease, gives rise to certain rights and obligations, it could be argued that any such contract should give rise to an asset and a liability. To avoid such an extreme interpretation, there is a need for clearer recognition criteria. There is, however, a lack of consensus on this issue; the discussion paper suggests

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[57] For example, British Airways had operating lease commitments of £1,195m as at June 30, 1994, and finance lease commitments of only £499m. The figures for United Airlines were a more dramatic $26,713m versus $1,246m. See Boobyer [1997], Exhibit 12.2, p. 239 for details.

enforceability as the trigger for recognition, whilst a draft United Kingdom statement of principles suggests instead performance.

The discussion paper triggered a lively debate in the financial press, with many observers highlighting the importance of operating leases as a major source of long-term, and not just short-term, finance.[58] It was suggested that the off-balance sheet attraction of leasing finance would be drastically reduced, and that it would make purchasing a more favourable option. Alternatively, in a measure designed to lessen the impact of such a policy, it was thought that companies could elect for shorter lease terms so that the asset and liability required to be capitalised would appear smaller. Such rumours had a detrimental effect on the valuation of leased properties.

This debate is likely to persist for some time, after all only the suggestions of accounting standard setters who are largely agreed on the principle of lease capitalisation have been discussed. The difficulty of incorporating the ideas of the bodies of many European countries where even this is highly controversial (as can be seen from Table 2.1 below) not to mention the representatives of many industries which make heavy use of big-ticket leases (and, hence, are likely to hold a preference for operating leases) ensure there is a great deal of support for retaining the off-balance sheet treatment of operating leases.

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[58] Out of a sample of 232 listed companies in the UK in 1994, the average unrecorded lease liability per company was £51m, of which only £8m was short-term. Long-term unrecorded lease liabilities represented 39 per cent of reported long-term debt before capitalisation. See "Accountancy: A lesson from the leasing shop", by V. Beattie and A. Goodacre in *The Financial Times*, September 4, 1997.

Table 2.1 Lease Capitalisation – the two views

Commercial substance countries		Legal form countries
Lessor and lessee	Lessor only	
Australia Belgium Canada Hong Kong Ireland Japan New Zealand The Netherlands Portugal* Spain* United Kingdom United States	Austria Germany Luxembourg	Denmark Finland France Italy Norway** Sweden** Switzerland

Recently changed *, or shortly to change ** to commercial approach (as at December 1996)

Source: Boobyer [1997] p. 235

Part C Leasing and Taxation

As was discussed in Chapter 1 section 4, taxation has been of critical importance to the development of the leasing industry in the UK. It is, therefore, appropriate to outline the way lessors and lessees are taxed in the United Kingdom. A general outline of the UK taxation system is presented first, followed by a closer look at the system of capital allowances in the UK and then the special areas of deferred taxation and Value Added Tax. In addition, section five will provide an outline of the strategy adopted by leasing companies in the light of the current taxation regime.

1. The method of company taxation in the UK

The treatment of taxation in accounts is regulated not only by the Companies Acts but also by the following Statements of Standard Accounting Practice and Financial Reporting Standards: SSAP 5, 'Accounting for value added tax' (April 1974); SSAP 8, 'The treatment of taxation under the imputation system in the accounts of companies' (amended version December 1977); and FRS 19 'Deferred Tax' (December 2000).[59] In the sections that follow, the system of company taxation in the United Kingdom is outlined. As a result of the sample period in the study ending on 31 December 1995, the focus will be on the system prevailing prior to the recent changes made between 1997 and 1999. The subsequent changes to the system, which include changes in the payment of Corporation Tax and the abolishment of Advance Corporation Tax, are then discussed.

1.1 The imputation tax system

The imputation taxation system was introduced into the UK, in place of the 'classical' taxation system, in March 1971 and became fully effective from April 1973. The main features of the imputation system, prior to the changes set out in the second Finance Act 1997 (about which more below), were as follows:

a) Corporation tax is levied on the company's taxable profit. Profits include both income (apart from franked investment income, for which see below) and chargeable gains.

b) When the company makes a distribution to shareholders (i.e. a dividend payment), to the extent that the distribution has not been paid out of franked investment income of that same period, it has to pay to the Inland Revenue an advance payment of corporation tax (ACT) as a percentage of the distribution or, where appropriate, the excess of the distribution over franked investment income. A tax credit is imputed to shareholders, which is deemed to satisfy his or her liability to basic-rate tax on the amount of the dividend income, unless the taxpayer is a higher-rate taxpayer. For this purpose the year is divided into four quarters; ACT must be paid within 14 days of the end of each quarter.

c) ACT is available to be set off against the company's liability to corporation tax for the period in which the dividend is paid, although this 'set off' is restricted in certain circumstances. Any unrelieved ACT can be carried back for six years or carried forward indefinitely.

d) The resultant net liability is called 'mainstream' corporation tax (MCT) which is payable nine months after the end of the company's accounting period.[60]

SSAP 8 requires that the following items should be included in the taxation charge in the profit and loss account and, where material, separately disclosed:[61]

a) The amount of UK corporation tax specifying:

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[59] FRS 19 replaced SSAP 15, 'Accounting for deferred taxation' (October 1978, revised 1985) with effect from 23 January 2002.

[60] To illustrate, assume that a company with chargeable profits of £1m in its year ended 31 March 1999 pays a dividend of £200,000 on 31 October 1998. The corporation tax payable is as follows (given a rate of corporation tax of 30% and ACT of 20/80 = 1/4):

	£
£1,000,000 @ 30%	300,000
Less: ACT paid in respect of dividend - £200,000 * ¼	(50,000)
Balance of corporation tax payable (MCT)	250,000

[61] SSAP 8, Para. 22, from Lewis & Pendrill [1992] p. 176.

(i) the charge for corporation tax on the income of the year (where such corporation tax includes transfers between the deferred taxation account (see section 4) these should be separately disclosed where material;

(ii) tax attributable to franked investment income;

(iii) irrecoverable ACT;

(iv) the relief for overseas taxation.

b) The total overseas taxation, relieved and unrelieved, specifying that part of unrelieved overseas taxation which arises from the payment or proposed payment of dividends.

Each of these items will be examined in turn, discussing the treatment in the profit and loss account together with the associated treatment in the balance sheet. The changes in the imputation tax system arising out of F(no.2)A 1997 will then be discussed.

1.2 Corporation tax

At the end of each accounting period companies compute the corporation tax charge payable on their profits using the tax rate that will apply for the financial year with the rate used being disclosed. The resulting liability is deducted from the relevant ordinary or extraordinary profits in the profit and loss account and credited to a corporation tax payable account.

Due to the fact that this corporation tax is payable nine months after the end of the company's accounting period it will be included in the balance sheet as a creditor falling due within one year. The Companies Act 1985 requires the separate disclosure of the amount for creditors in respect of taxation and social security.[62]

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[62] Companies Act 1985, Schedule 4, Notes on the balance sheet formats (9). See *ibid.* p. 177.

1.3 Tax on franked investment income

Dividends received from UK companies are known as franked investment income, as they are not subject to further taxation as income in the hands of the receiving company. A tax credit is instead imputed to the shareholder. If the shareholder is a company, this credit can be set against ACT arising on dividends paid in the same year (this only affects the amount of ACT payable and does not alter the accounting treatment discussed below). Franked investment income received should be grossed up by the amount of the tax credit before inclusion in the profit on ordinary activities before taxation.[63] The tax credit (i.e. the tax on franked income) should be included with the tax charge in the profit and loss account.[64]

1.4 Advance Corporation Tax (ACT)

When a company pays a dividend it will, assuming it has received insufficient franked investment income, also have to pay an amount of ACT within 14 days of the end of the relevant quarter. The ACT on any dividend payable or proposed at the balance sheet date should be recognised as a liability in the balance sheet, being included in 'taxation and social security' falling due within one year. When those dividends are paid the ACT on them constitutes a payment in advance of the corporation tax liability of the year in which they are paid, i.e. of the year following the balance sheet date. ACT is recovered primarily by being offset against corporation tax on the income of the year in which the dividend is made, as noted in the example above. ACT can be carried forward indefinitely if necessary, but in each year there is a restriction on the use of ACT to set off, by reference to the UK taxable income of that year.

The ACT on dividends paid during the financial year is available as a deduction from the corporation tax liability for the year. The amount to be included in the balance sheet in respect of the corporation tax liability for the financial year

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[63] SSAP 8 para. 16. See Wild & Goodhead [1994] p. 349.
[64] SSAP 8 para. 28(c). *ibid.*

therefore is the amount charged in the profit and loss account less any ACT that is available for offset in respect of dividends paid in the year. Any ACT on dividends paid in the year that cannot be offset against the corporation tax liability of that year may be offset against the corporation tax liability of the previous six years to the extent that there is sufficient taxable income in those years available to absorb the offset. ACT that cannot be set against the taxable income of the year in which it arises or any of the previous six years (unrelieved ACT) may be carried forward to be set against the taxable income of future years.

It is necessary for accounting purposes to decide whether recovery of ACT is reasonably certain and foreseeable. ACT can be carried forward in one of two ways:

a) To offset against the deferred tax account (see section 4 below), to the extent that the deferred tax account represents an amount that will be released to the profit and loss account over the life of the related assets. Only a proportion of the balance on the account can be used for this purpose; this is the extent to which ACT can be set off against the UK corporation tax liability. However, in so far as the deferred tax account represents amounts other than deferred UK corporation tax, it is not available for this purpose.
b) As an asset or by offset against the deferred tax account to the extent that estimated UK taxable income to be earned in the succeeding period exceeds the distributions likely to be made in that period.

If ACT is regarded as recoverable, to the extent that it cannot be offset against the deferred tax liability it should be included in 'prepayments and accrued income'. If 'prepayments and accrued income' is included under debtors rather than as a separate heading, then the recoverable ACT should be included in the amount falling due after more than one year.

ACT not considered recoverable within the succeeding year or available to be set off against the provision for deferred tax should be written off and shown

separately as part of the tax on profit on ordinary activities. Should it subsequently be recovered, the credit should be disclosed separately as a deduction in arriving at this amount. The reasons for writing off or recovery through the profit and loss account should be explained in the notes to the accounts. Furthermore, the accumulated amount of any ACT written off but available for recovery against future corporation tax liabilities should also be disclosed.

1.5 Overseas taxation

A company resident in the UK is liable to corporation tax on all its profits whether they arise in the UK or overseas. As profits that have arisen overseas are usually subject to taxation in the relevant overseas country, they may therefore be subject to double taxation. Similarly, where a UK company receives dividends from the taxed profits of an overseas subsidiary, such dividends are not classed as either franked investment income nor group income and therefore are subject to UK corporation tax.

It is possible for companies to obtain relief for such double taxation, although the precise nature of the relief depends upon the terms of any double taxation convention between the UK government and the relevant overseas government. Where there is no double tax convention, it is still possible to obtain unilateral relief for double taxation.

In some cases it is possible to obtain relief against UK corporation tax for the whole of the overseas taxation payable however, in other cases, some of the overseas taxation may be unrelieved, for example, where the rate of overseas taxation on overseas profits exceeds the rate of UK corporation tax on the same profits.

1.6 Recent changes to the system of Advance Corporation Tax

The system of corporation tax that has been described in the preceding sections was the system that prevailed until the Labour Party took office in May 1997. The new

government wasted no time in unveiling a budget, contained within a second finance act for that year (F(no.2)A 1997), which affected the system of tax credits which lay behind the imputation system. In particular, a number of organisations were affected by the curtailment of tax credits, including pension funds, charities and individual tax payers. The changes represented a selective abandoning of the imputation system. The rationale of such a system is to prevent double taxation and hence a tax credit is imputed or deemed to meet the tax liability of the recipient of the dividend. The measures introduced, however, separated ACT and what was the related tax credit.

Furthermore, although for UK companies the principles of paying ACT and the rate of payment remained the same, F(no.2)A 97 abolished the Foreign Income Dividend Scheme, which was introduced in Finance Act 1994 to limit the damage to UK multinationals distributing income earned abroad to shareholders. As expected, there was extensive lobbying to retain the FID scheme, which highlighted the attacks made to the imputation system. Unsurprisingly, given the large amount of criticism to what was seen as an incomplete change to the system, the following budget (incorporated in FA98) ended the system of advance corporation tax with effect from 6th April 1999, 'large' companies[65] instead adopting a Quarterly Instalment Payment (QIP) system for paying corporation tax.

The new system applies to accounting periods ending on or after 1 July 1999, although it will not fully come into force until 1 July 2002, a transitional period phasing in the changeover to the new system. From 2002, large companies will pay corporation tax in four equal instalments, in the seventh, tenth, thirteenth and sixteenth months following the start of the accounting period. Such companies are now therefore required to make payments on account in respect of the corporation tax on their profits during the year to which they relate.

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[65] A large company is one whose profits for an accounting period exceed the Upper Relevant Maximum Amount (URMA), currently £1.5 million, in force at the end of that period.

2. Capital allowances

2.1 Introduction and history

The outline of the historical development of the leasing industry in the UK detailed in Chapter 1 section 4 highlighted the central part which the availability of capital allowances played in its growth to becoming a major source of capital investment in the UK. Commercial prudence has long dictated that part of the profits of a business should be set aside to cover the decrease in value of its capital assets. However, it was not until the Customs and Inland Revenue Act was passed in 1878 that any corresponding relief was allowed in computing taxable profits. The original capital allowance relief was meant to approximately represent the actual decrease in value, with the Commissioners being given the power to determine the appropriate rate in each case. It was not long before rates were standardised and with that the commercial and fiscal paths began to diverge and have never since coincided.

The statutory basis of the current system began with the Capital Allowances Act 1968 (in respect of industrial buildings and scientific research), subsequently amended by the Finance Act 1971 (in respect of plant and machinery), and (in the case of leasing in particular) the Finance Act 1986. The Capital Allowances Act 1990 has supplanted the previous legislation and is the basis of the current legislation. It has been subsequently amended by more recent Finance Acts.

The capital allowance system acts as the fiscal equivalent of depreciation; its role is to provide a means for companies to write off a capital expense against revenue. It could be argued that the whole purpose of the finance lease is to permit the lessee to avoid a large capital outlay, and to permit the lessor to employ its capital to good effect. The system of capital allowances accentuates the benefits that both parties can obtain from the lease transaction. The high point of tax efficiency of these arrangements was under the Labour Government of the late 1970s. At this time an individual taxpayer paying tax at the top rate of 98 per cent on investment income could obtain 100 per cent capital allowances in respect of expenditure which he

incurred on the purchase of plant or machinery for leasing, and leased the equipment to a lessee having no liability to UK tax (for example, a non-resident or a UK local authority) which could not itself have utilised the capital allowance.

The tax benefits began to be eroded almost as soon as they appeared by Finance Act (FA) 1976 (for certain partnerships); FA 1980 (which introduced a number of anti-avoidance measures); and FA 1982 (leasing to foreign lessees). The Finance Act 1984 saw radical changes to the then widely accepted principle of using tax incentives to encourage investment. The government at the time felt that uneconomic investments were being made financially viable only through the tax deferral provided by capital allowances. The Finance Act 1984 progressively reduced capital allowances from 100 per cent to a writing down allowance of 25 per cent per annum over the period 1984 to 1986, while at the same time reducing the rate of corporation tax from 52 per cent to 35 per cent. The latter reduction was justified on the grounds that it would increase companies' net of tax returns from investments and still make capital investment attractive. The current rate of corporation tax is 30 per cent.

When viewed from the standpoint of the last two decades one could conclude that the system of capital allowances has moved from one concentrating upon incentives for capital investment to one that only provides some allowance for wear and tear on the capital asset. If, however, a longer term perspective is taken one should take into account the fact that for many years after first gaining legal recognition capital allowances and depreciation were further and further separated as a number of artificial allowances were introduced, in the sense that they bore no relation to diminution in value. Hence, one could instead argue that the present trend is of a return towards a capital allowance system, which is beginning to recognise once more the real purpose for which these allowances are given.[66] However, even under the present system of writing down allowances there is still a mismatch

between the tax measure of depreciation in the form of writing down allowances and the accounting measure of depreciation.[67]

2.1.1 Qualifying capital expenditure

To qualify for capital allowances, expenditure must be incurred on the provision of an asset falling within one of the capital allowance categories (detailed in section 2.4.3) and must be of a capital nature. If the expenditure is of a revenue nature it will, subject to the provisions of s. 74 Income and Corporation Taxes Act (ICTA) 1988, be deductible from gains or profits. Expenditure on 'small tools' such as implements or utensils is usually regarded as being of a revenue nature.

The capital allowance provisions need not, for example, be considered if the expenditure can be shown to be within s. 74(d) ICTA 1988, as being for '... the supply... of any implements, utensils or articles employed for the purposes of the trade, profession or vocation', since such expenditure will be a deductible expense. Therefore, a distinction must be drawn between 'machinery and plant' and 'implements, utensils or articles employed' (see section 2.4.3.1 below).

Similarly, although s. 74(g) ICTA 1988 prohibits a deduction from profits in respect of capital employed in the improvement of trade premises, a deduction will be allowed for an amount expended on repairs to such premises under s. 74(d) ICTA 1988. Therefore, if the premises fall within the definition of 'industrial buildings or structures' (see section 2.4.3.2 below) an amount expended will be allowed in full if it can be shown to be a repair; if it cannot, capital allowances only will be deductible. If the premises are, for example, a retail shop and thus outside the definition, repairs will still be allowed in full but if the expenditure is held to represent an improvement rather than a repair, no tax relief will be available at all. In an enterprise zone whose

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[66] The temporary reintroduction of initial and first year allowances in November 1992 and more recently under the Labour Government (about which more later) shows, however, that the use of capital allowances for economic incentive purposes is still alive.

designation has not lapsed, capital allowances will be available, other than for expenditure on private dwellings.

2.2 Types

The system of capital allowances provides for relief to be given in one or more of the following three stages:

a) An 'initial' or first year allowance (FYA)[68], which is available in the year of acquisition.
b) An annual writing down allowance (WDA), which writes down the remaining value of the asset over its period of use by the taxpayer.
c) A final balancing allowance or charge given by relating the sale proceeds of the asset against its tax written-down value (modified in the pooling system - see section 2.5 below).

For equipment leasing, the rules relating to plant and machinery are the most important and, unless otherwise stated, in the remainder of this section all references will be to those categories of asset.

Capital allowances are given as a deduction against the taxable income of a company, thereby reducing the taxable profit, increasing taxable losses, or moving from taxable profits to taxable losses. Taxable profits give rise to a tax charge. Taxable losses, however, can be used in a number of ways as follows:

a) they can be set against the total UK profits subject to corporation tax of the chargeable period, from all sources;

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[67] An asset leased for five years considered over a period of twelve years, assuming a corporation tax rate of 33 per cent and after-tax interest rate of seven per cent would produce a deficit of 1.14 per cent of the original cost of the asset to the Inland Revenue. See Soper et al. pp. 133-134.
[68] Initial allowances were available for expenditure incurred in industrial buildings, FYAs for expenditure incurred in plant and machinery.

b) they may be transferred to or from other members of a group or consortium of companies (see section 5.2);

c) they can be carried back to set off against the profits of a previous period, except to the extent that losses attributable to capital allowances may be carried back three years. For accounting periods ending on or after 1 April 1991 all trading losses may be carried back three years;

d) to the extent that losses cannot be otherwise used, taxable losses may be carried forward to offset taxable profits arising in the same trade.

2.2.1 First year allowances

In the first period of rapid expansion in leasing activity, between 1972 and 1984, 100 per cent first year allowances were granted in the year of acquisition (taxpayers, however, had the alternative of disclaiming the first year allowances and choosing writing down allowances instead if their need for allowances was likely to be greater in the years following the acquisition). Another innovation of the period was the reduction in the burden of administration on the taxpayer and the Inland Revenue whereby, instead of giving individual allowances to each separate class of assets (as had been the case pre-1970), the residual of cost less first year allowances claimed on all plant was added to a 'pool' of unclaimed allowances. This pool was subject each year to the 25 per cent writing down allowance.[69]

First year allowances were phased out over the two-year period 1984-86. The rates of the allowance before, during and after the phasing-out period were as follows:

a) for expenditure on or before 13.3.84 - 100 per cent;

b) for expenditure between 14.3.84 and 31.3.85 inclusive - 75 per cent;

c) for expenditure between 1.4.85 and 31.3.86 inclusive - 50 per cent; and

d) for expenditure on or after 1.4.86 - 0 per cent.

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[69] See section 2.5 for a detailed outline of the pooling system.

Therefore, the first year allowance was no longer available in respect of expenditure incurred after 31 March 1986; however, expenditure incurred before 1 April 1987 was still eligible for first year allowances if it was made under a contract entered into on or before 13 March 1984. Thereafter, no first-year or initial allowance was given until 1 November 1992 (see below), except for the following circumstances. The initial allowance continued to be made available in respect of expenditure on qualifying buildings in enterprise zones at a rate of 100 per cent. The same rate (as a first year allowance) also continued to apply to expenditure that fell within s. 22 Capital Allowances Act (CAA) 1990.[70]

The next three sections detail the temporary reintroduction of FYAs and initial allowances by the Conservative Government anxious to encourage investment at a time when the UK economy was struggling to emerge from the severe recession of the early 1990s. This is followed by an outline of the more recent changes made by the current Labour Government.

2.2.2 The 1992-93 initial allowance

An initial allowance of 20 per cent was introduced in respect of expenditure incurred on the construction of industrial buildings between 1 November 1992 and 31 October inclusive.[71] The enterprise zone initial allowance provisions were applied with modifications. The allowance was 20 per cent. The building must have been brought into use before 1 January 1995, whilst the expenditure must have been incurred under a contract entered into between 1 November 1992 and 31 October 1993. Where the 100 per cent enterprise zone was available it was not possible to claim the 20 per cent allowance. The normal 4 per cent writing down allowance continued to apply (see section 2.4.3.2), so that the total allowance for the year in which the 20 per cent allowance was available was 24 per cent. As was the case under the system of 100 per cent initial allowances the allowance could be disclaimed.

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[70] See section 2.3 (a) for details.

2.2.3 The 1992-93 first year allowances

As stated above there was a temporary reintroduction of first year allowances for plant and machinery in respect of capital expenditure incurred between 1 November 1992 and 31 October 1993. The rate of the first year allowance was set at 40 per cent, not the 100 per cent that was in existence prior to 1984. The lessor must have incurred the expenditure on the provision of plant or machinery for the purposes of the leasing trade and the equipment must have belonged to it in the chargeable period relating to the incurring of the expenditure. No first year allowance was available if the chargeable period to which the incurring of expenditure was also that relating to the permanent discontinuance of trade. Therefore, the trade must have continued into another accounting period (in the case of corporate lessors) or another basis period (in the case of individual lessors) before being discontinued if the first year allowance for the previous chargeable period was to be claimed successfully.[72]

A company may elect to take no, or a reduced, first year allowance by written notice to the Inspector of Taxes presented within two years of the relevant accounting period. One effect of these provisions is that it makes available higher writing down allowances in subsequent years. This could prove beneficial where two companies are members of the same group for group relief purposes and a loss that is made by one is available to extinguish a profit made by the other under the group relief provisions. In these circumstances the claimant company could disclaim first year allowances so as to maximise the advantage of the group relief, and preserve the benefit of writing down allowances for use in future years when group relief would not be available. This could also be beneficial for a company (which is not a member of a group) which establishes a new trade of leasing, and which has no other income

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[71] The detailed provisions are contained in Finance Act 1993.

[72] From fiscal year 1997-98, the introduction of the current basis of assessment replaced the previous preceding year basis. Hence, the concept of a basis period, as distinct from an accounting period or fiscal year, was abolished for individual lessors.

other than that from leasing operations against which to set first year allowances available to the company in its first accounting period.[73]

As was discussed above, the first year allowances were reintroduced by the government in order to encourage industrial investment at a time when the country was showing little sign of recovering from recession. However, because of the depth of the recession, the temporary first year allowances did little to bring forward capital investment. Indeed, the perception of the Inland Revenue was that their attempt to boost investment was ineffective, but nonetheless costly as an additional 15 per cent capital allowance (in the case of plant and machinery) was given for expenditure which would have occurred in any event. Such experience should perhaps be borne in mind in assessing the impact of the first year allowances introduced by the new Labour Government, which came into office in 1997.

2.2.4 The current system of allowances

With effect from 2 July 1997 and initially for a one-year period, a first year allowance of 50 per cent instead of the writing down allowance was available for small and medium sized enterprises (SMEs) for investment in plant and machinery. The first year allowances were extended by the following two Finance Acts (1998 and 1999), with FYAs of 40 per cent being available for SMEs. It is the first time in recent decades that tax incentives by way of capital allowances have been dependent on the size of business. There were probably two reasons for this: firstly, SMEs are deemed an important source of enterprise and therefore employment in Europe. Secondly, according to an Inland Revenue Press Release (2 July 1997), more than 99 per cent of businesses should qualify. Thus it is attractive to target SMEs and at the same time the cost is limited because although only the largest 1 per cent of firms do not qualify, they account for 85 per cent of capital investment.

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[73] Section 5.2 provides a more comprehensive outline of the group structure of companies and group relief provisions.

To qualify for the first year allowances a business had to satisfy at least two of the following conditions:

(a) turnover not more than £11.2 million;

(b) assets not more than £5.6 million; and

(c) not more than 250 employees.

A company must be classified as small or medium sized for the year in which the expenditure is incurred. If the company is a member of a group, the group must be small or medium sized.

There were a number of exceptions contained in F(no.2)A 97. The new rate of first year allowance did not apply to expenditure on plant and machinery for cars, sea-going ships, railway assets and leasing. As was to be expected from a sector that owed its historical growth to the tax-efficient use of capital allowances, there were strong representations made by the FLA to the Chancellor at what was seen as unfairly harming the leasing sector.

The exclusion of finance leasing companies from the first year allowances, together with further measures designed to close tax loopholes previously exploited by finance lessors (which will be discussed in section 5.2) had a serious impact on leasing. It was reported that six months after the July 1997 Budget there was a 60 per cent decrease in big-ticket leases (leasing of assets greater than £20 million).[74] Furthermore, in the three months to November 1997, the value of new leases, at £557m was one third of the value in the previous year (£1.56 billion). The last time the outlook had been so depressing was in the recession at the beginning of the 1990s. It was forecasted in the industry that, since they did not expect a sudden reversal of the budget changes, there would be a trend away from finance leasing towards the use of operating leasing (which was left unscathed by the budget).

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[74] As reported by C. Gresser "Trains, planes and oil rigs hit by tax changes", *The Financial Times*, January 15 1998.

It is interesting to note that the impact of the changes on small and medium sized enterprises was not likely to be favourable after all since, according to research by City University Business School,[75] SMEs depend disproportionately on leasing. Furthermore, it revealed that growing rather than profitable SMEs were particularly heavy users of finance leases, particularly due to their lack of taxable profits. This will be discussed further in the review of the literature examining the relationship between firm size and leasing in Chapter 3 section 10.

2.2.5 Writing down allowances

Section 24 (1) CAA 1990 outlines an entitlement to writing down allowances where persons or companies are carrying on a trade in circumstances where they have incurred capital expenditure on the provision of equipment wholly and exclusively for the purposes of the trade and such equipment belongs or had belonged to them. A writing down allowance is given by reference to 'qualifying expenditure'. This is defined in s. 25 CAA 1990 as the balance (after the deduction, if any, of first year allowances) of any capital expenditure incurred on the provision of equipment for the purposes of a trade in the chargeable or basis period[76] or at any previous time. Expenditure can be qualifying expenditure only once. The following section provides a more detailed discussion of expenditure qualifying for writing down allowances.

2.3 Capital allowances applied to leasing

As was briefly mentioned above in section 2.1 with reference to the 1970s, any person could establish a leasing trade and claim capital allowances with the benefit being passed, in the form of reduced rentals, to the lessee irrespective of the latter's underlying tax position. Even if the lessee were a non-taxable entity, tax benefits could be effectively obtained. In 1979 The Institute of Fiscal Studies investigated the taxation of banks and estimated that approximately 80 per cent of the benefit was

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[75] Reported in "Tax avoidance move tilts the level playing field: Finance leasing sector sees Budget speech as an undeclared attack on the industry", by J. Kelly in *The Financial Times*, 15th July 1997.
[76] See footnote 72 for details of the recent abolition of the concept of the basis period.

transferred to lessees.[77] Tax-based leasing in the late-1970s was not restricted to incorporated lessors; to a large extent leasing was used as a vehicle to shelter income tax liabilities through various personal tax schemes.

As a result of such developments within the leasing industry, there have been a number of amendments to the capital allowance legislation with specific reference to leasing, beginning with the Finance Act 1980. It declared that first year allowances (now termed writing down allowances) on leased assets, whether used in the course of trade or not, were to be excluded unless it was certified by the lessor that the plant and machinery would be used for a qualifying purpose and for a requisite period.[78]

Plant and machinery was used for a qualifying purpose if:

a) it was leased to a lessee who used it for the purposes of a trade other than leasing. Where the lessor's expenditure is old expenditure[79] the lessee must have been in a position to claim first year allowances if it had incurred the expenditure itself. This excluded leases to all non-trading entities, including local authorities and government agencies. When the expenditure is new expenditure[80] it is necessary that the lessee would have been entitled to include the expenditure as part of its qualifying expenditure for the purpose of determining writing down allowances

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[77] As stated in Soper et. al [1993], p. 137.

[78] S. 64(1) FA 1980. Many of the provisions of the Act are now contained in The Capital Allowances Act 1990: where this is so it is indicated.

[79] Old expenditure is essentially expenditure that qualifies for first year allowances. S. 22 CAA 1990 defines old expenditure as being either:
i) expenditure which received financial assistance offered by the Government prior to 13 March 1984 in respect of projects in development areas, Ulster or the area for which the Highlands and Islands Development Board has responsibility; or
ii) any expenditure incurred before 1 April 1986, which was the date on which first year allowances ceased to be available in normal circumstances in respect of plant and machinery; or
iii) expenditure which was not new expenditure under s. 57 Finance Act 1986 (repealed). Such expenditure comprises that incurred in respect of contracts entered into before 14 March 1984 and is no longer relevant.

[80] New expenditure is that incurred after 31 March 1986. Excluded from this definition is expenditure within s. 41(1)(c) CAA 1990 which covers expenditure on the provision of motor cars costing less than £12,000.

under s. 24 CAA 1990 if it had bought the plant or machinery itself and incurred the capital and expenditure in so doing;[81]

b) it was used for short-term leasing. This is defined by reference to the time for which the equipment was leased to a single lessee. Short lets of less than 30 days must be normal, with a limit of 90 days per year to the same lessee. Alternatively, the maximum period for which the equipment is leased to a single lessee must normally be less than one year, and the equipment must not be leased to lessees who would themselves not qualify for first-year or writing down allowances (as detailed in point (a)) for more than two years in either the requisite period (defined below) or, where the requisite period exceeds four years, any consecutive period of four years within the requisite period;[82]

c) it is let to a lessee who uses it for the purposes of short-term leasing and either is resident in the UK or uses the asset in carrying on a trade in the UK. These requirements are designed to ensure that the lessee qualifies to pay UK taxation. There is, however, no requirement that it should be eligible for either first-year or writing down allowances relating to old and new expenditure, respectively;[83]

d) it was used for a purpose other than leasing, for example when the lessor uses assets bought for leasing purposes in some trade other than for leasing, which it also carries on.[84] This extends to equipment used in any other trade and also equipment used by the lessor in connection with its leasing trade but not actually leased, i.e. forming part of the lessor's fixed assets such as office furniture, computers, etc.

The 'requisite period' was a period originally set at four years beginning on the date on which the equipment is first brought into use by the person incurring the expenditure. In the case of new expenditure and certain old expenditure, however, it is a period of ten years. The old expenditure in question related to equipment leased to a person not resident in the UK and who did not use the equipment for the

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[81] S. 39(2) CAA 1990.
[82] S. 40(1),(2) CAA 1990.
[83] S. 39(4) CAA 1990.
[84] S. 39(5) CAA 1990.

purposes of trade carried on in the UK.[85] If the lessor disposes of the asset within the four- or ten-year period the requisite period comes to an end. If a lease failed these tests, then writing down allowances only were available. Following the withdrawal of first year allowances, the Finance Act 1986 removed the regulation - S. 64(1) FA 1980 - but has left all the definitions on the statute book. A reason for this is that when the Finance Act 1985 introduced short-life asset 'de-pooling' arrangements (see section 2.5), the qualifying user test was retained.

The Finance Act 1980 also introduced legislation to allow losses arising from the trade of leasing to be set off against other income only when the lessor carries on a trade of leasing for at least six months in a year. In addition, the tax-efficiency of leasing by individuals was eroded further by what is now s. 384(6) and (7) Income and Corporation Taxes Act 1988, which disallows any set-off of capital allowances against the other income of the individual unless he carries on the trade of leasing for at least six months in a year. These requirements effectively ended the individual income-tax-based leasing transaction.

Section 70, Finance Act 1982[86] introduced a further provision to restrict allowances to leasing companies by reducing the level of writing down allowances from 25 per cent to 10 per cent per annum for assets leased outside the UK. This was introduced in order to prevent the export of capital allowances, which at the time were valued at 52 per cent (the corporation tax saving to the leasing companies). This legislation has effectively eliminated direct UK-to-foreign leasing since 1982. UK leasing companies are now involved in overseas leasing activity only via corporate links with international leasing groups, with the assets being owned by a foreign leasing company within the group. The FLA (and, before 1992, the ELA) has strongly pressed for changes in the 1982 legislation, particularly in view of the setting up of the European single market in 1992 with the possibility that the European

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[85] S. 70(3) FA 1982.
[86] Now under s. 41 & 42 CAA 1990.

legislation may call into question the distinction in the UK tax code between leasing to UK customers and leasing to those elsewhere in the EU.

The recent changes to the system of capital allowances under the present government, particularly the exclusion of leasing companies from claiming first year allowances (see section 2.2.4), and the targeting by the Inland Revenue of the lessor's use of "staggered" or "quarter-end companies" (see section 5.2) have dramatically restricted the tax advantages of finance leases. As described above a possible outcome of this has been the move towards operating lease finance, which has been documented in the financial press recently. Whether this reduction in the use of finance leases has resulted in a reduction in overall investment or merely a shift towards other types of raising finance must await further research.

2.4 Claiming capital allowances

2.4.1 Incurring expenditure

In 1984, when the phased changes in capital allowances were announced in advance, it became necessary to review the legislation determining the precise dates when expenditure is deemed to be incurred for the purposes of capital allowances. Under Section 57, Finance Act 1985[87] (for accounting periods ending after 17 December 1984), expenditure is defined as incurred on the date on which the obligation to pay an amount becomes unconditional and before that on which the asset becomes the property of the lessor. One month's grace is given at the end of the accounting period between the obligation being established and the obligation becoming unconditional, to allow the earlier date to be used for the purpose of claiming capital allowances in that accounting period. The maximum period in which credit can be brought forward between the obligation becoming unconditional and the actual payment being made is four months, i.e. if payment is made beyond the cut-off point then the date of payment will instead be used as the date on which expenditure is incurred.

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[87] Now under s. 159(3) CAA 1990.

2.4.2 Belonging

Under Section 61(1)(a) CAA 1990, a lessor who is not carrying on a trade of leasing is deemed for the purpose of the capital allowances provisions to be trading. A separate pool of expenditure for the purpose of calculating allowances and charges is created for equipment leased in this way. The most common case of equipment leasing otherwise than in the course of a trade is where a landlord leases equipment, such as lifts or central heating systems, incorporated as fixtures in a building, together with the building itself. Under the general law, machinery or plant which is attached to a building in such a way as to become a fixture is *ipso facto* part of the building.

The provisions of s. 61(4) CAA 1990 state that where the lessee of a building is required, under the terms of a lease, to provide such machinery or plant, it is, for the purposes of capital allowances, nevertheless treated as belonging to that lessor. At present it is thought by the Inland Revenue that current legislation has gone too far to enable capital allowances to be claimed by leasing companies.

In the past, difficulty arose from the interaction of the provisions of s. 22(1)(b) and s. 24(1)(b) CAA 1990 and the general law of property which, from the above, regards a fixture, once annexed to land, as becoming the property of the landlord. Where anyone other than the freeholder incurred expenditure on such equipment the equipment became, from the date at which it became fixed to the land, the property of the freeholder. It therefore did not 'belong' to the person who had installed it, as required by s. 22(1)(b) and s. 24(1)(b) as a precondition to the making of a first-year or writing down allowance. Thus, a transaction such as the grant of a building lease and the subsequent construction by the lessee of a building including machinery or plant brought about a situation where no allowance could be claimed because the freeholder had incurred no capital expenditure and the building did not belong to the lessee under the building lease. This was the conclusion reached by the Court of Appeal in *Stokes v. Costain Property Investments Ltd* ((1984) STC 204,

(1984) 1 All ER 849 CA). The Court of Appeal decided that the word 'belong' implied a right to dispose of the equipment, and that the lessee did not have this right.

The inadequacy of this rule led to the introduction of the Finance Act 1985 of special rules for plant that becomes a fixture[88] and applied to expenditure incurred after 11 July 1984. Although a highly complex and controversial piece of legislation, essentially it allows the lessee to elect for the purposes of taxation that the relevant section (53) of CAA 1990 will apply, so that for all material purposes the equipment will be treated as belonging to the equipment lessor in consequence of incurring the expenditure, and the lessor may claim the capital allowances.

2.4.3 Capital allowances relating to specific assets

For expenditure incurred after 13 March 1985, the rates of allowances over the main categories of allowance are as shown in Table 2.2.

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[88] Now contained in ss. 51 to 59 CAA 1990.

Table 2.2 Rates of allowances for expenditure incurred after 13 March 1986[89]

Category	FYA	Initial	WDA	
Plant and machinery (i)	-	-	25 %	p.a. on balance
Plant and machinery (ii)[90]	40%	-	25 %	p.a. on balance
Industrial buildings	-	-	4 %	p.a. on cost
Hotels	-	-	4 %	p.a. on cost
Industrial buildings in Enterprise Zones	-	100 %	25 %	p.a. on cost
Scientific research	100 %	-	-	
Patents	-	-	25 %	p.a. on balance
Know-how	-	-	25 %	p.a. on balance
Ships	-	-	free	depreciation[91]
Long life assets	-	-	6%	p.a. on balance

Original Source: Soper et al. [1993], Table 13.2, p. 136

The following sections provide an overview of some of the above categories.

2.4.3.1 Plant and machinery

This section covers the aspects relating to capital allowances for plant and machinery. The meaning and constitution of 'plant' is, however, a complex subject and unfortunately there is no definition of plant in any of the taxes acts. Despite this, there are a number of judicial decisions relating to plant and from which some general points can be deduced.

Furthermore, machinery and plant must also be distinguished from stock-in-trade (see *Blake v. Shaw* [1843-1860] All ER Reprint 504).[92] This is usually taken into account by companies in the course of preparing and auditing the financial

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[89] With the exception of the period 1 November 1992 and 31 October 1993 when first year allowances were reintroduced (see section 2.2.2).
[90] These rates have applied since July 1998 and are applicable for small and medium enterprises only. The 25 per cent writing down allowance is applied to the balance in subsequent years. See section 2.2.4.
[91] See section 2.4.3.4 for a full description of the system available for ships.
[92] See Sowler, ICAEW [1996] Chapter 6 p. 37.

statements. Problems may occur where items are taken out of stock and used as, or in the construction of, machinery or plant. To comply with the Capital Allowances Acts, such items should be brought in at their original cost.

The first general description of plant was given in *Yarmouth v. France* (1887 19 QBD 647) where the judge stated that:

> '... in its ordinary sense it includes whatever apparatus is used by a businessman for carrying on his business - not his stock-in-trade which he buys or makes for sale; but all goods and chattels, fixed and moveable, live or dead [in this case it was a horse], which he keeps for permanent employment in his business.'[93]

In the 1970s, when the rate of first year allowances for plant exceeded the rate of initial allowances for industrial buildings, the definition of plant was explored further in the courts, the judgements generally relating to whether the item performs a function in the taxpayer's trade or is merely the setting for which the trade takes place.

The significance of precise classification is of course due to the fact that if an asset is not held to be plant, it will not be subject to the 40 per cent first year allowance or the 25 per cent writing down allowance where applicable (see Table 2.2 above). If the asset is instead deemed to be an industrial building, it will qualify for the much lower industrial buildings allowances (see below). Furthermore, where a 'non-plant' asset is deemed to be part of a commercial building, such as a shop or office, no capital allowances can be claimed on the expenditure; commercial buildings do not qualify for capital allowances on the grounds that they do not depreciate in value over time.

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[93] This definition was approved by the House of Lords in *Hinton v. Maden and Ireland Ltd* (1959) 38 TC 391.

The Finance Act 1994 attempted to codify the distinction between machinery and plant and buildings in respect of expenditure incurred after 30 November 1993.[94] The new rules introduced in FA 1994 are not intended to change the treatment of assets where the courts have specifically decided that a particular item was plant but s.117 FA 1994 provides new rules for 'what is plant'. The new rules are aimed at determining where the borderline is between what qualifies as plant and what does not.

In general, the new rules only outline what is not plant. Any asset that lies outside the definitions remains subject to existing case law and practice. One could argue that a clear aim of the Inland Revenue under the Act is to restrict what qualifies as plant for capital allowance purposes.

2.4.3.2 Industrial buildings

Industrial building allowances are granted when expenditure is incurred in the construction of an industrial building, which is to be occupied for the purpose of a trade. Only the costs of construction are allowed, and costs relating to the acquisition of the interest in the land are specifically excluded. However, the term 'industrial building or structure', which is defined by reference to s. 18 CAA 1990, has a broad meaning. In particular, the Inland Revenue expressed the view that the latter includes walls, bridges, dams, roads, culverts and tunnels.[95]

The rate of the industrial building allowance is four per cent on 'straight-line terms' (see Table 2.2), as distinct from the 'reducing balance' basis for writing down allowances on plant. Thus, the full cost of the building can be written off over 25 years in equal annual amounts. As the description of the allowance suggests, the building must be used for industrial purposes. If a building is partly used for industrial purposes and partly for other (e.g. offices, shops, showrooms and repair shops), the non-qualifying element will be excluded. This is done through an

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[94] SS. 117-118 FA 1994.
[95] Leaflet CA2, October 1972, as discussed in Sowler, ICAEW [1996], Chapter 6 pp. 20-20.1.

apportionment of costs; however, where the element of non-qualifying expenditure fails to exceed 25 per cent of the total capital expenditure of the building, then the whole building will be regarded as qualifying in full.

Certain areas of high unemployment or which are in need of substantial industrial regeneration have been designated by the Government as 'enterprise zones'. Capital expenditure incurred on the construction of buildings and structures in such zones, as long as it is incurred within ten years after the site has been included within the zone, is given special treatment in two ways under the provisions of s. 1 CAA 1990. Firstly, the scope of industrial building allowances has been greatly extended with the result that the only non-qualifying building is a dwelling house. Secondly, the phasing out of the initial allowances on industrial buildings as provided in s. 58 FA 1984 does not apply and the expenditure continues to qualify for an initial allowance at the rate of 100 per cent. These two factors have been largely behind the move of major retail chains and leisure complexes to out-of-town sites within enterprise zones over the last 15 to 20 years.

The concept of the 'relevant interest' is an important one in relation to industrial buildings and structures as the person entitled to the capital allowances is the person who, at any given time, is the owner of the relevant interest and is not necessarily the person who incurred the expenditure in the construction. S. 20 CAA 1990 defines the relevant interest as the interest to which the person incurring the expenditure was entitled at the time when he incurred it.

If, for example, the expenditure was incurred by the freeholder, the allowances will be made to the person who owns the freehold. If the owner buys a building new and unused from a developer then the industrial building allowances will be based upon the original cost. If, within 25 years, the building is sold or the relevant interest in the land is sold, then a balancing charge or allowance will arise. The new purchaser will be entitled to the allowance based upon the residue of expenditure (the unrelieved expenditure of the vendor) plus or minus the balancing

charge suffered by the vendor. The balancing charge is then spread evenly over the remainder of the 25-year period from which the building originally came into use.

2.4.3.3 Motor vehicles

Capital allowances for motor cars, excluding commercial vehicles, have been restricted since the Finance Act 1971 to an annual writing down allowance. The treatment of motor cars will vary according to whether or not the original market cost exceeds the statutory limit (£12,000 since 11 March 1992, previously £8,000). If it does, the so-called 'expensive' car is treated as an asset separate from any other; i.e. it is not pooled in so far as sales proceeds can only be set against the car to which it is related, thus generating separate balancing charges or allowances for each car. The 25 per cent writing down allowance for expensive cars is now limited to a maximum of £3,000 (previously £2,000) in any one year.

Cars originally costing less than £12,000 are restricted to annual writing down allowances of £3,000 or 25 per cent whichever is the lower.[96] Such cars are pooled with other similar cars in a similar manner to leased assets that did not qualify for the first year allowance. As will be outlined in section 2.5.1, the non-pooling of expensive cars provides a 'de-pooling' arrangement that is not available to cars costing less than £12,000.

An important point for lessees of 'expensive' (but not of 'inexpensive') cars, which compounds the effect of the restriction on the lessor's capital allowance, is the restriction placed on the deductibility for tax purposes of rental payments of cars valued at £12,000 or more. The amount of such payments that may be deducted is reduced to the ratio of £12,000, together with half the amount by which the new car value exceeds £12,000, to the total cost of the car. For example, if a car cost £16,000 only fourteen-sixteenths of the amount of the total rentals may be deducted for tax

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[96] An interesting point to note is the fact that the reference to the original market value allows expensive vintage cars to obtain greater allowances than equally 'high cost' new cars.

purposes.[97] This discriminates against leasing, since the lessee is in addition affected by the impact on lease rentals of the lessor's capital allowance restriction. Furthermore, relaxations introduced by s. 61 FA 1991 in the case of cars subject to hire-purchase agreements, whereby s. 35(2) CAA 1990 is disapplied, are not available in the case of leasing contracts. The FLA have therefore made strong representations for a review of the current legislation.

The restriction on deductibility of rental payments for 'expensive cars' is currently the subject of differences of interpretation. Since 1 August 1995 lessors have been able to reclaim VAT on cars used for leasing. A car with a list price of £10,500 will have a VAT-inclusive price of £12,337.50. The question arises: What is the 'cost' of the car. If it is £10,500 it will not be an expensive car and there will be no reduction in the lessee's allowable expenditure. If it costs £12,337.50 it will be classed as an 'expensive car' and there should be a reduction. Although the Inland Revenue is believed to argue that the 'cost' is the VAT-inclusive price, there is a good argument for saying that, since the lessor can now recover VAT, the actual cost is less than £12,000 and the provisions relating to 'expensive cars' should not apply.

Companies in the short-term car hire business, in contrast to lessors or companies acquiring cars for their own employees' use, have been able to treat such cars as 'plant and machinery' rather than being affected by the restrictions on capital allowances for cars. Such car-hire firms therefore continued to obtain first year allowances until 1 April 1986.

2.4.3.4 Ships

There are special provisions relating to ships, reflecting the large capital investment associated with such assets, and in part the strategic importance that is still attached to the British shipping industry, despite its decline since the early 1970s. However, such provisions are less generous than they once were. Prior to the phasing out of the

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[97] S. 35(2) CAA 1990.

first year allowance, a trader incurring capital expense on the purchase of a new ship could elect to take that allowance in full, or to postpone or forgo it or any part of it.[98] This allowance for ships is known as 'free depreciation' and contrasts with the system for plant and machinery described above.

The purchaser (either a company or a consortium) must give notice to the inspector within two years of the end of the period in which the expenditure is incurred requiring postponement of the first year allowance wholly or in part or requiring it to be reduced to a specific amount.[99] Where this has been done, an amount equal to the whole of the expenditure is disregarded in calculating any writing down allowance or balancing adjustment. However, it must be taken into account as disposal value in the chargeable period in which the ship no longer belongs to the company concerned (i.e. when it is sold, lost or broken up).[100] The system of free depreciation alongside first year allowances is generally no longer available but the British shipping industry has, unsurprisingly, campaigned to have it reintroduced, with an amendment to the Finance Bill 1991 being proposed to that effect. The amendment was not, however, enacted as the Treasury was suspicious of the possibility of 'tax-dodges' and, in addition, pointed out that during the time of the system of 100 per cent first year allowances and free depreciation, the British merchant fleet declined from 32 million to 13 million tonnes.[101]

The system today provides for the availability of first year allowances in respect of ships in the same circumstances as they are in respect of other items of equipment. Thus, writing down allowances in respect of leased ships are available where the ship is provided by the ship owner for leasing and letting on charter otherwise than by way of lease, providing that the ship is used for a qualifying purpose in the requisite period. Normal writing down allowances are not available on ships leased to non-UK residents (extended to persons carrying on a trade in the UK),

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[98] S. 30(1) CAA 1990.
[99] S. 30(1) CAA 1990.
[100] S. 24(6) CAA 1990.
[101] See Sowler, ICAEW [1996], Chapter 10 p. 37.

except where the lease is a short-term lease (see section 2.5.1), or where the ship is let on charter in the course of a trade of operating ships, subject to certain conditions.[102]

On acquiring the ship the owner is deemed to carry on a separate 'single ship trade'[103] for the purposes of the provisions relating to writing down allowances, balancing adjustments, qualifying expenditure and disposal value. The single ship trade is assumed to be carried on separately from any other trade. As a consequence, there is no pooling of ships with other leased assets, including other ships. Balancing adjustments are not made in respect of a single ship trade but in what is known as 'the actual trade', which is that carried on by the ship owner in the course of which it buys a ship. A balancing allowance is added to the ship owner's qualifying expenditure in the actual trade and a balancing charge is brought into account as disposal value, as if the ship had been sold or otherwise disposed of.[104] Hence a ship owner disposing of a ship may have a substantial balancing charge which cannot be set in the normal way against other qualifying expenditure in a pool. UK ship owners are therefore put at a disadvantage compared with their contemporaries operating under more favourable tax jurisdictions. In recognition of this, sections 94-98 Finance Act 1995 provide some relief by deferring the balancing charge where a qualifying ship is disposed of after 20 April 1994.

The present system of writing down allowances allows ship owners to postpone in full or in part the allowance as under the system of first year allowances.[105] Once more, notice must be given within two years of the end of a chargeable period for which the lessor has qualifying expenditure. In the calculation of the writing down allowance for future years, it is assumed that postponed allowances had been made in full, so that the normal reducing balance basis of writing down allowances is preserved. A postponed writing down allowance may be

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[102] For details of the conditions applying to charters of operating ships see *ibid.* Chapter 10 p. 38.
[103] S. 31(2) CAA 1990.
[104] S. 31(7) CAA 1990.
[105] S. 31(3) CAA 1990.

claimed wholly or in part for any later chargeable period during which the actual trade is carried on. This remains so even if the single ship trade is treated as terminated in or prior to the later period. In cases where the ship owner only claims part of the postponed writing down allowance, the balance may be claimed in any one or more subsequent periods until such time as the aggregate of the amounts claimed equal the amount originally postponed.[106] Furthermore, the lessor may also claim any writing down allowance to which he may otherwise be entitled for the period to which the claim relates.[107]

Finally, it should be noted that the special provisions relating to writing down allowances for ships are not compulsory. A ship owner can elect that they shall not, or shall no longer, apply.

2.4.3.5 Long life assets

The first Finance Act of 1997 (FA 1997) introduced a new measure for providing capital allowances on 'long life' assets. A long life asset was defined under the act as machinery and plant which, at the time of purchasing, would reasonably be expected to have a useful economic life of 25 years or more.[108] If so, the annual rate of writing down allowance is reduced from 25 to 6 per cent. Allowing for transitional provisions this rate of 6 per cent (on a reducing balance basis, in contrast to that for industrial buildings) applies to expenditure incurred on or after 26 November 1996 on the provision of machinery and plant. Allowances will, however, continue to be given under the old rules at 25 per cent per annum on expenditure incurred before the year 2000 under a contract entered into before 26 November 1996 and on expenditure on second-hand plant or machinery if the old rules applied to the vendor.

Businesses spending less than £100,000 per annum on such assets are largely excluded from the changes, leaving most businesses, including nearly all small and

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[106] S. 31(4) CAA 1990.
[107] S. 31(5) CAA 1990.
[108] S. 38A(2) FA 1997.

medium sized enterprises, unaffected by the change. In addition, expenditure on ships, motor cars, retail premises, hotels and dwelling houses are all exempted.

The exclusion for expenditure below the *de minimis* limit of £100,000 do not apply to contributions to expenditure on machinery or plant, nor to expenditure on a share in machinery or plant, on machinery or plant on which allowances have been given to a previous owner at the lower rate, or, crucially, on machinery or plant for leasing. The latter exclusion represents further evidence of the unease of the Inland Revenue with regard to the use of leasing as a tax-efficient method of raising finance.

2.5 The pooling system

In many countries, the system for capital allowances, or their equivalent, requires each asset to be depreciated separately for tax purposes. Even in the UK, within a company's register of fixed assets each asset may have its own depreciation calculated. However, in order to ease the administrative burden of the taxpayer and the Inland Revenue, it was decided that the system of capital allowances would run on a pooling system, with the current system being introduced by the Finance Act 1971.

The basic concept of the pooling system is that the company maintains a pool of the residue of incurred expenditure (after the deduction of previous allowances available, e.g. first year allowances or writing down allowances), and against this overall total an annual writing down allowance is calculated. The obvious advantage of the system is that it removes the requirement to calculate tax allowances for each individual asset. An additional point to mention is that, since the writing down allowance is an annual allowance then (providing the accounting period is less than 12 months) the allowance is reduced in proportion to the accounting period.

A feature of the pooling system is that potential balancing charges and balancing allowances, if related to individual assets, are spread over the duration of the pool at the rate of the annual writing down allowance (currently 25 per cent per

annum).[109] In reality in a leasing company there will be a number of separate leasing pools that do not allow balancing charges and allowances to be spread against other pools. These have arisen as a result of legislation concerned specifically with leasing. Prior to 1986, the separate pools potentially required by a leasing company would have been:

a) General pool: Own fixed assets used in its trade, and leased assets for which no special rules applied.
b) Motor car pool: Cars of original market value less than £8,000 (£12,000 if bought after 10 March 1992).
c) Non-qualifying leases: Leases to non-qualifying users, e.g. local authorities.
d) Foreign leases: Leases to non-UK residents where the writing down allowance is 10 per cent per annum.
e) Cars with an original market value greater than £8,000 (£12,000 if bought after 10 March 1992). Each car will form its own individual pool.

The Finance Act 1986 amended this structure to allow assets purchased after 1 April 1986, and subject to leasing agreements, to be incorporated into a single pool, although as stated above in section 2.4.3.3, the restrictions in respect of expensive cars remain in force, and the existing pools have been retained.

The pooling system was advantageous for leasing companies in the transitional period of the tax changes of 1984-86, with assets on which 75 per cent and 50 per cent first year allowances had been allowed and in periods of inflation where the general level of second-hand values has tended to increase. This benefit has reversed in recent years with the period of low inflation since the early 1990s and the fact that first year allowances of 100 per cent are available on very few assets. The pooling system has become disadvantageous, particularly when applied to assets

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[109] For a more detailed analysis of the pooling system see Soper et al. [1993] pp. 144-147, in particular Table 13.4.

subject to high levels of obsolescence such as office equipment and computers (see below for a method introduced to deal with this).

2.5.1 De-pooling

Under the system of writing down allowances, the tax life of an asset could be spread to infinity, if never sold, but in reality 95 per cent of the cost of the asset will be taken within the first ten years. With assets of short estimated useful life this will be a distinct disadvantage. As a result of this, an option to 'de-pool' selected assets was introduced in the Finance Act 1985 (s. 57 and Sch. 15 FA 1985).[110] It enables an election to be made to have certain items of plant or machinery pooled separately as 'short-life assets' and relates to assets acquired after 31 March 1986.

The provision was originally intended to encourage expenditure on short-life assets such as high-technology assets with little or no value at the end of their useful life, by enabling relief on their disposal or scrapping to be obtained earlier than would be the case if their disposal value came out of the general pool in the normal way.

Certain types of plant and machinery are excluded from the provisions by s.38 CAA 1990 and are as follows:

a) ships;

b) motor cars;

c) equipment leased by non-trading lessors;

d) equipment used only partly for trading purposes;

e) equipment in respect of which government, public or local wear and tear subsidies are payable;

f) equipment acquired for a consideration which is not taken into account for capital allowance purposes, or which was acquired by way of gift;

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[110] Now contained in ss. 37 and 38 CAA 1990.

g) equipment for which a first year allowance is not available because it is used otherwise than for the qualifying purpose in the requisite period.[111] This does not apply to expenditure incurred after 26 July 1989;

h) equipment provided for leasing except where used for a qualifying purpose within the requisite period. This does not apply to expenditure incurred after 26 July 1989;

i) hired vehicles provided for use of persons in receipt of mobility allowance or certain mobility supplements;[112]

j) equipment leased to joint lessees where one or more is non-resident and new expenditure was incurred. This does not apply to expenditure incurred after 26 July 1989;

k) equipment leased to joint lessees where a first year allowance would be wholly or partly denied on the grounds that all or part of the profits of the lessees' trade would not be chargeable to income or corporation tax, and where the expenditure was old expenditure. This does not apply to expenditure incurred after 26 July 1989;

l) equipment leased to a non-resident lessee where only a ten per cent writing down allowance is available; and

m) equipment in respect of which a first year allowance is available (other than the temporary 1992/93 first year allowance and the recent re-introduction of first year allowances).

As is evident from the above list, seven of the thirteen exclusions relate in some way to leasing.

Apart from the excluded items, the provision covers plant or machinery which are likely to have a life of less than four years after the end of the year of acquisition. An irrevocable election must be made, in writing (specifying the asset, the capital expenditure and the date of incurring the expenditure), within two years of the end of

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[111] Subject to relaxations detailed in s.22(5), (6) and (11) CAA 1990.
[112] S. 36(4) CAA 1990.

the chargeable period or its basis period in which the expenditure was incurred (but see footnote 72). Expenditure incurred on the 'short-life' asset (including, in respect of a chargeable or basis period ending after 5 April 1990, value added tax paid on the supply of the asset if the taxpayer is unable to recover it as input tax (see section 6)) is deemed to be wholly and exclusively incurred for the purposes of a notional trade carried on by the taxpayer as a trade separate from any other trade.

Each item treated as a short-life asset goes into a separate pool of its own, where it remains until the fourth anniversary of the chargeable period. If it is disposed or scrapped during this time, a balancing allowance (assuming the disposal value is less than the qualifying expenditure) will be made immediately. This contrasts with the treatment of the asset if it were in the general pool whereby the effect of the sale would merely be an increase in future writing down allowances over what they would otherwise have been. Any additional VAT liability incurred in respect of a chargeable or basis period ending after 5 April 1990 by the taxpayer in respect of the asset (i.e. where input tax relief is subsequently adjusted and recovered from the taxpayer) will be included in the balancing allowance.

If the asset has not been disposed of and the disposal value brought into account for the purposes of capital allowances by the fourth anniversary, the qualifying expenditure is transferred into the general pool in the following chargeable or basis period and dealt with in the normal way. The same result will occur for short-life assets that begin, before that anniversary, to be used for a purpose other than for a qualifying purpose within the provisions of s. 39 CAA 1990 (leased assets used for certain purposes).

Anti-avoidance provisions regarding the disposal of a short-life asset by a trader to a connected person are detailed in s. 37(8), (9) & (10) CAA 1990.

Although originally intended to cover large items of high-technology plant, the short-life asset provisions will also apply to small items with which it is

impracticable to deal individually. The Inland Revenue refers to the example of scientific instruments; however, it may apply to all types of leased equipment. The basis of the concession is that the sales proceeds are applied to a pro-rated tax written-down value to arrive at the balancing charge or allowance, in each year of disposal.

3. The trade of leasing

Leasing is regarded by the Inland Revenue as a trade for tax purposes. The profits that a leasing company generates are therefore taxable according to the principles of Schedule D, Case 1. There are no specific rules as to what amounts to the carrying on of a trade and it is necessary to examine the facts of each case to establish whether there is an intention to trade and whether the pattern of transaction indicates that that intention has been fulfilled.

Although a series of transactions with a view to profit will establish a trade for tax purposes, one single transaction on its own might not be considered a trade. If a trade is not established, any tax losses arising from a capital allowance claim may be 'stranded', i.e. not available for surrender to another group company and not available to be carried forward or backward to be set off against the profits of other trades in the same company.

Furthermore, the pre-tax profit reported by a company in its financial statements is normally different to that reported under Schedule D, Case 1. Taxable profits are arrived at by adjusting reported book profits according to statutory rules, with certain expenditure charges reported in the profit and loss account not being allowed for tax purposes. Depreciation is the most important item that is not deductible from income for tax purposes in the same way as for accounting purposes; though this is addressed, as detailed in the previous sections, by a capital allowance. This is discussed further in the next section dealing with deferred taxation.

4. Deferred taxation

4.1 Introduction

The principles of and methods of accounting for deferred taxation are set out in FRS 19 'Deferred Tax', which has only recently come into force. In a similar manner to the discussion of the imputation system, the sample period used in the study coincided with that operating under the earlier SSAP 15 'Accounting for deferred taxation'. This section therefore presents a brief review of the requirements of SSAP 15 with particular reference to leasing before discussing the key changes brought into effect by FRS 19.

Although accounting profits form the basis for the computation of taxable profits in the UK, for most companies there are differences between the two. Such differences can be divided into two categories: (a) permanent differences; and (b) timing differences.

In the case of permanent differences, certain items of revenue or expense arise which are properly taken into account in arriving at accounting profit are not included when arriving at taxable profit. Examples include receipt of regional development grants, expenditure on entertainment and depreciation of non-industrial buildings.

On the other hand, timing differences are differences between the profits or losses as calculated for tax purposes and those stated in the financial statements which arise from the inclusion of items of income and expenditure in the computation of tax in periods different from those in which they are included in financial statements. Timing differences therefore originate in one period and are capable of being reversed in one or more subsequent periods. Deferred tax is defined as the tax attributable to timing differences.

4.2 SSAP 15 'Accounting for deferred taxation'

SSAP 15 requires that tax deferred or accelerated by the effect of timing differences should be accounted for to the extent that it is probable that an asset or liability will crystallise but not to account for timing differences to the extent that the asset or liability will not crystallise.[113] An asset or liability crystallises when the reversal of a timing difference is not replaced by a new timing difference of at least the same tax effect with the result that there is a decrease or increase in the amount of the taxation liability.

In order to assess the extent to which assets or liabilities arising from timing differences will crystallise, it is necessary to look into the future as well as at the past. Therefore, it is necessary to look at financial plans or projections covering a number of years sufficient to enable an assessment to be made of the likely pattern of future tax liabilities.[114] The Appendix to SSAP 15, which is for guidance only, suggests that a period of three to five years may be sufficient where the pattern of timing differences is expected to be regular, but may need to be longer in other cases.[115] The Appendix provides little guidance for those cases, probably the majority, where financial plans and projections for such a period are not available, however it states that a prudent view should be taken.

The standard states that deferred tax should be computed under the liability method,[116] i.e. the tax is calculated using the rate of corporation tax which is expected to apply when the timing differences reverse and a deferred asset or liability crystallises. It follows, therefore, that the amount of the provision for deferred tax should be changed if there is a change in the rate of corporation tax expected to apply. The method of deferral whereby the deferred tax is calculated using the rate ruling when the provision is set up, and subsequent reversals are made at the same rate, is not acceptable under the standard. The standard requires that the major

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[113] SSAP 15. Paras 25 and 26.
[114] SSAP 15. Para 28.
[115] Appendix to SSAP 15, Para 4.
[116] SSAP 15. Para 24.

components of the deferred tax provision must be disclosed in the balance sheet or notes to the accounts.[117] Furthermore, the total amount of unprovided deferred taxation should be disclosed as a note, analysed into its major components.[118]

Although not included within the standard itself, the Appendix also states that the combined effect of all timing differences should be considered when attempting to assess whether a tax liability will crystallise, rather than looking at each timing difference separately.[119] This suggests that a potential liability arising from a short-term timing difference, such as a deferral of development costs, should not be provided if in the period of reversal substantial capital expenditure can be foreseen which will result in capital allowances in excess of depreciation being such that no liability will arise. Given that the objective is to arrive at a meaningful and representative provision in the circumstances faced by each company, such a global approach is sensible, although it is sometimes difficult to give the required analysis of the provision.

Despite the requirement to look at the combined effect of timing differences, the next section will, for explanatory purposes, look at each of the major categories of timing differences.

4.3 Principal timing differences

There are a number of variations between accounting practice and taxation law which give rise to timing differences and the more important are:

a) *Use of accruals basis of accounting.* Timing differences arise from the use of the accruals basis of accounting in the financial statements and the receipts and payments basis in taxation computations. Normally these differences reverse in the next accounting period although they may be replaced by new originating

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[117] SSAP 15. Para 27.
[118] SSAP 15. Para 40.
[119] Appendix to SSAP 15, Para 4.

differences. Examples include non-specific bad debt provisions, provision for future losses on contract work in progress, interest receivable, provision for plant closure or reorganisation costs, and intercompany profits in stocks eliminated on consolidation. Other differences, such as the treatment of a pension surplus as a pre-payment, reverse over a longer period.

b) *Capital allowances.* It was stated in section 3 that timing differences occur through the availability of capital allowances in taxation computations that are different from the related depreciation charges in financial statements. Assessment of the effect of capital allowances requires the making of assumptions regarding future levels of capital expenditure and it is in this area that financial plans and projections for some years ahead are most significant. Where companies have made adequate plans and projections, a comparison between projected depreciation charges and capital allowances will reveal the extent to which timing differences can be expected to reverse and result in the crystallisation of a liability or asset. Where such plans and projections have not been made, an assumption should be made on the basis of the best information available, normally restricted to past expenditure and known requirements. It is argued by Soper et al. [1993][120] that, whereas most industrial companies can forecast their future capital allowances reasonably well, as their capital expenditure plans are within their control, a lessor's task is more difficult, however, because it involves forecasting its future level of leasing activity. In addition, lessors face other problems such as reductions in the future tax rate triggering rental rebate payments to lessees. Therefore, a conservative approach should be adopted by lessors in their forecast of deferred tax reversals.

c) *Capitalisation of finance leases.* A consequence of the requirement embodied in SSAP 21 which requires lessees to capitalise finance leases is that the profit and loss account is charged with depreciation of the leased asset and finance charges (interest) rather than with the rentals payable. As taxation relief is granted in respect of the lease rentals payable, the capitalisation of finance leases gives rise to timing differences. In order to determine the amount of provision required in

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[120] Soper et al. [1993] p. 236.

accordance with the principles of SSAP 15, the lessee must look into the future. Forecasts of the depreciation of leased assets, finance charges and rentals payable in each accounting period must be made based upon an analysis of both the finance leases already entered into and capitalised before the balance sheet date and the finance leases which the lessee expects to enter into in the foreseeable future. The forecast changes in the profit and loss account must then be compared with the rentals payable to determine whether or not a net reversing difference is expected to occur in the foreseeable future.

d) *Revaluation of fixed assets.* If there is a revaluation surplus, to the extent that the valuation exceeds the net book value, there is a potential timing difference in that a balancing charge or a tax on a chargeable gain may be payable if the asset is sold at its revalued amount. No deferred tax should be provided at the time of the revaluation, however, unless the asset is expected to be disposed of. Provision should be made out of the revaluation surplus as soon as a liability is foreseen, which in the absence of rollover relief (see below) will be at the time of the decision to dispose of the asset. Depreciation on the revalued amount in excess of depreciation based on the original cost will not have an effect on deferred tax; this is a permanent difference.

e) *Disposal of fixed assets.* Where a fixed asset has been disposed of and the proceeds invested in a replacement asset, tax on the gain may be deferred via the application of rollover relief. Where rollover relief is obtained the tax deferred will not crystallise until the replacement asset is sold. It may not even crystallise then; unless the sale of the replacement asset without further rollover relief is likely, crystallisation of the liability cannot be foreseen and it should not be provided.

f) *Tax losses carried forward.* Where a company is unable to obtain an immediate benefit from a tax loss, that loss may be carried forward to set off against future profits. Such a tax loss, incurred in the past, is therefore an asset as it will reduce the tax payable in one or more future periods. According to SSAP 15, such a loss

for tax purposes is a timing difference.[121] Deferred tax relating to current trading losses may be treated as recoverable when:[122]

(i) the loss results from an identifiable and non-recurring cause; and

(ii) the enterprise has been consistently profitable over a number of years, with any past losses being more than offset by income in subsequent years; and

(iii) it is assured beyond reasonable doubt that future taxable profits will be sufficient to offset the current loss during the carry-forward period.

The tax on recoverable tax losses would reduce the tax charge in the current profit and loss account and would be deducted from any relevant provision for deferred taxation in respect of the other timing differences described above.

As described earlier, it is necessary to analyse the combined effect of all timing differences when determining the amount of the necessary provision for deferred tax on a particular date.

4.4 FRS 19 'Deferred Tax'

The Accounting Standards Board had indicated for some time that SSAP 15 was high on the list of standards that should be subject to a comprehensive review. The review focused on the inconsistencies between SSAP 15 and other accounting standards, in particular International Accounting Standard, IAS 12 (revised 1996) 'Income Taxes'. FRS 19 was issued on 7 December 2000, becoming effective for years ending on or after 23 January 2002.

The FRS requires deferred tax to be provided for on a full provision basis - rather than the partial provision basis previously required by SSAP 15 - on most types of timing difference. It permits but does not require entities to discount long-term deferred tax balances, and also requires entities to explain, by reconciliation, the differences between their effective tax rates and the standard rate of tax. The new

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[121] SSAP 15, Para 19.
[122] Appendix to SSAP 15, Para 14.

requirements bring accounting practice in the UK more closely in line with international requirements, as embodied by IAS 12.

5. Leasing company strategy

This section examines the way in which leasing companies use the tax reliefs generated by the capital allowances granted to them as legal owner of the leased asset and, in turn, how these strategies impact upon the rentals charged to lessees.

5.1 Taxable capacity

The most important strategic requirement for a lessor is to have a source of taxable profit available against which to offset the relief afforded by capital allowances. A leasing company may generate tax capacity in two ways:

a) the leasing company itself may have generated a taxable profit. This may arise when taxable rentals exceed the interest costs borne by the leasing company and the capital allowances claimed; or

b) via the taxable profits arising in a leasing company's parent company, its subsidiary companies or its fellow subsidiaries. Access to the taxable capacity of other members of the leasing company's group is available through the mechanism of Group Relief, which is the subject of the following section.

5.2 The group structure of leasing companies

The time gap between the date upon which expenditure is incurred and the date upon which tax is saved, based on allowances resulting from this expenditure, has an impact on the calculation of rentals for leasing companies which utilise tax capacity. The lease rental quoted will be more expensive the longer the gap, ceteris paribus.

It was evident from section 1.1 that if a lessor has a taxable profit then, for accounting periods ending prior to 1 July 1999, corporation tax was payable nine

months after the end of the accounting period. Expenditure incurred by the company on the last day of its accounting period therefore occurred only nine months before the relevant tax was saved. However, if expenditure was incurred at the start of the accounting period, the delay before receipt of tax benefits would be (one day less than) an additional year. Therefore, other things being equal, the lease rental charged by the lessor would be more expensive in the latter case.

In order to smooth out the effect of incurring expenditure at different times of the year, a leasing group may arrange to have leasing companies with different accounting year-ends. A typical leasing group structure will have four or twelve companies with year-ends every quarter or month respectively. Such companies were called 'staggered' or 'quarter-end' companies. Having established such a structure, leasing business will be written in the company with the next occurring year-end with the result that seasonal fluctuations in rental quotes are minimised.

For large companies with accounting periods ending on or after 1 July 1999 corporation tax becomes payable in four instalments. The first instalment is due six months and thirteen days after the start of the accounting period, the second and third instalments being payable three and six months after the first instalment, respectively. The last instalment is payable three months and fourteen days after the end of the accounting period. These changes are scheduled to be phased in over a period of three years, during which only a certain percentage of corporation tax is payable in instalments.

These changes will have a negative impact on the liquidity situation of profitable companies since corporation tax will be paid earlier, however tax savings are utilised earlier too. Since each instalment constitutes an even proportion of the total tax payable for the year, one quarter of the tax saving due to incremental leasing business made in the last quarter of the accounting period could already be enjoyed at the beginning of the third quarter of the accounting period.

Nevertheless, the timing benefit of staggered companies as outlined above would still apply under the new instalment payment system.

The other major reason for the existence of multiple leasing companies in a group is to maximise the benefits arising from surrendering tax losses under group relief rules. Section 403(3) Income and Corporation Taxes Act (ICTA) 1988 permits capital allowances to be made to the surrendering company which are available to set against income of a specified class to be surrendered to the extent that they exceed the income in question. It is important to remember that, in order to surrender a tax loss, the leasing company must in the first instant have tax losses. The reduction in the level of capital allowances, beginning in 1984, has resulted in most leasing companies operating in 1984 receiving rental income exceeding capital allowances and interest charges. In order to take full advantage of group relief rules, leasing groups have incorporated many more companies and have begun to trade through these new companies. In the first year or two the new business written in effect generates tax losses without having first to utilise in-built tax capacity as in a mature leasing company. The tax losses so generated can therefore be surrendered more efficiently under group relief rules.

5.2.1 Group relief

UK tax law, while usually concerned with the separate taxation of companies, does however recognise the existence of groups of companies. Various reliefs are available, including the ability of one company to surrender a trading loss to offset the taxable income of other companies in a group or consortium in the same accounting period. This relief is the subject of this section.

Group relief is available between a parent company and its subsidiaries, and the losses may flow in either direction. A group for group relief purposes comprises a parent company and its 75 per cent subsidiaries.[123] There are a number of technical

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[123] S. 413(3)(a) ICTA 1988.

restrictions as to which companies may enjoy the relief and the extent to which they may do so. A temporary grouping of a company will normally severely restrict any available relief. A further restriction is that the companies involved in a group relief claim must all be resident in the UK.

A leasing company will typically have trading losses, which it will surrender to other members within its group that have taxable profits. The claimant company (the company with taxable profits) will normally pay for those tax losses. Payment is tax neutral providing it is no more than 100 per cent of the loss surrendered.[124] Equally, no payment for group relief is actually necessary, although normally the payment is equal to the tax saved by the claimant company. For complete neutrality the claimant company will pay for losses surrendered to it on the date when it would otherwise have paid corporation tax to the Inland Revenue.

5.2.2 Corresponding accounting periods

There are a number of rules that govern the position where the accounting periods of surrendering and claimant companies do not coincide. Although the rules were viewed as restrictive in one sense, leasing companies however regarded the corresponding accounting period rules as an opportunity prior to F(no.2)A 1997.

Section 408(1) ICTA 1988 states that any accounting period of the claimant company which falls wholly or partly within the accounting period of the surrendering company corresponds with that accounting period. Where these periods do not coincide (as is the case with groups of leasing companies) it is necessary to time-apportion the trading losses and taxable profits of the companies involved. The amount of profits of the claimant company against which it is permissible to set the surrendered capital allowances is related to the time-apportioned profit or loss (whichever is the smaller), attributable to the 'overlap' common to the accounting periods of the two companies.

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[124] S. 402(6) ICTA 1988.

Although the corresponding accounting period rule is a restriction on the losses available for surrender, it applies on a company-by-company basis. Provided a leasing company is a member of a group of companies with, for example one leasing company within the group having a year-end of 30 June 1997 and three others having year-ends of 31 December 1996 with enough profits to absorb any loss of the leasing company,[125] it could (prior to the second budget of 1997) write leasing business in its year to 30 June but surrender tax losses 'back' in full to the previous December. The lessor's lease rental evaluation could therefore assume that receipt of tax benefits will arise on 1 October 1997, this being the date when the claimant companies would otherwise pay tax. The tax credit delay has been shortened in this example from a notional nine months from the lessor company's year-end to an actual delay of three months.

The example presented here was representative of a discernible trend in the leasing industry in the 1990s, particularly in the large-ticket sector where highly competitive rentals are common.

One of the major causes of the discontent voiced by the Finance and Leasing Association, aimed at the Chancellor, was the attack on the use of staggered companies by the second Budget of 1997. F(no.2)A 1997 closed the loophole, mentioned above, whereby finance lessors claimed a full year's capital allowances via the use of staggered companies in order to boost cash flow. The FLA pointed out that whereas finance leasing companies will now have their allowances apportioned, companies buying assets may however still claim a full year's allowance. Their protestations of unfairness in the treatment of finance lessors seemed to be borne out by the marked decline in the writing of finance lease contracts in the Autumn of 1997, detailed earlier in section 2.2.4

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[125] See Examples 13.2 and 13.3 Soper et al. [1993] pp. 154-155 for examples of how the rule worked in practice.

5.2.3 Interaction with the 'Pay and file' system

The 'pay and file' system is a new system of reporting profits and payment of corporation tax and was introduced for accounting periods ending on or after 30 September 1993. A comprehensive return form must be lodged by companies in respect of each accounting period and this replaces the corporation tax computation previously required. The payment of corporation tax has become more streamlined to reduce administration costs and, in addition, a more rigid system of penalties for completing a return form.

The pay and file return requires full details of income from all sources during the accounting period, together with deductions and reliefs claimed. In addition there are new rules for claiming group relief.[126] Where a claim is made for group relief it must be accompanied by a copy of the notice of consent to surrender given by the surrendering company; any claim for consortium relief must be accompanied by copies of notices of consent given by all members of the consortium.

5.2.4 Partnership and consortia

For very large ticket business an individual leasing company, or individual groups of companies, may not wish to be exposed to the entire credit risk of the transaction. In addition, tax capacity constraints may mean that a single group is unable to use effectively the tax losses involved. In such cases leasing companies or groups may join together to form a consortium. A consortium is defined as being satisfied where not less than 75 per cent of the ordinary share capital is held by two or more companies, each of which owns at least 5 per cent.

Consortia received a boost as a result of Finance Act 1984, which increased the maximum number of permitted members of a consortium from five to twenty.[127] Furthermore, the former limitation whereby a company owned by a consortium could only surrender allowances available to it to member companies of the consortium,

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[126] To be found in Sch. 17A ICTA 1988.

has been lifted. At present, a company owned by a consortium may surrender, via a consortium member, known as the 'link company', capital allowances to any member or members of the group of which the link company is also a member. The maximum amount that may be surrendered is limited to the proportion of the link company's share in the consortium.[128] Conversely, a company owned by a consortium may claim capital allowances, by way of a link company, surrendered by any member of the group of which the link company is a member. The claim is limited once more in proportion to the link company's share in the consortium.

As a result of the ability to generate timing advantages as discussed in the previous section, the partnership had been the preferred vehicle for joint corporate leasing ventures prior to F(no.2)A 1997.

Alternatively, where the risks involved in the transaction are great, and where two or more individuals are involved as members of a leasing partnership, they may obtain the protection of limited liability by designating the partnership a limited partnership under the Limited Partnerships Act 1907. Under the general law, as a partner's liability was limited to a certain amount it means that for the purposes of s. 380 ICTA 1988 he is capable of sustaining a loss for tax purposes greater than the limit of contribution to the partnership.[129] However, the Inland Revenue ruled that the reliefs that may be claimed by limited partners are now restricted by ss. 117 and 118 ICTA 1988 to the amount of the partner's contribution.

Finally, according to s. 116 ICTA 1988, the corporate partner cannot set off its share of any loss of the partnership except against the profits of the partnership trade. In effect the partnership trade is isolated from the other activities of the corporate partner.

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[127] Now contained in s. 413(6) ICTA 1988.
[128] Limitations regarding the length of time in which the company's must have belonged to the consortium, etc. are contained in s. 406(1)-(4) ICTA 1988.
[129] Decided in *Reed v. Young* [1986] STC 285 May 1986.

6. Value added tax

6.1 Introduction

Value added tax (VAT) was introduced in the UK by the Finance Act 1972 and came into effect on 1 April 1973, replacing Purchase Tax and Selective Employment Tax. The introduction of value added tax was a pre-condition of the acceptance of the UK into the European Economic Community (now the European Union). The ultimate legal authority for value added tax is a number of European Union VAT Directives, which must be reflected in the member states' national legislation. The Directives thus have direct effect and override national law where there is a conflict. The administration of value added tax was given to HM Customs and Excise, rather than the Inland Revenue, which brought with it a practical approach to controlling the taxpayer, based upon a long history of duty enforcement.

The basic principle of value added tax is that the tax should be charged at each stage of the production and distribution process but that the total tax due should be borne by the consumer, and is achieved in the following manner. Traders who are registered for value added tax (see next section) are required to charge value added tax on their sales and must account for this 'output tax' to Customs and Excise. Such traders may recover from Customs and Excise the 'input tax' which they pay to their own suppliers, with the result that, in effect, registered traders suffer no value added tax and the total tax is borne by the consumer at the end of the distribution chain.

Due to the nature of value added tax as a multi-stage tax, intermediate business-to-business transactions such as leasing are affected.

6.2 The carrying on of a business

Article 2 of the Sixth Directive on the Harmonisation of Value Added Tax in the Community requires a taxable person in any Member State to charge value added tax. Article 4(1) defines a 'taxable person' as one who carries out an 'economic activity'

which, as defined by Article 4(2), specifically includes the exploitation of tangible property for the purpose of obtaining income therefrom on a continuing basis. A leasing trade is within the value added tax net, since s. 94 VAT Act (VATA) 1994 provides that 'business' includes any trade. Furthermore, a person who leases other than in the course of his business is also engaged in an economic activity as he is exploiting tangible goods for the purpose of obtaining income therefrom on a continuing basis: that is precisely the intention of a leasing contract.

The wording of the Sixth Directive on this matter appears, however, to have been ignored in the UK, where decisions as to whether lessors were chargeable to value added tax have been made by reference to the term 'business' in general English law. The problem originated in cases decided before the Sixth Directive was adopted but when similar provisions were contained in Article 2 of the Second Directive.[130] It is arguable that the cases were correctly decided and that lessors seeking registration for value added tax in order to deduct input tax, could succeed in a case where a small proportion of leasing is carried on by them, but where the transaction appears to be within the meaning of the Sixth Directive. This view is strengthened by two subsequent cases.[131]

For the purposes of value added tax, most business transactions of VAT-registered traders fall clearly into one of the following categories:

a) *Standard rated.* In this category value added tax is charged at the standard rate (currently 17.5 per cent) on the business' output or sales, and the business recovers the value added tax that has been paid to suppliers on its 'inputs', i.e. purchases carrying VAT. The net effect is that the tax is charged on the business' value added (approximately equal to its internal costs plus profit margin), where both output and/or inputs are standard rated.

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[130] In *Coleman v. Customs & Excise Commissioners* (1976) VATTR 24, it was held that a taxpayer, who purchased and let out a pleasure boat otherwise than in the course of trade, was not making supplies in the course of a business.

b) *Zero rated.* This gives full relief from value added tax to the final customer. A zero tax rate is charged on the business' output, however the business still recovers value added tax paid on any standard-rated items.

c) *Exemption.* This gives less than full relief to the final customer. No value added tax is charged on the exempt sale, but the business cannot recover associated input VAT and therefore must pass on to the customer the latter cost. Where a VAT-registered trader's total output comprises a mixture of exempt and standard- (or zero-) rated items, some of the trader's input value added tax may have to be apportioned between the exempt output (where the relevant input VAT is irrecoverable) and the standard or zero-rated outputs (where input VAT is recoverable). In such instances the trader is part-exempt.

d) *'Outside the scope'.* Such transactions are ignored for the purposes of value added tax. The effect is the same as exemption except that 'outside the scope' items are not counted in calculating the recovery ratios of partially exempt traders.

Value added tax is applied to goods and services. The following section outlines the application of the tax to both categories as well as the specific business of leasing.

6.3 The supply of goods and services

The application of value added tax differs depending upon whether there is a supply of goods or a supply of services.

A supply of goods is deemed to occur where legal title to the property is, or is to be, transferred to another person. This includes, for example, the transfer of title in land by means of a freehold or a lease exceeding 21 years. What appears to be a supply of services is, in certain circumstances, a supply of goods instead. An example of this would be where a person applies a process to another person's goods and the nature of the goods has changed.

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[131] The cases are: Stirling v. Customs and Excise Commissioners (1985) VATTR 232; and Haydon-

Anything that is not a supply of goods that is done for a consideration, is a supply of services. A charge for value added tax will only arise where consideration is present. Accordingly, a free supply of services is outside the scope of value added tax.

Value added tax is applied to both goods and services, however there are significant operational differences in the treatment of goods as compared with the treatment of services. Supplies of goods are generally either standard or zero rated, but supplies of services may fall into any one of the categories discussed in the previous section.

Prior to 1 January 1978, equipment leasing was treated as a supply of goods but, in order to bring the law into line with the Sixth Directive, it was declared a supply of services by para. 14 Sch. 6 Finance Act 1977.[132] Equipment leasing thus differs from hire purchase and conditional sale agreements, which are treated as supplies of goods.[133] In an equipment lease contract, the lessor's output tax is payable in respect of each rental instalment. However, in the case of a hire purchase or conditional sale agreement the lessor must pay VAT on the sale price at the end of the quarter in which the tax point relating to the contract falls, whereas the finance charges represent a VAT-exempt service. The lessor will, of course, be able to deduct input tax included in the price.

Supplies of services that are paid for periodically give rise to tax points (defined as the time at which supplies are treated as taking place) at the earlier of the date of payment or issue of tax invoice. Value added tax charged on lease rentals must be accounted for by the lessor (as output tax payable to HM Customs and Excise) and by the lessee (as input tax recoverable from Customs) at the end of the VAT accounting period in which the tax point falls. In order to simplify

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Baillie v. Customs and Excise Commissioners (1986) VATTR 79.
[132] Now contained in para. 2(1) Sch. 4 VATA 1994.

administration, lessors may issue a single tax invoice annually which details every rental payable in the ensuing year and the rate and amount of value added tax chargeable on each. A change in the rate of value added tax will invalidate the annual tax invoice from the time of the change, and the lessor must issue a new tax invoice for rentals due after the change.

6.4 Exemptions

Value added tax on equipment lease rentals is normally charged at standard rate. However, there are a number of exceptions that have been detailed in the various VAT Acts with the more important detailed below.

a) Transport is zero-rated in accordance with Group 8 Sch. 8 VATA 1994. Furthermore, note (2) to the act states that the letting of certain ships and aircraft is zero-rated. As a consequence, in accordance with item (1), ships of 15 tonnes gross tonnage or more are zero-rated, as are aircraft of 8,000 kilograms or more (item (2)). These provisions apply whether the craft are leased for use within or outside the UK. However, where the place of use is outside the EU the provisions of Article 17 of the VAT (Place of Supply) Order 1992 apply which take the supply out of the scope of VAT.
b) The leasing of certain equipment (medical, scientific, computer, etc.) to a charity is zero-rated if the equipment would be zero-rated if bought by the charity.[134]
c) Goods, other than transport, leased to a business within the EU were zero-rated before 1 January 1993.[135] If the goods were not received in a business capacity they would be standard-rated. Leasing to companies outside the EU (except the Isle of Man) was zero-rated before 1 January 1993 regardless of the capacity in which they were taken on hire.[136] Thus, the treatment of the goods for the purposes of value added tax was by reference to the place where the lessee

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[133] Para. 1(2) Sch. 4 VATA 1994.
[134] Group 15 Sch. 8 Note (9) VATA 1994.
[135] Item 5 Group 7 VAT (Hiring of Goods) Order 1985 (SI 1985 No. 799).
[136] Item 6 Group 7 *ibid.*

belongs and the capacity in which it received the supply. The rules were changed by the VAT (place of Supply) Order 1992 which stated that, with effect from 1 January 1993, a supply of goods other than transport is treated as made in the UK if the recipient belongs in the UK or in another EU country and is not registered for VAT. In all other cases the supply will be deemed to be made abroad and will be outside the scope.[137]

d) Prior to 1 January 1993, means of transport leased for use in a country outside the EU were zero-rated. Thus, it was the place of use of the leased equipment that formerly determined the value added tax treatment. The coming of the Single Market and the consequent VAT (Place of Supply) Order 1992 brought about a change. Article 17 of the Order states that the place of supply is the place of use or enjoyment of the means of transport where this is outside the EU. Such a supply is outside the scope of VAT, although input tax is recoverable.[138]

6.5 Motor cars

Lessors are normally able to recover from Customs the full amount of input tax paid on equipment purchased for leasing. The reason for this is because the goods are supplied to the lessee in the same state as that in which they were purchased, and also applies to items acquired for the purchase of hire purchase or conditional sale agreements.

However, special rules apply to motor cars, although recent legislation has addressed some of the problems. Previously,[139] value added tax paid on cars acquired for use in the purchaser's business (including use for leasing and contract hire) could not be claimed from Customs, formed part of the acquisition cost for capital allowance purposes, and must have been taken into account when calculating lease rentals. Since cars acquired for hire purchase or conditional sale are not used in the finance company's business, value added tax paid on new cars was therefore

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[137] Art. 15 of the VAT (Place of Supply) Order 1992.
[138] In accordance with Reg. 32 of the VAT (General) Regulations 1985.
[139] VAT (Cars) Order, SI Act 1980, No. 442.

available for input tax credit. In addition special rules applied to sales of cars on the termination of leases. Used cars in respect of which input tax credit has not been claimed may be sold under a VAT Second Hand Goods Scheme, in which case value added tax is chargeable only on the excess of the sales proceeds over the original cost to the lessor.[140] Normally, the selling price will be less than the cost of the vehicle to the lessor and therefore no VAT will be chargeable. This treatment is disapplied by Art. 8(2) where the car is not sold but, *inter alia* becomes subject to a second lease.

The VAT treatment of cars was radically changed from 1 August 1995. As detailed in section 2.4.3.3 above, leasing companies are now able to reclaim the 'blocked' input tax on the purchase of cars that they use only for their leasing business. Leasing companies, in effect, pay 17.5 per cent less for cars which they buy to lease which should be passed on to the lessee in the form of improved terms.

At the same time, however, the amount of input tax on lease rentals which lessees are able to reclaim has been restricted. Only 50 per cent of the input tax is recoverable unless the lessee can show that the car is used only for business purposes and that there is no element of private use.

A further change results in the ability of lessees to be able to reclaim, in full, the input tax in respect of maintenance and service charges and so, where contract hire arrangements exist, it may be possible to arrange that this service and maintenance charge is separately stated. It may even be necessary to have a separate service and maintenance contract, since Customs and Excise will look closely at such arrangements to make sure that the service and maintenance element is not exaggerated at the expense of the finance element of the agreement, so as to maximise input tax recovery.

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[140] Art. 8(1) VAT (Cars) Order 1992.

6.6 Terminations and transfers

Rebates of rental from lessor to lessee have caused problems in the past. The treatment of such payments for VAT purposes will depend in each case on the precise legal nature, however there are a number of working arrangements agreed with Customs and Excise:

a) Providing the lessee does not issue an invoice purporting to charge value added tax in respect of the payment, no VAT need be accounted for by it.
b) Throughout the lease contract the lessor will have charged value added tax on the rental payments and accounted for it to Customs and Excise. This will not be affected by any payment to the lessee, and accordingly any document issued by the lessor should not identify any amount of VAT and should be specifically endorsed 'this is not a credit note for VAT purposes'.[141]
c) On sale of the equipment value added tax must be charged and accounted for in the usual manner.

These arrangements are convenient and, where both lessor and lessee are fully taxable persons, there is no net tax consequence other than minor cash flow differences.

Where a lease is terminated early there will normally be (in the case of finance leases, a large) payment due from the lessee to the lessor. Although the treatment for the purposes of value added tax will again depend on its legal nature, arrangements have been made with Customs and Excise that such a payment may be treated as a consideration for a supply of services by the lessor to the lessee. Therefore, the lessor will charge the lessee value added tax on the payment. On the subsequent sale of the asset by the lessor VAT will, in the normal course of events, be charged by the lessor to the purchaser.

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[141] Sowler, ICAEW [1996], Chapter 10 p. 66.

Where a leasing contract is transferred it will usually qualify as the transfer of part of a business as a going concern. It will therefore be deemed to be neither a supply of goods nor a supply of services.[142] In accordance with this judgement, the disposing lessor should not charge VAT on the consideration, and the acquiring lessor may be required to give an indemnity for any value added tax which may be judged to be payable should Customs and Excise decide that the transfer was not part of a business as a going concern.

The final part of the chapter discusses the legal framework governing the lessee's and lessor's rights and responsibilities in a leasing contract, thus completing our look at the institutional background to the corporate use of leases in the UK.

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[142] Art. 12 of the VAT (Special Provisions) Order 1991.

Part D Legal Treatment of Leases

1. Introduction

The purpose of the following sections is to set out the legal background to the lease contract, including the rights and responsibilities of lessor and lessee, the lease contract itself, the interaction with statutory law and common law as well as the distinguishing characteristics of a leasing contract.

The definitions of the various lease and associated asset financing contracts were discussed in Chapter 1 section 3 and Chapter 2 Part A section 3.1 together with the differences between them. It is important to note that there is a clear legal distinction between a lease contract and a hire purchase or instalment sale contract. It is the permanent separation of ownership and use, central to the concept of equipment leasing, that distinguishes it from the other forms of asset finance where ownership and use are not separated. As we shall see later, the lessor in a finance lease has the legal role of purchaser, owner and eventual seller of the leased asset but, with the exception of making payment for the asset, the practical consequences of the role are delegated to the lessee. In the case of an instalment sale or hire-purchase contract, on the other hand, legal ownership will pass to the lessee, either immediately or on the completion of the contract.

2. Leasing as a form of bailment

The previous section highlighted the main characteristic of a leasing transaction. This is the separation of control, retained by the lessor, from a right to use the asset, conveyed to the lessee, in return for the latter's payment of a specified rental over a pre-arranged period of time. A lease contract is a form of bailment and is, therefore, subject to the rules of common law. A bailment is defined as: "A delivery of goods on a condition, express or implied, that they shall be restored by the bailee to the

bailor, or according to his directions, as soon as the purpose for which they are bailed shall be answered."[143]

There is a legal consequence that, in addition to the rights and obligations contained within the lease contract, the lessor and lessee also have the rights and obligations of bailors and bailees, respectively. Common obligations are imposed on the parties to a contract of bailment by common law, statute or both. Under the Supply of Goods and Services Act 1982 certain terms are provided into contracts for the hire of goods, defined as when one party agrees to bail goods to another by way of hire.[144]

Responsibilities of bailor:

a) It is implied that in the case of bailment, the bailor has the right to transfer possession of goods via a hire contract for the period of the bailment.
b) A warranty is implied so that the bailee will enjoy quiet possession of the asset(s) for the period of the bailment.
c) Under the contract it is implied that the goods supplied are of merchantable quality, except where defects are brought to the attention of the bailee before the contract is signed and if the bailee examines the goods before the contract is signed.

Responsibilities of bailee:

a) Under the contract of bailment the bailee agrees to pay the rental or hire charge.
b) The bailee must take reasonable care of equipment hired during the period of the lease.
c) The equipment hired must be used for the purpose for which it was leased.

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[143] Definition taken from *Osborn's Concise Legal Dictionary*, cited in Sowler, ICAEW [1996], Chapter 10 p. 3.
[144] S. 18(1) SGSA 1982.

d) The bailee must return the equipment at the end of the contract period and pay any expenses thus incurred.

There has been virtually no commercial case law in the UK directly concerned with equipment leasing, and provisions, which regularly appear in leasing agreements largely, remain uninterpreted in the English courts. The following section provides an overview of the leasing contract and details some of the aforementioned provisions.

3. The leasing contract

In spite of the proliferation of various leasing arrangements, the basic core of the terms of all such agreements are similar. All leases reflect the need to govern the relationship between the lessor and the lessee: the agreement to hire; payment; the rights of each party; and how the arrangements may be terminated. Additional contractual arrangements may include maintenance provisions or terms for funding the lease. Furthermore, the lease may contain detailed cost of money and taxation assumptions. These 'extras' are additional to the requirement for the agreement to reflect the transaction at hand.

Although this section is concerned with the terms of the lease, it should be borne in mind that, as we have seen in the previous sections, the common law and specific statutes imply extensive terms into leasing agreements covering not only the condition and merchantability of leased assets but also the responsibility of the lessor in respect of defective premises and the right of the lessee to quiet possession. These implied terms are concerned with the protection of the lessee. However, the terms of the leasing agreement, being normally drafted by the lessor, are intended to govern the relationship between lessor and lessee in such a way as to protect the lessor's right of ownership of the leased assets and to ensure that the lessor receives the rentals and is protected against default of the agreement by the lessee.

3.1 The lessor's agreement to hire

In general, the agreement comprises a statement that the lessor agrees to hire the leased assets to the lessee for a particular period or periods of time upon the terms and conditions of the leasing agreement. Finance leases of plant and machinery do not usually deal with delivery of the leased asset to the lessee at the start of the hire period but provide that the hiring commences on delivery, leaving the arrangements for delivery to be settled between the lessee and the supplier. This contrasts with circumstances where the lessor funds the construction of the leased asset: in such instances the lease will contain detailed provisions relating to the period up to and including delivery. These provisions also contain terms under which construction, delivery and acceptance are supervised by the lessee. In addition, the insolvency of the constructor or lessee and the destruction of the leased asset during construction will also be considered.

Delivery need not, in law, be the physical delivery of the goods. If the hirer is already in physical possession of the leased assets when the lease is signed, as is common with finance leases - because, for example, the transaction is a sale and leaseback - 'delivery' is completed when the lease is entered into. In such circumstances, it is usual for the lessee to sign a delivery note acknowledging that the leased assets are accepted and in good condition.

Finance lease agreements normally provide that the leased assets are hired to one lessee for an agreed fixed or primary period of hire during which time the lessee will, through the payment of rentals agreed during this period, pay the cost of the leased asset to the lessor together with the profit the lessor expects to make from the transaction. It is common for the hiring to continue thereafter for a secondary period of hire for the full useful life of the leased asset at a nominal rental. Operating leases may also have a fixed period of hire but an extension of the hire may not be possible because, for example, a manufacturer's buy-back may have been negotiated.

3.2 The lessee's covenants

The following is a list of the main covenants of the lessee contained within the leasing agreement:

a) *To pay rentals.* In a basic finance lease the covenant is a statement of the amount of each rental payable during the primary and secondary periods of hire and whether value added tax is to be added. More sophisticated leases may include provisions for: rental-free periods at the beginning of the primary period (when the leased asset may not yet have realised its earnings potential in full); balloon rentals at the end of the primary period (intended to be paid out of the sales proceeds of the leased asset); rental variation provisions dealing with the lessor's funding of the lease; money cost variations; and variation terms for capital allowances and corporation tax changes, as discussed in Part B section 4.

b) *To maintain and repair the leased assets.* These are two separate obligations. The obligation to repair the leased asset may be placed not with the lessee's covenants but in the insurance clause, thereby reflecting the requirement for the lessee to insure the leased asset, with the proceeds of insurance being applied directly to their repair. The standard of maintenance and repair is generally that necessary to ensure that the leased assets may be lawfully, safely and efficiently used during the period of hire and that at the end of the lease they are re-delivered in the same condition (subject in some instances to wear and tear) as at the beginning of the hire.

c) *To bear the costs of all taxes, expenses and outgoings relating to the leased assets, their operational use and their acquisition whether attributable to the lessor or to the lessee.* This reflects the fact that such expenses would accrue to the lessee if it had bought rather than leased the asset. The covenant should cover not only those taxes with which the lessee would normally be charged as operator of the leased assets, for example local business rates or road fund licences, but also those charged to the lessor as owner, such as stamp duty on the acquisition of the leased assets or value added tax on the rentals.

d) *To use the leased assets lawfully, with care and by properly trained and qualified personnel.* This clause is intended to ensure that the leased assets are operated safely by the lessee and that the lessee is made responsible for so doing. It is primarily the lessee's responsibility to operate the leased asset lawfully and in accordance with the manufacturer's instructions and safely in accordance with the Health and Safety at Work Act 1974. However, there are also circumstances in which the lessor as owner may incur civil and possibly criminal liability for the unlawful or negligent use of the leased assets, such as the use of unexcised fuel in leased commercial vehicles. The requirement for properly trained and qualified personnel is a requirement not only of the aforementioned Health and Safety at Work Act but is also a statutory requirement when operating ships or aircraft.

e) *To insure the leased assets against material damage and for third party risks.* Although separate obligations, they can be contained in one clause with the result that the distinction between the two insurances is often blurred. The distinction between the two must be made clear however. In finance leases the lessee insures the leased asset against material damage. The covenant to insure against third party risk is however quite different. If the leased asset should injure a third party then both the lessee and the lessor (as owner) may be tortiously liable to the third party.[145]

f) *To apply the insurance proceeds to the repair of the leased assets or in reduction of future rentals.* This clause is a consequence of the obligation to repair the leased asset, if it is capable of repair. If it is not possible to repair the asset, it is then likely to be regarded as a total loss by the insurers in which case the hire would come to an end and any shortfall after the insurance proceeds have been applied to the reduction of the future rentals would be required, under this clause, to be made up by the lessee to the lessor. Alternatively, the leased asset may be capable of repair but not to its former condition and level of performance. In this case the value of the lessor's asset has been reduced and it is necessary to reduce the financial liability of the lessee in respect of the asset. Accordingly, the lease may provide that the leased assets should be repaired from the lessee's own

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[145] The provision of insurance is discussed more fully in section 4.4.

resources, with the insurance proceeds being paid to the lessor in reduction of future rentals.

g) *To indemnify the lessor against any loss incurred as a result of the acquisition, hire and disposal of the leased assets at the end of the lease.* In the case of relatively expensive finance-leased assets this would extend to include an indemnity against loss through a change in the capital allowance system or in the rate of corporation tax as was detailed in Part B section 4.1. A finance lease is a method of finance whereby the responsibility for the leased assets is placed, as far as possible, on the lessee, and the amount of the rental payments reflects this. The indemnity is therefore intended to ensure as far as possible that any liability or loss affecting the lessor as a result of the agreement and any of its constituent parts is passed on to and indemnified by the lessee. Part B section 4.1 presents an application of this principle in the form of the tax indemnity clause. The effect of such clauses is that the lessor's net rate of return is maintained by adjusting the rentals as the hire period continues or by payment of an additional rental or a rebate of rental if the hire has terminated.

h) *To keep possession of the leased assets and not to underlet or mortgage them or create any lien over them.* This provision is concerned with ensuring that the lessee does not try to create rights over the leased assets in favour of a third party to the detriment of the lessor's interest. The lessor enters an agreement to lease to the lessee and not to a third party. Furthermore, the lessor does not wish that third parties acquire rights over the leased assets or the leasing agreement. The prohibition against the creation of liens is not at conflict with the requirement that the leased assets should be passed to a third party for repair. Delivery to a third party for repair does not pass legal possession and a repairer's lien will only arise if the repair charge is not met when the bill is tendered.

i) *To ensure that the lessor's rights in the leased assets are not prejudiced by their becoming a fixture.* As was discussed in Part C section 2.4.2, it is important for the lessor to be satisfied that the leased assets, if plant and machinery, remain in its ownership. If they become a fixture then title automatically passes to the freeholder, with the result that the lessor's rights to recover rentals under the lease

agreement may be affected. In addition, the lessor may not be entitled to capital allowances in relation to the leased assets. If the leased assets are of a nature that they are likely to become a fixture, then the lessor's ownership can be protected by means of a landlord's and/or a debenture holder's waiver. These will prevent the relevant third party from assuming rights over the leased assets. The question of waivers does not apply if the leased assets are land or buildings.

j) *To redeliver the leased assets to the lessor at the expiration of the hiring.* With the exception of hire purchase, all forms of hire agreement contain a provision for re-delivery.

3.3 The lessee's right to terminate

Where a leasing agreement gives the lessee the right to terminate the hiring of the leased asset before the end of the primary period the lessor will be entitled to receive the balance of its financial interest in the leased asset from the lessee. Such a right of termination is most common in operating leases, such as leases of motor cars, but less so in finance leases.

3.4 The lessor's right to terminate

Every lease contract will contain a termination clause enabling the lessor, in the event of a default in payment or breach of the terms of the lease or insolvency of the lessee, to terminate the lease and/or repossess the leased assets and/or recover damages for breach. The complexity of the termination clause in general increases with the size of the transaction.

In the case of operating leases the clause is mainly concerned with the lessor recovering possession of the leased asset and arrears of rentals. Finance leases involving the leasing of equipment of which there is no ready second-hand value, often provide stipulated loss values to apply at specified periods during the hire period, for example, quarterly. Such values are agreed measures of liquidated damages reflecting the amount required for the lessor to maintain a net rate of return

on the transaction. Generally, such clauses seek to recompense the lessor for any loss on the transaction as a result of default. Some clauses follow the guidelines set down in the case of *Robophone Facilities Ltd. v. Blank* ((1966) 3 A11 ER 128) where an operating lease provided that upon default the lessee should pay liquidated damages calculated by discounting the rentals (other than arrears) remaining unpaid at the date of termination to their present value.

Other clauses, even in large finance lease contracts, are simple and provide primarily for the payment of arrears. These rely upon damages being awarded by the courts to the lessor under the common law should the lease agreement be terminated by the lessee failing to make payment.

3.5 Exclusion clause

Lease contracts generally include a clause excluding the lessor's liability for defects in the leased assets or for their operation. Such a clause will not cover responsibilities specifically assumed by the lessor, for example maintenance, insurance, etc., under an operating lease. Legislation has been passed that restricts the ability of the lessor to exclude items that would otherwise be implied in the agreement. Section 12 of the Supply of Goods (implied Terms) Act 1973 and section 11 of the Supply of Goods and Services Act 1982 provide for the exclusion of implied terms, but these rights are restricted by the Unfair Contract Terms Act 1977. Section 12 of the Act states that the exclusion of implied terms as to title, quiet possession and freedom from encumbrances is void as against a party to a contract who 'deals as consumer', and is valid against others only if it satisfies the requirements of reasonableness. Against parties who 'deal as consumer' the exclusion of implied terms as to description of the leased assets, merchantable quality and fitness for purpose is void, and is only valid against others on the same requirement as above, namely the requirement of reasonableness. Schedule 2 of the Act sets out guidelines as to how the lessor may show that reliance on the exclusion is reasonable in the circumstances prevailing at the time of the contract.

3.6 Other common terms

The following are some of the more important terms not included above that may form part of the lease contract:

a) A provision that title will always remain with the lessor.
b) A finance lease will contain provisions dealing with the disposal of the leased asset at the end of the hire period. Under the provisions, the lessee will be appointed agent of the lessor to sell the leased asset and for the lessee to be rebated most of the sale proceeds. Some of the proceeds will be retained by the lessor to avoid the suggestion that the lessee has received the whole benefit of the leased assets and that the lease agreement is in fact a hire-purchase agreement.
c) As stated above in Part B section 4.2, formal provisions may be included in the contract for the variation in the rentals in accordance with fluctuations in the cost of money.
d) A clause dealing with the treatment of government grants - whether received by the lessor or the lessee.
e) A clause prescribing the governing law of the agreement and the methods for serving notices, etc.
f) Additional terms required for leasing agreements to which the Consumer Credit Act 1974 applies.

4. Liability risks under a lease

4.1 Liability exposure

The lessor should obtain protection against the following categories of liability exposure:

(a) Contractual liabilities relating to the leasing contract

When the lessor is in breach of contact with the lessee it may be liable to pay damages or compensation to the lessee. Such a situation may arise if, for example,

the contract is in respect of equipment of a certain type or quality but the equipment provided was of a different type or quality.

Situations such as this fall under that part of the Supply of Goods and Services Act 1982, which requires that the goods leased conform to description. A lessor who is in breach of contract as a result of the supply of the wrong goods may have recourse against the manufacturer or supplier (if they had been at fault) but would, in the first instance, be required to meet all its obligations to the lessee. The Supply of Goods and Services Act 1982 establishes the lessee's right to quiet possession and the fitness of the leased goods for their purpose; failure of the lessor to meet these requirements can result in liability to the lessee.

(b) Liability of the lessor arising from the action of the lessee

Where the lessee uses leased equipment illegally or recklessly, resulting in loss or damage to the asset or even loss of life, and notwithstanding the fact that the lessee may be responsible, the lessor as owner of the equipment may be required to pay compensation to the extent that the lessee was uninsured, inadequately insured and unable to pay from its own resources. Where the lessee's action results in a claim, the claimant, influenced by the 'deep pocket' philosophy, may demand compensation directly from the lessor. Should this claim succeed the lessor may subsequently be able to obtain compensation from the lessee's insurers, but may incur legal costs that will not all be recoverable.

(c) Contractual liability arising after the termination of the leasing contract

Generally, at the expiry of the lease contract the asset will be sold, often with the lessee acting as agent of the lessor for this purpose. The lessor will therefore be subject to the obligations arising from the contract of sale and the Sale of Goods Act 1979. Despite the fact that the lessee has sold the goods on behalf of the lessor, the lessor will be held liable as the principal and as a party to the contract entered into by the lessee, as agent for and on behalf of the lessor.

(d) Liability to third parties

Claims may be made by third parties under statute or common law and in circumstances different from those already described. Equipment used by the general public such as lifts, electrical apparatus and machinery may give rise to a third party claim if injury results from its failure in normal use.

Defending the lessor's position against a claim can give rise to considerable legal costs, however weak the claim may in fact be. Therefore, the lessor's insurance cover should include the costs and expenses incurred in defending or settling a claim.

In addition to the liabilities discussed above, the lessor must consider, and insure against, other risks, of which the most important are: theft; special perils; fire; and accidental damage.

4.2 The lessee's liabilities

Many of the above liabilities of the lessor are similar to those of the lessee. As discussed in section 3.2, the lessee has contractual obligations to the lessor and normally the contract will stipulate the insurance that the lessee must arrange. In addition to the contractual obligations, the lessee must consider the following liabilities:

a) liabilities to subcontractors and their employees;
b) liabilities to customers;
c) liabilities to authorities, for example for pollution;
d) liabilities to other third parties.

4.3 Product liability

Within the EU there is a gradual move towards the adoption of 'strict liability' which imposes greater burdens on lessors as well as manufacturers. It is no longer a defence to a claim resulting from the failure of the product to show that there was not

negligence contributing to the loss. Furthermore, the lessor can be placed in the position of the manufacturer of a faulty product and face legal proceedings.

All lessors are, to a greater or lesser extent, exposed to a product liability claim. In spite of the fact that the manufacturer may have adequate product liability cover, lessors should err on the side of caution and consider the need for contingent cover for problems such as defective design, faulty workmanship or faulty materials.

4.4 Insurance

The separation of use and ownership makes no significant difference to the overall degree of risk, but it is necessary that the interests of both the lessee and the lessor are protected by the insurances effected. One of the common features of a leasing contract is that the lessee is required to bear the financial consequences of any loss or damage to the leased equipment and of any third party claims arising from its use, to the extent that these are not covered by insurance. Neither a lessor nor a lessee, however, is under any statutory obligation specifically to insure leased equipment, except in the case of motor cars.

There are similarities between the insurable interests of a lessee in equipment that is leased and a purchaser in equipment that is purchased, and the lessee will wish to arrange insurance on the same basis. Nevertheless, the lessor will be concerned to obtain the collateral security afforded by the insurance arranged by the lessee. Insurance provides lessors with both direct protection against any claims made by third parties and an assurance that, in the event of a loss, there will be sufficient funds to pay the current value of rentals in respect of the unexpired portion of the primary lease period and any other liabilities.

Leasing agreements generally contain detailed provisions concerning the insurance which lessees are required to effect at the start of the lease and to maintain throughout the lease period, with the conditions imposed varying between leasing companies and also possibly depending on the type of equipment leased. Insurance

covering equipment against loss or damage is normally arranged on an agreed-value basis for the greater of the market value of the equipment and the amount stipulated in the lease to enable the lessor to recover the unamortised cost at the date of the loss of the equipment.

As was discussed in section 3.2, under a finance lease the lessee is liable for any loss or damage to the leased equipment during the lease period. In the event of there being any repairable damage to the equipment, the lessor has a responsibility to apply any insurance rebate received towards the lessee's expenditure in repairing the damage. In the event of a total loss of leased equipment, the lease terminates and the lessee is required to make a lump sum terminal payment to the lessor. The lessee is normally discharged from this obligation as the lessor will receive the proceeds of the insurance policy covering the equipment against physical loss or damage. In the absence of sufficient insurance proceeds, however, all or part of the terminal payment must be found by the lessee.

The following chapters which explore i) the issues arising from the literature in the capital structure and leasing fields, before ii) developing the hypotheses to be tested along with the methodology to test them should be understood in relation to the issues arising from this chapter, namely that the external environment has undergone rapid change during the past 30 years. This, of course, also implies that one must interpret the results of this study, using data from the period 1986 to 1995, as providing no more than a guide (albeit hopefully a useful one) to our understanding of the reasons behind the corporate use of finance leases in the UK today.

3. Literature Review

1. Introduction

This chapter provides a summary of the extant literature relating to the corporate use of leasing finance. The approach taken in the chapter is to provide an introductory overview of the early approaches developed to evaluate finance leases vis a vis other forms of raising finance. This is followed in section two by an outline of one of the most widely documented leasing valuation models, that developed by Myers, Dill and Bautista [1976].

The sections that follow examine the leasing literature under a number of headings related to the effect of different company characteristics on the use of leasing finance. The relationship between leasing and a company's tax position is the subject of section 3, followed by a review of the debt-lease substitutability debate in section 4. Section 5 highlights certain features of both the US Bankruptcy Code and UK insolvency law as they relate to the use of secured debt instruments and leases and proceeds to discuss the impact of the possibility of financial distress on the use of leasing finance. The literature examining the relationship between leasing and agency and contracting costs is the subject of section 6. The following four sections review the link between leasing and the lessee's industrial sector, the company's investment opportunity set, ownership structure and size, all of which have been used in the literature as proxies for the impact of asset type and company characteristics on the use of leasing as a form of finance.

The early work on leasing undertaken in the early-mid 1970s was principally concerned with valuation issues and as a means of comparing the two alternatives of 'lease or buy'. The corporate lease-versus-buy decision is typically analysed under

the framework of financial structure irrelevance developed by Modigliani and Miller [1958], invoking the assumptions of perfectly competitive capital markets.[146]

The concept underlying the lease-versus-buy decision is the intuitively simple net present value (NPV) analysis. In return to saving the cost of purchasing the asset, the lessee is committed to a series of lease payments that are generally tax-deductible. The lessee thereby forgoes: i) the depreciation tax shields (termed capital allowances in the UK) and any other tax credit associated with ownership;[147] and ii) the interest tax shields arising from any debt financing, and in addition loses the salvage or residual value of the asset. Net present value analysis compares the present value of these cash flows: if the net present value is positive (negative), the present value of leasing is superior (inferior) to purchasing. This approach is summarised in the comprehensive review article of Bower [1973].

Almost all analyses are derived from the following net present value equation, also known as the 'net advantage of leasing' (NAL) equation:

$$NPV = A_0 - \sum_{t=0}^{N-1} \frac{L_t}{(1+r_1)^t} + \sum_{t=0}^{N-1} \frac{L_t T}{(1+r_2)^t} - \sum_{t=1}^{N} \frac{D_t T}{(1+r_3)^t} - \sum_{t=1}^{N} \frac{I_t T}{(1+r_4)^t} + \sum_{t=1}^{N} \frac{O_t (1-T)}{(1+r_5)^t} - \frac{S_N}{(1+r_6)^t} \qquad (1)$$

Where:

NPV = net present value of leasing (or the net advantage of leasing to the lessee)

A_0 = price of the asset today ($t = 0$)

L_t = lease payment at time t

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[146] Perfectly competitive capital markets are defined as satisfying the following idealised conditions: (i) zero taxation, (ii) no transaction costs, flotation costs, contracting costs or brokerage fees, and (iii) the inability of a single investor or company in affecting the market price of a security by trading in that security. See Schallheim [1994] p. 4.

[147] The investment tax credit, once an important factor in the leasing analysis in the USA was repealed in 1986. In the UK this is also unlikely to apply to leases today, as the earlier system of investment grants was replaced by first year allowances (themselves subsequently being replaced by writing down allowances) in 1972. An exception to this in the UK is in respect of expenditure on industrial buildings in areas designated by the Government as 'enterprise zones'. See Chapter 1 section 4 'Historical Development of Leasing' and Chapter 2 Part C section 2.4.3.2 'Industrial Buildings'.

D_t = depreciation charge at time t

I_t = interest charge on the "equivalent loan" at time t

O_t = operating expenses (at time t) that are higher if the asset is purchased but not if the asset is leased

S_N = expected after-tax salvage or residual value of the asset at time N

r = appropriate discount rate for each of the above cash flows: r_1, r_2, r_3, r_4, r_5 and r_6

T = lessee's marginal rate of corporation tax

N = number of time periods covered by the lease contract

The first term on the right-hand side of the equation represents the savings to the lessee of the cost of the asset. The second represents the present value of the lease payments the lessee is committed to paying. The present value of the tax deductions applicable to the lease payments is represented by the third term. The fourth shows the present value of the opportunity loss of tax deductions allowed for depreciation. The present value of the opportunity loss of the tax deductions for interest, assuming that some or the total amount of the asset cost would be borrowed if the asset were purchased, is represented by the fifth term. The sixth shows the present value of the savings from after-tax operating expenses that may be higher if the asset is purchased rather than leased.[148] Finally, the seventh term represents the present value of the after-tax salvage value of the asset, an opportunity cost if the asset is leased.

Although there is general agreement on the elements of the NPV equation, there is disagreement on the discount rates, r_1 to r_6, and on the interest payments for the equivalent loan. The debate largely centres on the use of the after-tax cost of debt or the firm's weighted-average cost of capital as the appropriate rate of discount. Since higher discount rates favour leasing over purchase, leasing companies have a natural bias to argue for the use of the higher cost of capital. Although in the development of their model (see Section 2 below), Myers, Dill, and Bautista [1976] provide theoretical support for the choice of the after-tax cost of debt as the

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[148] This is only applicable if the lease includes some provision for asset maintenance.

appropriate discount rate to use in the NPV analysis, the debate was re-entered into in a series of articles in Financial Management's 1987 Symposium on Leasing.[149] Mukherjee's [1991] survey conducted in the USA in the late 1980s revealed that 73 per cent of respondent companies (out of a sample of 45 companies) employed the after-tax cost of debt. However, a UK survey by Drury and Braund [1990], conducted at a broadly similar time, found that 41 per cent of the respondent companies were using a theoretically incorrect interest rate, with 22 per cent of the companies incorrectly using the before-tax rate (when these companies were expected to be taxpayers throughout the entire period of the study).[150]

In order to use the above leasing model, the lease payments are determined exogenously. However, Miller and Upton [1976] and Lewellen, Long, and McConnell [1976] showed that, under the assumption of perfect capital markets and a corporate tax rate common to all companies (and assuming lease terms are determined in competitive markets), the NPV will equal zero and therefore a company would be indifferent between the choice of leasing or purchasing the asset. Lewellen et al. argued that in equilibrium the NPV will be zero (that is the lease payments in Equation (1) will adjust so that the NPV will be zero, given all the other terms in the equation). Miller and Upton [1976] derived the same conclusion using the Capital Asset Pricing Model.

2. The Myers, Dill and Bautista (MDB) model

The leasing model developed by Myers, Dill, and Bautista [1976] is probably the most well documented of the existing models. The foundation of the model is the comparison between leasing and borrowing. Myers et al. argued that the 'lease versus buy' comparison is 'next to meaningless'. The alternative 'lease versus borrow'

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[149] See Weingartner [1987a] and [1987b], Cason [1987] and Schall [1987]. Whereas Weingartner argues in favour of using the weighted average cost of capital, Schall suggests that the use of the after-tax cost of debt is theoretically superior; Cason chooses instead a hybrid of the two discount rates.
[150] In addition, they report that a further fourteen per cent of the companies in the sample used non-discounting methods to evaluate finance leases. See Drury and Braund [1990], p. 189 for a breakdown of the results.

comparison recognises that a company which signs a lease contract reduces its ability to borrow through other channels. In this sense the lease displaces debt: it uses up some 'debt capacity'[151] created by the company's other assets. They argued that although legal ownership of the asset is retained by the lessor, the financial lease contract is similar to a loan secured by the asset.

According to Myers et al., a company signing a lease contract undertakes in effect two simultaneous transactions: The company purchases the asset for cash (denoted as transaction 1A) and at the same time purchases the cash by giving up the asset's depreciation tax shields, salvage value and by agreeing to pay at frequent intervals to the lessor (1B). The alternative is a second set of two transactions: Purchase the asset for cash (2A) whilst at the same time purchasing the cash by selling whatever package of financing instruments is optimal when leasing is excluded (2B).[152] The value of the lease contract to the lessee is the advantage of transaction 1B over 2B. Therefore, we are concerned with how the market value of the company changes if the lease is used as a substitute for other forms of financing.

The MDB model simultaneously solves the problem of the appropriate discount rate for the cash flows and the equivalent amount of borrowing. This is achieved through the derivation of the amount of debt that is equivalent to (or displaced by) the lease. As the authors state: 'The amount of debt displaced depends on the value of the lease liability, but the value of the lease liability depends on the amount of debt displaced!'.[153] The equivalent loan is the amount of borrowing that equates the cost of borrowing to the cost of leasing. For multiple periods, the amount of the equivalent loan is:

$$B=\sum_{t=1}^{N}\frac{L_t(1-T)+D_t(T)}{[1+r(1-T)]^t} \qquad (2)$$

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[151] Debt capacity is defined by Myers [1977] as the promised debt payment that maximises the value of the company's debt.

[152] As Myers et al. themselves noted (p. 801) the company could also undertake a short-term lease, analysis of which has been performed by Miller and Upton [1976] and Flath [1980].

Where B is the amount of the equivalent loan and the other variables being defined as above. Thus, from the equivalent loan approach of the MDB model the amount of borrowing equivalent to the lease is the present value of the after-tax lease payments and depreciation tax shields, discounted at the after-tax cost of debt. The MDB lease valuation formula can be represented as follows:

$$\underset{\text{(lessee)}}{V_0} = A_0 - \sum_{t=1}^{N} \frac{L_t(1-T) + D_t T}{(1+r^*)^t} \qquad (3)$$

where: A_0 = value of the leased asset at time 0.

r^* = after-tax cost of debt ($r^* = r(1 - T)$)

L_t = lease payment at time t

T = corporate tax rate

D_t = depreciation tax shield at time t.

The first term on the right-hand side of the equation represents the value of the leased asset whilst the second term on the right-hand side represents the value of the equivalent loan. The lost interest tax shields of displaced debt are implicitly recognised in the adjusted discount rate.[154] From the lessor's viewpoint, the signs of all cash flows are reversed. To use the basic form of the MDB lease valuation model, one needs to know only the schedule of lease payments and capital allowances, the company's cost of borrowing and its marginal tax rate.[155]

According to the MDB model, the NPV of leasing is simply the asset cost minus the value of the equivalent loan. This follows from the fact that the equivalent loan is endogenously determined in the model in such a way that the after-tax cash flows from leasing exactly equal the after-tax cash flows of the equivalent loan.

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[153] *Ibid.* p. 803.

[154] See Bower [1973] p. 26 and Mukherjee [1991] footnote 1 p. 99 for a discussion of this point. In addition, Schallheim [1994] pp. 129-130 provides an illustration of this concept.

3. Taxes and leasing

This section provides a summary of the research undertaken on the impact of taxation on the use of leasing finance, focusing on the similarities and differences with the impact of taxation on the use of debt finance. Smith and Wakeman [1985] show that under the assumption of perfectly competitive capital markets, no taxes, no out-of-pocket contracting costs and fixed real activity choices, the company will be indifferent between owning an asset and leasing it. This is a special case of the Modigliani and Miller [1958] indifference proposition, which demonstrated that the capital structure of the company (i.e. the proportion of debt and equity capital employed by the firm) is irrelevant to the total value of the company. Smith and Wakeman [1985] furthermore show that under these circumstances, and with the additional assumption of equal corporate tax rates, there is no tax advantage to leasing, since the total tax liability is independent of the ownership structure.

Therefore, the theory of financial leasing has predominantly focused on the differential tax position of the lessee as the primary rationale for leasing. This stems largely from the work of Myers, Dill, and Bautista [1976], who present examples of the benefits of leasing based upon the assumption that the lessee is in a non-tax paying position in perpetuity or that it pays a different tax rate in perpetuity from the lessor. For Myers et al. themselves, taxation was shown to be the only obvious and substantial motive for leasing. In a Modigliani-Miller world, including corporate taxation, where the marginal tax rate is positive, debt dominates equity as long as the company's tax rate is positive.[156] Leasing dominates both debt and equity if the company's tax rate is permanently or temporarily less than the corporate tax rate.

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[155] As Myers et al. [1976] state, in addition one would need to adjust also for the loss of the asset's salvage value and for any operating costs assumed by the lessor. *Op. cit.* p. 806.
[156] This analysis follows from Modigliani and Miller's corrected paper [1963], which considered the impact of corporate taxation on the capital structure decision.

The argument can be summarised as follows: the leasing activity of a company should be inversely related to its tax rate since leasing allows low tax rate companies to sell tax shields to high tax rate lessors, who value the tax benefits more highly. A portion of the savings generated from the sale of the tax shields can be transferred indirectly to the lessee in the form of lower lease payments.[157]

Franks and Hodges [1978], in a note to Myers et al.'s article generalised the analysis to deal with finite non-tax paying periods, showing that the value of the lease can be sensitive to the company's forecast tax position.[158] They found that the attraction of leasing depends critically on the length of such a non-tax-paying period.

Brealey and Young [1980] extended the analysis to analyse the implications of Miller's [1977] equilibrium model for the cost of leasing. Starting from a standpoint of a world of certainty, Miller analysed the capital structure decision when investors are subject to different marginal rates of personal tax, with equity income and bond income being taxed at different rates. He argued that in equilibrium the corporate sector would issue debt up to the point at which the marginal reduction in corporate tax is equal to the increase in personal tax incurred by the marginal shareholder. Brealey and Young showed that in such a world only if a company is in a temporary non-tax-paying position is leasing likely to be the preferred source of financing, equity being the preferred source for companies in a permanent non-tax-paying position.

Drawing on the analysis of Smith and Wakeman [1985], Graham, Lemmon, and Schallheim [1998] show that leasing is favoured by a low tax-rate company when: (i) the depreciation tax shield is received early in the lease term; (ii) the taxable gain on the sale of the asset is relatively small; (iii) larger lease payments occur later in the lease term; or (iv) the before-tax discount rate is high. Although it is

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[157] As discussed in Chapter 1 section 4, it was the prevalence of 100 per cent first year allowances on plant and machinery and the high rates of corporation tax in the 1970s that played a pivotal role in the growth of leasing finance in the UK.

possible to conceive of situations in which the high tax rate company is the lessee, the conditions are atypical, such as a lease with large payments early in the term and depreciation tax shields occurring later in the term. In general, the use of accelerated depreciation tax shields or capital allowances (despite changes to the once highly favourable UK tax regime) tend to favour conditions under which the low tax rate company is the lessee.

As was briefly mentioned above, tax-based theories of optimal capital structure predict a positive relationship between the use of debt financing and the corporate marginal tax rate. Modigliani and Miller [1963], in a correction to their earlier [1958] irrelevance proposition, recognised that tax law (in both the US and the UK, as well as in many other countries) favoured the use of debt over equity because interest payments (but not dividend payments) are tax deductible. Thus the marginal tax benefit to debt is always positive in the MM model.[159]

Miller [1977] later argued that in a world of differential personal taxes,[160] the marginal personal tax disadvantage of debt, combined with supply-side adjustments by companies will mitigate the corporate tax advantage of debt and drive market prices to an equilibrium, implying the irrelevancy of leverage to any given company. DeAngelo and Masulis [1980] suggest that the existence of corporate non-debt tax shields, such as depreciation, is sufficient to overturn Miller's leverage irrelevancy theorem. They show that when a company's debt capacity to fully use tax deductions is limited, its use of debt financing is reduced.[161]

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[158] *Ibid.* Table 3, p. 667 illustrates the effect on different tax-paying commencement dates on the value of a lease.

[159] That is not to say that in the MM model with corporate taxes there is no place for equity. They recognised that there may be other non-tax reasons for issuing both debt and equity. See Modigliani and Miller [1963] p. 442-3 and [1958] p. 292-3.

[160] Although the tax rates on dividends and capital gains are similar (personal tax rates are currently 10, 22 and 40 per cent, CGT rates are 10, 20 and 40 per cent), unrealised capital gains are not subject to tax under the rules for capital gains tax.

[161] For numerical examples of the DeAngelo and Masulis model see Schallheim [1994] pp. 102-105.

MacKie-Mason [1990] empirically studied companies' incremental financing decisions using discrete-choice analysis and found that tax shields significantly affect the choice between issuing debt and equity; at the margin the desirability of debt finance varies positively with the effective marginal tax rate on deductible interest. Thus, when high tax shields substantially increase the probability of tax exhaustion, the company faces a lower expected marginal tax rate and should therefore be less likely to use debt. An important feature of this study was the careful testing for the *marginal* effects rather than *average* effects of taxes on capital structure. The study by Graham [1996] similarly shows that the incremental use of debt is affected by the simulated company-specific marginal tax rates.

Lasfer [1995], using UK data, shows that companies that pay lower taxes, after accounting for stock relief, capital allowances, trading losses and ACT recoverable, are likely to have lower debt financing in their capital structure. In particular, he found that companies that are tax exhausted use less debt than tax-paying companies. Graham, Lemmon, and Schallheim [1998] use a before-financing tax measure to avoid the problem of the endogeneity of the marginal tax rate.[162] In doing so, they show a positive relation between debt levels and tax rates, providing an important insight to what Myers [1984] called 'the capital structure puzzle'.

Using the above framework, Lewis and Schallheim [1992] extend the work of DeAngelo and Masulis [1980] to model the leasing and borrowing decision. They focus on leasing as a means for selling excess non-debt tax deductions. In their model, non-debt tax shields are transferred or 'sold' via leasing, thus reducing the potential redundancy with interest deductions and making the marginal value of debt positive. The lessee responds to this incentive by issuing additional debt. In this way, Lewis and Schallheim establish the theoretical possibility of a positive relationship

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[162] According to the authors, a spurious relationship exists between the financing decision and many of the commonly used tax proxies. Since both interest expense and lease payments are tax deductible, a company financing its operations with debt or leases reduces its taxable income, potentially lowering its expected marginal tax rate. This endogeneity of the tax rate can lead to a bias in such tests in favour of finding a negative relationship between leasing and taxes and against finding a positive relationship between debt and taxes.

between debt and lease financing, even within the same company. (The issue of the relationship between debt and leasing is discussed in the next section.) Furthermore, in their model, leasing can be an advantageous form of financing in perfectly competitive markets even if the marginal tax rate is the same for both the lessor and the lessee.

The empirical evidence provided to date on the influence of taxes on leasing is mixed. For example, Ang and Peterson [1984] report that, contrary to expectations, the average tax rates of companies using lease finance was consistently higher than that of non-leasing companies in each of the six years covered in their study.[163] Finucane [1988] and, in a later study, Krishnan and Moyer [1994] showed that tax-related factors are not significantly associated with the level of leasing by a company. These results may, however, be driven by the fact that both papers looked at 'capital' leases, as defined by FASB Statement No. 13 in the USA, which are not likely to be affected by tax factors because they are treated by the Internal Revenue Service as instalment sales contracts for tax purposes. In a further study, Mehran and Taggert [1996][164] used the ratio of reported tax less the change in deferred tax to earnings before interest and tax in order to estimate the impact of taxes on leasing for a sample of 134 large US companies over the period 1979-80. They find that the coefficient of this variable is not significant, however, these results may be driven by the small number of companies analysed and the short sample period.

Other studies, on the other hand, do find evidence of tax effects. Barclay and Smith [1995] find that companies with a high proportion of tax losses carried forward rely more on lease finance. Sharpe and Nguyen [1995] construct two alternative proxies for a company's tax status. The first is the ratio of tax expense over pre-tax income. The second is a dummy variable equal to one if the company reported tax losses carried forward in its financial statements. Such companies are considered to be tax exhausted and thus unable to take full advantage of the tax

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[163] *Ibid.* footnote 10, p. 1064.
[164] The results of the Mehran and Taggert paper are discussed in Lasfer and Levis [1998], pp. 162-3.

benefits of ownership. Sharpe and Nguyen report that these two measures are significant for all three of their measures of leasing propensity, suggesting that capitalised leases are used more heavily by companies for which the tax benefits of ownership appear low, a result in contrast to that reported by Krishnan and Moyer [1994].

Graham, Lemmon, and Schallheim [1998] argue that the tax findings of the latter two papers are difficult to interpret because they are largely based on the relationship between taxes and capital leases. As was discussed earlier, under the US tax system such leases are not necessarily classified as true (tax-advantaged) leases by the IRS. Graham et al. suggest that capital leases are likely to be a mixture of true and non-true leases (the latter are treated as debt by the IRS). They suggest that whilst the findings by Barclay and Smith [1995] and Sharpe and Nguyen [1995] show a positive relationship between the use of capital leases and tax losses carried forward (in support of the expected negative relationship between leases and tax rates), their tax results may be spuriously caused by the endogeneity of corporate tax status mentioned earlier.

To address these problems, Graham et al. [1998] construct a before-financing tax rate by examining the marginal tax rate that the company faces after making the investment decision, but prior to making the lease versus purchase decision.[165] Furthermore, the authors focus on operating leases as well as capital leases, as the former are likely to be classified as true tax-advantaged leases by the IRS. They show that a change in the marginal tax rate from 0 to 46 per cent will, on average, result in a 17 per cent decrease in the company's ratio of operating leases to company value and a 5.1 per cent decrease in the ratio of capital leases to company value.[166]

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[165] *Ibid.* pp. 143-4 detail how this measure is calculated.
[166] The authors contrast their result that companies with capital leases have higher *marginal* tax rates than those without with that of Krishnan and Moyer [1994], who find no difference in *average* tax rates across leasing and non-leasing companies.

A number of recent studies in the UK have also analysed the impact of taxes on the decision to lease, albeit with mixed results. Adedeji and Stapleton [1996], utilising UK data in a direct test of the Ang and Peterson results, find a significant negative relationship between taxable capacity and the use of finance leases. Adams and Hardwick [1998], using a similar tax variable to that used by Adedeji and Stapleton, however found no statistically significant relationship between the propensity to lease and the tax position of companies in their sample.[167] In addition, Beattie, Goodacre and Thomson [2000], in their initial replication of the Ang and Peterson and Adedeji and Stapleton studies, report an insignificant relationship between the propensity to use finance leases and a company's tax ratio. Utilising a comprehensive lease ratio (finance leases plus estimated operating lease liability divided by total assets),[168] the authors find a generally insignificant relationship, although two out of five years show a significant positive relationship. Beattie et al. point out that the nature of utilising operating leases for retail assets in the UK may partially explain this result.[169]

Lasfer and Levis [1998] analyse financial statements of all unquoted and publicly quoted UK companies for which the appropriate data is available. Their sample covers a total of 3,008 individual companies over the period 1982-96, resulting in 23,411 pooled time-series and cross-sectional observations.[170] Taking into account the features of the imputation tax system then in force in the UK, the authors construct five different proxy variables in which to evaluate the tax impact on the decision to use finance leases and hire purchase finance.[171,172] The study reports

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[167] *Ibid.* footnote 7, p. 493.

[168] For details of the estimation procedure used by Beattie et al. [2000], see *ibid.* Appendix 1, pp. 464-7.

[169] Since the purchase of retail properties generally attracts no tax allowances in the UK, it may be beneficial for retail companies to finance such assets with operating leases from non-tax paying lessors (e.g., a pension fund). Beattie et al. therefore argue that the tax incentive to lease rather than buy retail assets depends on the non-tax paying situation of the lessor, not the lessee. See *ibid.* p.457.

[170] To avoid survivorship bias, Lasfer and Levis include in their sample live companies as well as those that were delisted during the sample period.

[171] The proxy tax variables include the ratio of tax charge to profit after tax, Corporation Tax recoverable, Advance Corporation Tax (ACT) recoverable, provision for ACT recoverable and ACT written off. *Ibid.* pp. 167-168. See Chapter 2 Part C section 1.4 for a discussion of the pre-1999 system of ACT.

results split into large and small company sub-samples, quoted and unquoted company sub-samples, as well as for the sample as a whole. The results show that taxation is a major determinant of leasing for quoted companies and large companies, whereas for unquoted companies and small companies the various tax proxies are not significant.

4. The relationship between leasing and debt capacity[173]

There has been much research into the relationship between debt and finance leases as alternative financing instruments and, more specifically, on the degree of substitutability between debt and leasing. The notion that leasing is a substitute for debt financing is widely accepted in the finance literature and gained its clearest expression in the Myers, Dill and Bautista paper [1976]. Inherent in the MDB model, presented earlier, are a number of crucial assumptions:

1. 'The company regards lease payments as contractual obligations, equivalent to interest and principal payments on the company's debt.'[174]
2. The model assumes that a company has a certain debt capacity due to the tax-deductibility of interest payments. Therefore, borrowing is valuable up to the debt capacity.
3. Companies '... borrow 100 per cent of the tax shields generated by interest, depreciation and lease payments.'[175]

Leasing and debt are thus viewed as fixed, contractual obligations. Both leasing and debt reduce a company's debt capacity and, as a consequence, greater use

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[172] The analysis adopted by Lasfer and Levis centres on finance lease and hire purchase contracts and excludes operating leases. *Ibid.* p. 166, especially footnote 2. Under the US tax system the lessee is treated as the owner of the leased asset for tax purposes (thereby entitling the lessee to tax depreciation and credits where the lessee has economic ownership of the asset). This contrasts with the situation in the UK where the concept of legal ownership determines that the owner of the leased asset for tax purposes is the lessor. It follows, therefore, that the problem of capital leases not qualifying as true leases for US tax purposes does not occur in the UK.

[173] The definition of debt capacity is discussed in footnote 151.

[174] Myers, Dill and Bautista [1976]. p. 804

[175] *Ibid.* p. 804

of lease financing should be associated with less reliance on debt. The MDB model does not consider the determinants of an optimal capital structure: rather the model takes the optimal capital structure as exogenous and assumes that the company is operating at below its optimal level of debt, i.e., that the company has 'excess debt capacity'. The model is used to compare leasing and borrowing by determining whether debt or leasing 'uses up' less debt capacity, under the maintained assumption that debt and leases are substitutes. If leasing uses up less debt capacity than borrowing, leasing is the preferred financing alternative, vice versa where borrowing is cheaper and uses up less debt capacity than leasing.

Myers et al. themselves question the realism of the result represented by Equation (3). The underlying assumption is that the lease obligations and the various tax shields displace debt on a one-to-one basis. The corresponding assumption for the lessor is 100 per cent debt financing, a similar conclusion to Modigliani and Miller's [1963] note on debt financing. As with criticisms of Modigliani and Miller's paper, it is hard to visualise how any company could operate at such a level of debt and is not what is observed in practice.

To take account of this unrealistic scenario, Myers et al. instead assumed that lease payments and the various tax shields support, at most, λ of debt per £1 of assets leased (the company borrows λ times the value of the various tax shields and reduces borrowing by λ times the value of lease payments) and obtained the following formula:

$$\underset{(lessee)}{V_0} = A_0 - \sum_{t=1}^{N} \frac{L_t(1-T)+D_tT}{(1+r(1-\lambda T))^t} \qquad (4)$$

where: r^* = (Modigliani and Miller's [1963]) weighted average cost of capital

= $r(1 - \lambda T)$

r = appropriate hurdle rate assuming perfect capital markets and all-equity financing

A_0, L_t, T and D_t as before.

In the special case of λ equal to 1, equations (3) and (4) are the same.

The degree of substitutability among leases, non-leasing debt and equity is complex. Generally speaking, a company must find the appropriate level of investment as well as the optimum mix of all sources of finance, one of which may be leasing. It is no surprise, therefore, that there are competing views on the value of the debt-to-lease displacement ratio in the literature. Myers et al. themselves suggest that the empirical value of the ratio may be less than 1, because some of the risks of ownership of the leased assets may be retained by lessors. They reason that for the lessor the lease payments carry a degree of systematic risk as the probability of default by the lessee (and the value of the underlying leased asset, if default occurs) depend on the health of the economy. However, for the lessee, they were unsure whether $\lambda<1.0$ as the lease displaces, not supports debt as is the case for the lessor. Franks and Hodges [1978], and Brealey and Young [1980], among others suggested that the value of the ratio would be 1, because capital markets would view finance leases and debt as perfect substitutes: an example of value additivity in perfect and complete capital markets.

In practice, however, there may be differences in the nature of actual or perceived cash flows assumed under leasing and debt financing arrangements. In their study, Smith and Wakeman [1985] refer to examples of such differences and use them to identify potential lessors and lessees as well as the types of asset most likely to be leased by a given lessee. They suggest that if the term of the agreement in a noncancellable lease is shorter than the economic life of the asset, this offers advantages to the lessee if the useful life of the asset is expected to be less than the asset's economic life and if there are significant costs associated with transferring ownership. Under the assumption of rational markets, however, one would expect the

lease rental payments to be higher in these circumstances to reflect the additional risk which the lessor bears on behalf of the lessee: 'With finance leases the lessee bears the risk of obsolescence.'[176] However, as Marston and Harris [1988] discuss, if there is uncertainty regarding the useful life of the asset or if the risk of obsolescence is great, a short-term (operating) lease will impart less risk to the shareholders of the lessee company than will buying the asset. A lease in this case provides a way to transfer risks associated with an asset's future value from the lessee to the lessor, the latter likely to be in a more favourable position to manage the risk of obsolescence. A unit of leasing cash flow would thus be expected to displace less than a unit of debt service.

Klein, Crawford & Alchian [1978],[177] however, implied that the value of the ratio may be greater than one if the leased assets are industry- or company-specific. Such specialised assets have less-well-developed secondary markets and are therefore unlikely to be easy to sell in the event of default or bankruptcy, exposing the lessee to more liquidity risk.

Early attempts at examining the debt displacement effects of leasing tended to contradict the theoretical relationship, however. Using a sample of 92 US companies from 1973, Bowman [1980] examined the impact of lease leverage on measured equity betas and found that leasing has an effect on a company's systematic risk that is indistinguishable from ordinary debt. This was interpreted by Bowman to imply that the market viewed the two forms of financing as close substitutes. Bayless and Diltz [1988] more cautiously interpret the results as suggesting that lease and debt cash flows have a similar effect on measured betas as both forms of financing involve fixed payments that must be made in order to avoid default.

A later study using UK company data by Narayanaswamy [1994] investigated the extent to which the volatility of equity return is affected by using debt or leasing

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[176] Drury and Braund [1990], p. 182.
[177] As discussed in Adedeji and Stapleton [1996], footnote 4, p. 72.

finance. Using data covering the period 1981-90, the paper also examined whether changes in the accounting treatment of leases in the UK as detailed in Chapter 2 Part A affected the market's perception of finance leases.[178] The results support the hypothesis that lease obligations, on average, have a positive effect on the volatility of the return on equity as secured debt does, albeit to a significantly lesser extent. As a result, Narayanaswamy concludes that the market considers lease obligations more favourably (i.e. as being less risky) than secured debt, thus providing an incentive for lease financing relative to debt financing. It is interesting to note that although this result holds both before and after the enforcement of SSAP 21, the effect of lease obligations, relative to that of secured debt, on equity return volatility increases over the sample period. This suggests that the market's favourable perception of leases is changing, perhaps in part due to the introduction of the mandatory capitalisation of finance leases. As Narayanaswamy states: "... the market does not *fully* share the ASC's [Accounting Standard Committee's] notion of the economic substance of finance leases, though there is some indication that this *may* be changing slowly"[179] (emphasis in original).

In an article that sparked much controversy, Ang & Peterson [1984] attempted to directly estimate the extent to which leases substitute for debt. Using a Tobit cross-sectional analysis on a sample of approximately 600 companies over the period 1976-81, they estimated the relationship between the likelihood and the extent of leasing activity and a company's debt ratio and other explanatory variables. To their surprise, their results show a statistically significant positive (i.e. complementary) relationship between leasing activity and reported debt ratios. This result was supported by the study undertaken by Finucane [1988]. He also used a cross-sectional Tobit analysis on a sample of 600 companies, this time over the period 1981-85 and concluded that leasing and debt financing were positively correlated.

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[178] In effect, the sample period covered three different regulatory regimes: the period 1981-4 when Exposure Draft 29 (ED29) was under discussion, 1984-7 when the capitalisation of finance leases under SSAP 21 was voluntary, and 1987-90 when SSAP 21 was mandatory.
[179] *Ibid.* p. 349.

Adams and Hardwick [1998] discuss possible reasons for this complementarity. They suggest that, in the absence of rules requiring the capitalisation and inclusion of leases in the writing of debt covenants, leasing agreements could enable owners and managers of companies to circumvent restrictive debt covenants and '... employ leased assets to generate cash flows which could be used to finance bonuses and perquisite consumption.'[180] Such an analysis, according to Drury and Braund [1990] assumes that lenders view leasing and debt as non-equivalent debt instruments. Adedeji and Stapleton [1996] suggest the reasoning here is that as lessors will bear some of the costs of asset ownership (e.g. costs of disposal), they will pass on these costs to the lessees in the form of higher lease payments, charges which could be higher than the cost of debt. As a result, leasing will rank below debt in management's choice of finance and we would expect '... companies with low debt ratios to also have low lease ratios and ... [to] only observe [a] high use of finance leases in the case of those companies which had already used up their primary debt capacity'.[181] Thus, the relationship between leasing and debt finance is likely to be complementary rather than substitutive.

Mukherjee [1991] surveyed *Fortune 500* companies to ask their chief financial officers about their leasing activities and form of analysis. The results of the survey reveal that about 47 per cent (38 companies) of the companies responding in the sample view leasing as a substitute for debt, 22 per cent view leasing as a complement to debt, whilst 31 per cent believe that debt and leases are independent decisions. Nevertheless, as noted earlier, almost all of the respondents use models that are based on the assumption that debt and leases are substitutes, such as the MDB model.

The model developed by Lewis and Schallheim [1992], discussed in the previous section can be shown to support the complementarity relationship as it provides new insights into the debt and leasing choice. Since the authors determine

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[180] *Ibid.* p. 488.
[181] *Ibid.* p. 72.

the optimal leasing and capital structure decision endogenously, their model does not assume that debt and leases are substitutes. This is important because the theory developed by Lewis and Schallheim demonstrates that the relationship between debt and leases can be complementary. That is, a lessee company optimally uses more debt with leasing than it would if it restricted itself to debt alone.

The above empirical studies have been criticised for failing to control for the underlying factors that determine debt capacity. Smith and Wakeman [1985], in particular, assert that the results of Ang and Peterson [1984] stemmed from the latter's inability to adequately control for debt capacity across cross-sections of individual companies. Smith and Wakeman argue that companies with higher debt capacity may also have other characteristics that make leasing relatively attractive. In particular, companies with certain asset characteristics are likely to have greater debt capacity and, as such, they can afford to use more lease and debt financing than other companies.

Bayless and Diltz [1988] argued that the studies of both Bowman and Ang and Peterson do not distinguish between debt instruments, and therefore ignore the possibility that any given lease may displace different amounts of debt depending on the type. Bayless and Diltz control for debt capacity by constructing an experimental setting in which bank loan lending officers in the USA are queried regarding the amount they would be willing to lend under various hypothetical circumstances. The authors found that, in the case of a term loan decision, banks did not treat outstanding capital leases and debt differently; however, leases had a negative relative effect on credit line decisions. They conclude that the fungibility of leases and other forms of debt should generally depend upon the particular use for which the company's other debt has been targeted.[182]

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[182] In particular, Bayless and Diltz [1988] suggest that leasing is qualitatively more like a term loan (both are used primarily for equipment purchases and are often part of a firm's permanent debt) than lines of credit (used primarily to finance the working capital needs of a company and not viewed as permanent financing).

In their investigation of the default and prepayment experience of financial leasing contracts, Lease, McConnell, and Schallheim [1990] provide evidence of similarities between leasing and high-yield debt. Their results of the default rates and recovery rates of a sample of 137 completed leases in the USA over the period 1973-1982 are similar to those reported for high yield ("junk") bonds by Altman [1989] and Asquith, Mullins and Wolff.[183] Furthermore, the spread between contracted and observed yields on leases closely matches that on high-yield bonds. For the Lease et al. sample, the contract yield exceeds the realised return by 2.62 per cent.[184] Blume and Keim[185] report that for lower-grade bonds issued during 1977-78 the annual promised yield exceeds the realised return by 2.61 per cent. While the evidence is incomplete (for example due to differences in the sample periods used in the studies), Schallheim [1994] contends that the similarities between the outcomes associated with leases and high-yield debt are consistent with the hypothesis that leases and lower-grade debt are comparable sources of funds for high-risk companies.

Marston & Harris [1988] examined changes in, rather than levels of, leases and debt to provide a more robust control for differences in capital structure across companies than that used by Ang and Peterson. They also examined more comprehensive measures of leasing and non-leasing debt than Ang and Peterson, who focused only on capitalised leases and long-term debt. Using US data for the period 1976-82, they found that changes in the debt ratio and lease ratio for individual companies were inversely related over time, concluding that debt and lease financing are substitutes. For each company, debt and lease financing are substitutes but companies employing lease financing typically use higher levels of debt compared to companies that do not. They also show that companies, on average, reduce non-

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[183] Lease et al. report a default rate of approximately 19 per cent for their sample of leases and a recovery rate of 38 per cent relative to the original cost of the asset, or 64 per cent relative to the present value of the remaining lease payments plus estimated salvage value. *Ibid.* p. 14. The results reported by Altman [1989] and Asquith et al. [1989] (the latter summarised in Lease et al. [1990] p. 19) by comparison show cumulative default rates on high-yield bonds of approximately 30 per cent over the life of the bond and recovery rates on those bonds that do default of about 40 per cent of the face value of the bond.

[184] *Ibid.* Exhibit 3, p. 16.

[185] As reported in Lease et al. [1990] p.19.

leasing debt with increases in leasing, but do so on a less than one-to-one basis. These results have found support in the US study by Krishnan and Moyer [1994], who examined the company's decision to use leasing finance as a way to reduce bankruptcy costs (see next section) and note a significantly negative relationship between the use of long-term debt and capital leases.

Adedeji and Stapleton [1996] and Beattie et al. [2000] undertook separate direct tests of the Ang and Peterson methodology. Whereas both studies recorded the same positive relationship between the use of finance leases and debt using UK company data, only the former study recorded a significant relationship. Adedeji and Stapleton argued that Ang and Peterson's results are to be expected if a large number of non-leasing companies are included in the sample. They hypothesise that if an attempt was made to explain the leasing behaviour only of those companies that engage in leasing, then the negative relationship between the use of finance leases and debt would hold empirically. Indeed, they find that finance leases and debt displace each other but on a less than one-to-one basis. The debt-to-lease displacement ratio was estimated to vary from £0.82 to £0.39 over the three years in their sample.

Beattie et al. [2000], however, find no support for the hypothesis of a substitutability relationship between finance leases and debt. In contrast to Adedeji and Stapleton, they continue to find a positive but insignificant relationship when performing an OLS regression for the sub-sample of companies recording finance leases in their accounts.[186] Beattie et al. investigated the relationship further, and, recognising that operating leases liabilities are on average approximately thirteen times larger than finance lease liabilities in their sample, they utilised a comprehensive lease measure (see previous section). They report a significant negative relationship between the use of all forms of leasing and debt finance. For the

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[186] As the sample periods of the two studies were similar, with a common 1990-92 period, differences in the sample selection procedure adopted was suggested by Beattie et al. as a possible reason. They extracted data directly from the financial statements rather than via the Datasteam database, which had resulted in Adedeji and Stapleton excluding companies with insufficient data. This fact, and the

comprehensive lease measure, they estimated a debt-to-lease displacement ratio of approximately £0.23 over the period 1990-94. The same ratio was estimated with finance and operating leases separately. There was a similar debt-to-lease displacement ratio recorded when the operating lease ratio was used. The coefficients for the finance lease measure were not significant. This suggests that substitutability between debt and leases is not uniform across lease types, as the results indicate that debt and operating (but not finance) leases are substitutes in the UK, a finding at variance with evidence from the US.[187]

Lasfer and Levis [1998] report that differences in the levels of gearing between lessee and non-lessee companies are not homogeneous across companies of different size. For the whole sample, they find that lessee companies have on average higher gearing ratios and lower relative levels of bank loans than non-lessee companies. However, whereas for large companies leasing and debt finance are complements, for small and medium-sized companies leasing and debt finance are substitutes, suggesting that for the latter leasing is a cheaper source of finance. Based on a sample of 100 UK-owned companies listed on the London Stock Exchange for the year 1994, Adams and Hardwick [1998] use a composite leasing variable to capture the incidence of both finance and operating leasing in a similar way to that developed by Sharpe and Nguyen [1995]. Their results provide support for the hypothesis of complementarity between leasing and leverage (although this must be tempered by the fact that the sample period did not allow for time-series comparisons and the sample size is small and restricted to - by definition - large companies). They estimate that on average an increase of 0.1 in a company's leverage will lead, *ceteris paribus*, to an increase of approximately 0.08 in its leasing share.

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possibility that finance leases are a small fraction of total company financing, may cause the results utilising finance lease data alone to be sample specific.

[187] The study by Mehran, Taggart and Yermack [1997] (reported in Beattie et al. p. 456) found no evidence of a substitutional relationship.

5. Leasing and financial distress

In the UK corporate insolvency is a legal procedure for the court-supervised administration of a company in financial distress.[188] Default on promises made in lease and debt contracts generally gives the claimholder the right to force the company into insolvency. Most of the studies looking into this issue have originated in the USA. Consequently, they have examined the features of the US Bankruptcy Code and the relative position of capital leases vis-a-vis secured and unsecured debt. As this study looks at the issue of leasing in the UK, it is relevant, therefore, to provide an overview of the two countries' corporate insolvency codes and to point out some of the differences between them, particularly with reference to leasing.[189]

In the US, under the auspices of the 1978 Bankruptcy Reform Act, there are two main bankruptcy procedures for corporations: Chapter 7 and Chapter 11. Chapter 7 of the Code is the liquidation provision: it provides for the appointment of a trustee by the court to oversee the liquidation of the company. Its assets are therefore sold and the proceeds are distributed to the company's claimants according to their priority. Chapter 11 allows a company to remain in operation while a plan of reorganisation is worked out with its creditors. In order to facilitate this, the directors of the corporation are permitted to remain in charge and substantial rights are given to the company, often referred to as the debtor-in-possession. The rationale is that existing management representing equity holders will have greater incentives to maintain the company as a going concern in order to preserve some value for equity's claim. To give some idea of the relative frequency of bankruptcies being processed through Chapters 7 and 11, it is worth noting the results of the following studies. Franks, Nyborg, and Torous [1996] report that the majority of bankruptcies are

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[188] In contrast to the situation in the USA, the legal definition of bankruptcy in the UK only applies to individuals not corporations.

[189] The following discussion is based upon the work of Krishnan and Moyer [1994], Sharpe and Nguyen [1995], Barclay and Smith [1995], Franks et al. [1996] and Graham et al. [1998].

processed through Chapter 7.[190] Barclay and Smith [1995], however, state that '... most *large* corporations file under Chapter 11...'[191] (emphasis added).

The legal treatment of the claims of lessors is different from the treatment of the claims of secured lenders in bankruptcy. After filing for bankruptcy, the lessee has the option of either 'assuming' or 'rejecting' a true lease,[192] i.e., accepting or breaching all obligations entailed by the lease. If the lessee rejects an obligation, then the lessor may immediately recover possession of the equipment, re-lease, or sell it, and file an unsecured claim against the lessee for economic losses incurred, including unpaid rents, late charges and the present value of expected future rental shortfalls. In contrast, bankruptcy proceedings grant the debtor an automatic stay on the payment of most other financial claims, including those of secured debtholders, until the bankruptcy process is resolved.

If the lessee instead chooses to assume the lease, and thus retain the equipment, the lessor is entitled to continue receiving compensation in accordance with the original lease agreement. This is because such obligations are classified as administrative expenses in the bankruptcy code. Therefore, when a true lease is not rejected, the lessor will continue to receive full compensation even after the lessee files for bankruptcy, while other outstanding creditor claims, including those of secured creditors, are accrued against the bankrupt company with no assurance of being met.

Krishnan and Moyer [1994] suggest that a further advantage lessors enjoy relative to secured lenders is the superior claim of lessors over lenders prior to bankruptcy. If a lessee defaults on the terms of the lease, the lessor normally can

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[190] They report that in the Central District of the California Bankruptcy Court there were 57,752 Chapter 7 cases pending as compared with only 6,739 Chapter 11 cases as of December 1993. *Ibid.*, p. 89.

[191] *Ibid.* p. 901.

[192] A true lease, from a US legal standpoint is a lease whereby the lessor retains ownership. If not, the lease is 'intended for security'.

seize the asset with a minimum of legal costs. In such a case, the lessor will avoid any losses and delays that may arise from the bankruptcy and reorganisation process.

The UK Insolvency Code is governed by the 1986 Insolvency Act (with updates, the most recent being in 1994). The act was the result of a long process of investigation into UK law relating to insolvency by the Cork Committee in the 1970s, which reported in the early 1980s. Prior to the 1986 Insolvency Act there were three possible routes to formal reorganisation: 1) liquidation, 2) receivership, and 3) company voluntary arrangements. The two main aims of the 1986 Insolvency Act were:

1. to tighten up the controls on the abuses of the existing corporate insolvency system and a general updating of a system which in large part dated from the Bankruptcy Act 1914; and
2. to provide genuine alternatives to the remedy of liquidation for an insolvent company, where such remedies would provide a better opportunity for the creditors to recover their debts and for the companies concerned to remain in existence.

Measures designed to assist in the first aim include the regulation of insolvency practitioners and the amendments to the laws relating to receiverships and liquidations, including the new statutory concept of an administrative receiver. To achieve the second aim the Act introduced a new procedure, administration.

Franks et al. [1996] report the findings of two studies, which surveyed the use of the different insolvency procedures.[193] A study undertaken by Rajak revealed that the most widely used route in 1990 was the liquidation code, which accounted for approximately three quarters of all formal reorganisations, with receivership accounting for a further 22 per cent. In contrast, Olsen's study of a sample of the 148 reorganisations of distressed quoted UK companies that were resolved through the

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[193] *Ibid.* p. 88.

insolvency process during the period 1987 to 1995 revealed the following: 115 companies went into receivership, 10 were liquidated, 15 sought administration, 7 were company voluntary arrangements and the remaining case was a scheme of arrangement (a court-supervised arrangement with creditors).

The liquidator is appointed with the object of winding up the company and terminating its existence. In general terms, the liquidator has the power to take into possession all the company's assets, dispose of the property, negotiate with creditors and debtors to prove their claims to the insolvency and to settle the creditors' claims due from the company's assets. The liquidator can sell the company as a going concern or in a non-operating state, but he cannot use funds belonging to creditors to delay sale, otherwise he risks dismissal or legal action.

Receivership can only take place when one or more of the company's creditors has a particular kind of lien on the company's assets, known as a floating charge, which is a claim on moveable assets such as stocks and work in progress.[194] The purpose of the receiver is to generate sufficient funds from the company's assets to settle the following classes of creditor:

- secured creditors;[195]
- preferential creditors;[196] and
- the floating-charge holder who appointed him.

Although the receiver is not bound to settle unsecured debts, he has a duty to keep the creditors concerned informed of the progress of the receivership. From the preceding discussion it follows that the receiver, being appointed by the creditor with

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[194] Such charges 'float' over the company's property until such time as a specific event occurs which causes the charge to 'crystallise' and then attach to the particular property in the possession of the company at the time.

[195] Secured creditors are those creditors having: standard security over freehold/leasehold property; hire purchase claims; retention of title claims; and liens.

[196] Preferential creditors include the following: Inland Revenue, Customs and Excise, Department of Social Security, pension schemes (under Schedule 4, Pensions Schemes Act 1993), employees. All preferential creditors rank *pari passu* with each other.

the floating charge, represents the interests of that creditor with virtually no duty or care to other creditors.

The powers of the receiver are significant. He has complete control of the company, and does not require permission from the court or from other creditors for his actions. The receiver does not, however, have complete discretion over his actions. An important type of constraint is a lien (known as a fixed charge) held by other creditors on assets such as plant, equipment and buildings. Such creditors can repossess those assets even if such assets are vital for maintaining the company as a going concern. In order to avoid being 'held to ransom' by other creditors, the creditor with the floating charge will attempt to obtain liens on fixed charges as well.

Although the receiver has the power to terminate any of the company's contracts with third parties such as suppliers and contractors, in effect making them junior unsecured creditors, he does not have the power to stay the claims of the company (i.e. to postpone interest and capital repayments). This is because, unlike under Chapter 11 in the US, there are no automatic stay provisions in the receivership code. Secured creditors, furthermore, often precipitate liquidation by repossessing their assets even when they are essential to keep the business in operation.

The Insolvency Act 1986, as previously discussed, introduced a new form of insolvency management called an administration order. It was an attempt to save companies that previously would have faced extinction through receivership or liquidation. Whereas the appointment of the receiver does not usually require the permission of the court, the administrator can only be appointed by the court. Approval will only be given if there is a good chance that the company can emerge as a going concern. The main aims of the administrator are to rehabilitate the company, or to realise its assets through a sale of the business. Within three months of his appointment the administrator must propose a reorganisation plan to be approved by a majority of all creditors, or to seek an extension. In contrast to receivership in

which the control rights rest with the creditor with the floating charge, in administration the actions of the administrator require a vote by all creditors.

The administrator has strong powers under section 11 of the Act to delay or stay creditors' claims, similar to that available to a company entering Chapter 11 in the US. For example, interest and repayment on loans are stayed while the administration order is outstanding. Furthermore, the owner of a leased asset may be prevented from repossession of the asset if the asset is necessary to run the company, thus putting the rights of lessors on similar terms as those of secured creditors.

The aforementioned study by Olsen however revealed that the number of companies taking the administration route were relatively few and that receivership was without doubt the most common route taken. This is in part because the creditor with a floating charge is able to pre-empt the appointment of the administrator by appointing a receiver instead.[197] The creditor may wish to do so because a creditor represented by the receiver has greater control rights than he or she would in administration. It thus appears that the second aim of the 1986 Insolvency Act, that of providing genuine alternatives to liquidation, has not been satisfactorily achieved

It follows from the preceding surveys of insolvency law in the UK and the US Bankruptcy Code that there are differences in the relative treatment of secured debtors and lessors in the event of financial distress. Whereas in the US leasing contracts have high priority in bankruptcy relative to debt, in the UK the lack of any automatic stay provisions under the most commonly used receivership code puts the two forms of financing on a similar ranking. This difference should be borne in mind when reviewing the empirical work undertaken to date on the issue of financial distress.

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[197] To exercise this effective veto on the making of an administration order the creditor has to appoint an administrative receiver before the administration order is made; he or she is precluded from doing so afterwards by s.11(3)(b) I.A. 1986.

The characteristics of the US Bankruptcy Code leads to the conclusion that a company with a high probability of entering financial distress is likely to be able to arrange *ex ante* lease financing on more favourable terms than other forms of financing, such as issuing bonds. In such circumstances, lease financing may be the only form of long-term financing available to a high-risk company. Therefore, companies likely to enter distress will have a greater proportion of deductible financing costs arising from leasing; Graham et al. [1998] suggest that one would expect a positive relationship between leasing and *ex ante* measures of financial distress. They compare this with a company's debt policy in a similar situation. Capital structure theory suggests that companies will *ex ante* balance the tax benefits of debt against the expected costs of financial distress, implying that, *ceteris paribus*, companies with higher *ex ante* expected costs of financial distress should use less debt. Graham et al. argue that, *ex post*, the occurrence of financial distress can potentially obscure the empirical relationship between financial policy and taxes. Due to a decline in equity value as a result of financial distress, the company is likely to have a high observed debt ratio, as well as a low expected marginal tax rate (because of tax loss carryback and carryforward provisions). A similar argument applies to lease financing. Therefore, the authors predict that distressed companies are likely to display an *ex post* positive relationship between financial distress and measures of debt and leasing, confounding the ability to detect tax effects.

Krishnan and Moyer [1994] hypothesise that leasing reduces bankruptcy costs in comparison to financing with ordinary debt while having all the advantages of secured debt. Under these considerations, leases should be more widely used by riskier, less-established companies. They find that lessee companies have lower retained earnings, higher growth rates, lower interest coverage ratios, higher debt in their capital structure, higher operating risk (measured by the variation in EBIT) and lower Z-scores[198] than non-lessee companies. Their evidence suggests that, as bankruptcy potential increases, lease financing becomes an increasingly attractive

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[198] See below for a discussion of the Z-score variable as a predictor of corporate financial distress.

financing option. Their analysis is a partial analysis, however, as it examines the use of capital leases only, ignoring operating leases.

Finucane [1988] reports that companies with lower debt ratings tend to use more leasing finance, suggesting that leases, secured by specific assets, may have lower costs for companies facing higher unsecured debt costs. These results are consistent with the similarities noted in section four between leases and high-risk bonds, as reported in the studies of, *inter alia*, Lease et al. [1990] and Altman [1989].

Sharpe and Nguyen [1995] analyse the propensity to use both operating and capital forms of leasing. They hypothesise that a company's propensity to lease is a function of the type of capital required and the extent of leasing-related transaction costs associated with such assets. They find that a company's leasing propensity – the ratio of operating and capital leases to the book value of fixed assets – is substantially higher for lower-rated, non-dividend paying and cash poor companies.[199] Their results suggest therefore that leasing is used extensively by companies that are likely to face relatively high premiums for external funds.

In the UK, Lasfer and Levis [1998] report that profitability, as measured by earnings per share, is negatively related to leasing for a sample of small companies; for large companies, however, the relationship is positive. The results therefore are partially consistent with the above US evidence, suggesting that lease financing becomes an attractive financing option only for small companies that are in financial distress.

Based on their earlier discussion of the relationship between financial distress and both leasing and debt finance, Graham et al. [1998] construct *ex ante* and *ex post* measures of financial distress. To estimate the *ex ante* expected costs of financial

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[199] The authors report that after controlling for company size and other factors, the total lease share of a low bond rated company that pays no cash dividends is about 25 percentage points higher than that of a highly rated dividend-paying company. *Ibid.* p. 293.

distress, they relate the coefficient of variation of the company's earnings[200] (to proxy for the likelihood of financial distress) with the company's level of asset intangibility[201] (the variable acting as a measure of the proportion of company value likely to be lost in liquidation). The rationale for using this measure is that: i) both the variance and the level of earnings determine the likelihood of financial distress; and ii) intangible assets are likely to lose most of their value in liquidation. The results show that this measure of the *ex ante* expected costs of financial distress is negatively related to the use of debt finance, consistent with the predictions of the trade-off theory of capital structure. In addition, they find that the use of both operating and capital leases is positively related to the expected costs of financial distress, which is supportive of the view that companies with large expected costs of financial distress are likely to finance a large proportion of their assets with leases which have high priority in bankruptcy proceedings.

To measure *ex post* financial distress, Graham et al. construct two proxies. One is the contemporaneous value of a modified version of Altman's [1968] Z-score,[202] the other is a dummy variable set equal to one if the book value of common equity is negative. A low Z-score indicates a high level of financial distress, whilst the second variable acts as a proxy for companies that are likely to have experienced prolonged distress. The results show that whereas the debt ratio is (as expected) negatively related to the Z-score proxy and positively related to the book value proxy, there is no proof of such a relationship between leases and the two *ex post* measures of financial distress.

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[200] The authors use the standard deviation of the first difference in the company's historical earnings before depreciation, interest and taxes divided by the mean level of the book value of total assets as a proxy for the level of earnings. *Ibid.* Footnote 15, p. 144.
[201] The proxy used for asset intangibility is the sum of research and development and advertising expenses divided by assets.
[202] *Ibid.* Footnote 16, p. 147 provides details of the exact measure used.

6. Leasing and agency costs

This section looks at a further set of arguments for the determinants of leasing, those that focus on the so-called agency and contracting costs. Smith and Wakeman [1985] provide a comprehensive analysis of the various incentives affecting the lease-versus-purchase decision. The financial contracting motivations suggested by the two authors are precluded by the complete markets framework of Modigliani and Miller [1958]. However, such motivations arise when information asymmetries exist between outside investors and company insiders regarding ongoing operations or future prospects, or when conflicts of interest between classes of corporate claimants are costly to resolve. Although the review conducted by Harris and Raviv [1992] highlighted the extensive analysis of the influence of such financial market imperfections on corporate capital structure, until recently the theoretical or empirical research conducted has given little more than cursory consideration as to how leasing fits into the equation.

Smith and Wakeman [1985] suggest that taxes are important in identifying potential lessors and lessees but they are less important in identifying the specific assets leased. They suggest that companies are unlikely to lease assets that are highly specific to the organisation because the resulting bilateral monopoly problem, as developed by Klein, Crawford, and Alchian and detailed in Krishnan and Moyer [1994], would create agency conflicts between the lessor and the lessee.[203] They predict that leasing is more likely to occur if the lessor has market power and if the value of the asset is not specialised to the company. In this case, companies are more likely to lease generic office facilities than company-specific production and research and development facilities. Krishnan and Moyer suggest that the company-specific asset problem is exacerbated in the case of companies facing a high probability of financial distress because of the limited value of such assets in the event of company

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[203] Krishnan and Moyer [1994] summarise the problem thus: company-specific assets expose the lessor to the risk of exploitation by the lessee because there is no good alternative use for the assets if the lessee refuses to renew the lease, disputes the lease payments, or declares bankruptcy. The lessee is also subject to exploitation by the lessor as, for example the lessor may fail to maintain the leased asset properly, thereby increasing the effective rent in a way unanticipated at the inception of the lease. For further remarks on this issue, see *ibid.* Footnote 10, p. 35.

failure. Smith and Wakeman [1985] also predict that leasing is likely to occur if the lessor has market power and if the lessor has a comparative advantage in asset disposal.[204] Similar conclusions are reached by Williamson [1988]; building on his analysis of debt-versus-equity financing of asset specificity, he concludes that assets that are easily redeployable, i.e., assets with resale value and which are not company specific, are likely to be leased.

The extent to which leasing is determined by the resolution of agency conflicts is difficult to test. The main reason relates to the lack of data on a company's asset types. Previous studies, however, have developed a number of proxy variables to measure the impact of asset type on leasing propensity. It should be stated that the following categories are not mutually exclusive; empirical results examining one category have been used to endorse or challenge hypotheses in another category. The proxy variables include industry effects, the company's investment opportunity set, ownership structure and size.

7. Industry effects

The first proxy variable is the company's industrial classification: assets used by companies in a particular industry could be identifiable and their suitability for leasing assessed. For example, Krishnan and Moyer [1994] hypothesised that companies in manufacturing industries make greater use of company-specific assets than those in other industry groupings and, hence are less likely to use lease financing. Their results show that transportation, services and the wholesale and retail industries are more likely to use lease financing than manufacturing companies. Their results are consistent with earlier evidence reported by Finucane [1988],

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[204] Lewellen et al. [1976] for example state: 'The lessor may be more active or skilful in dealing with the associated second-hand asset market; his specialised knowledge may give him an edge'. *Ibid.* p.796. Smith and Wakeman [1985] identify three potential sources of this comparative advantage: i) the reduction in search, administration, information and transaction costs associated with the lessor's provision of a centralised market place for the asset; ii) the reduction in service from reusing components previously used in leased machines in the repair and maintenance of current machines, and iii) the reduction in production costs from re-using components of previously leased machines in

suggesting that assets leased in these industries, such as aircraft and retail space, are easily redeployable. Finucane furthermore reports that companies using mortgage-secured notes or bonds are more likely to use leasing. This is suggested by Lasfer and Levis [1998] to infer that companies with assets that make good collateral are also likely to have assets conducive to leasing.

Studies using UK data have tended to provide only a degree of support for the above US studies. In particular, Adedeji and Stapleton [1996] report results suggesting that the industrial classification of a company has little influence on its degree of use of finance leases. More recently, Adams and Hardwick [1998] report mean lease ratios (a measure incorporating both finance and operating leases) for manufacturing/engineering companies marginally below the average for their whole sample and, more importantly in light of the results of Krishnan and Moyer [1994], more than double the lease ratio for companies in the construction industry, an industry more likely to use non-company-specific assets.[205]

Beattie et al.'s [2000] study reports conflicting results that are dependent on the type of lease variable used. Where the lease variable is the ratio of the capitalised value of finance leases and hire purchase contracts to total assets, the industry dummy variables were generally insignificant. The exception to this was the significantly negative coefficient for the retail sector variable, implying that this sector utilises finance leases to a relatively lesser extent than other sectors, in contrast to the findings of Krishnan and Moyer and to the relationship hypothesised in the literature. Beattie et al. repeated the analysis, this time with a comprehensive lease ratio (see footnote 168 for details), incorporating operating lease liabilities. The results record the expected significant positive relationship between the lease ratio and the retail sector dummy, implying that retail companies are likely to employ

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the manufacture of new machines. However, the authors question whether this comparative advantage of lessor over user is, in itself, sufficient to provide an incentive to lease. *Ibid.* p. 902.

[205] The mean total lease share for manufacturing/engineering companies is 19 per cent, for construction companies 9 per cent. *Ibid.* p. 491.

more operating leases than other companies, possible reasons for this being the tax position of the lessor, as discussed previously in section 3, especially footnote 169.

8. Investment opportunity set

Williamson [1988] contends that the method of financing assets will depend on attributes such as their durability and the degree to which they are specific to economic exchange. Such reasoning implies that leasing decisions are related directly not only to the nature of the assets held by the companies but also to the extent to which those assets affect their investment opportunities. Myers [1977] maintains that two elements comprise company value: tangible assets-in-place (fixed assets such as property and equipment) which are valued independently of future corporate investment opportunities, and intangible growth options which reflect future discretionary investments. According to this interpretation, contracting costs, such as monitoring expenditures, are likely to be lower in companies with assets-in-place because such investments are likely to commit owners of the company (and their managers) to certain courses of action and thus restrict managerial discretion in decision making. In contrast, companies with high growth options are likely to be associated with uncertain future net cash flows, thereby necessitating higher contracting costs, such as those associated with the generation of information on performance and its disclosure.

Smith and Wakeman [1985] suggest that the more sensitive a capital asset is to the use and maintenance decisions in the company, the more likely it is that the asset will be leased. This is because ownership rights over company-specific tangible assets give owners more flexibility to switch assets between different uses in order, for example, to take advantage of market opportunities. The analysis suggests that that the value of companies that purchase rather than lease assets is likely to be characterised more by tangible assets-in-place than by intangible growth opportunities. Krishnan and Moyer [1994] found as evidence for this that leasing is a less common method of financing in industries with high levels of assets-in-place

(e.g. manufacturing) than for industries with more growth options (e.g. transportation).

It follows from the preceding discussion that the second proxy is the split of the company's market value into assets-in-place and the proportion of the value that is accounted for by future growth opportunities. Lasfer and Levis [1998] provide an overview of a number of mechanisms that can be used to reduce the agency problems between shareholders and managers (acting as the former's agents). Myers [1977] argues that with risky fixed claims in the company's capital structure, conflicts can arise between shareholders and bondholders over the company's real investment decisions. For example, if most of the benefits from a profitable investment opportunity were to accrue to the company's existing bondholders, then shareholders (and managers, if share options are in place) might decide that it is not in their interests to invest in the project. Myers terms this the underinvestment problem. In a similar vein, and following the work of Jensen and Meckling [1976], the asset substitution problem suggests that the presence of debt may provide incentives to transfer wealth from bondholders to shareholders by increasing the risk of the company's investment projects.

Myers [1977] suggests that the incentive to underinvest can be mitigated by reducing the amount of debt in the company's capital structure, by including restrictive covenants in the debt contracts, or by shortening the maturity of the company's debt obligations. Stulz and Johnson [1985] further suggest that these incentive problems can be reduced if the company retains the ability to finance new investments with high priority claims, such as secured debt or leases. Financing new investment projects with debt secured by the assets such borrowing finances limits wealth transfers from shareholders to existing bondholders and thus reduces the incentive to underinvest. In addition, according to Smith and Warner [1979], including security provisions in the debt also limits the company's ability to engage in asset substitution. This analysis suggests that a company with more growth options in its investment opportunity set (and thus for which these incentive problems are

more severe) should have a lower proportion of fixed claims in its capital structure, but a greater proportion of its long-term liabilities in senior claims such as finance leases or secured debt.[206]

Empirically, Barclay and Smith [1995] use the ratio of the market value of the company's assets to its book value as a proxy for growth options in the company's opportunity set. They find that firms with greater growth opportunities are less likely to resort to forms of financing characterised by fixed claims (such as debt and lease financing), but where they do they rely more heavily on lease financing.[207] Similarly, Graham et al. [1998] find that the ratios long term debt-to-market value, capital leases-to-market value and operating leases-to-market value are all negatively related to the market-to-book ratio and positively related to asset tangibility.

In the UK, Adedeji and Stapleton [1996] (using the price-earnings ratio as a proxy for expected growth) report that growth generally has a negative impact on the use of finance leases. This result is not consistent with the more recent findings of Adams and Hardwick [1998] who, using the same growth proxy, find no significant relationship between the variable and the use in the UK of finance and operating leases. However, this study suffers from the problem that the sample period is only one year, 1994, and the sample size is only 100 companies, leading to possible sample-specific results. Lasfer and Levis [1998] construct five variables to measure a company's growth opportunities. They find that the variable 'additions to other fixed tangible assets' is positively related to leasing for the sample as a whole, but that the

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[206] This view supports the 'complementary hypothesis' which suggests that leasing could enable highly geared companies to differentiate more easily the claims of shareholders and debtholders on future cash flows generated from projects and so maximise the market value of the company.

[207] Where the lease ratio is defined as the ratio of capitalised leases to total fixed claims (capitalised leases, debt, preferred stock). Where the lease ratio is defined as the ratio of capitalised leases to total firm value, Barclay and Smith [1995] report that companies with more growth opportunities issue significantly fewer fixed claims in the form of leases and debt obligations, a result consistent with the hypothesis that companies with more growth options tend to use less debt overall in their capital structures. The results of the two tests (reported in Tables III and IV, pp. 905-6) indicate '... that firms with more growth opportunities use capitalised leases more intensively but issue a smaller fraction of debt ...' *ibid.* p. 908.

variable Tobin's q[208] is positively related to leasing only for small companies. The authors suggest that whilst leasing for large companies is largely driven by tax savings, for small companies leasing is driven by growth opportunities, or as the authors put it: 'Leasing allows small companies to survive'.[209]

Lasfer and Levis [1998] also use the ratio of research and development expenditure to sales as a measure of growth opportunities, assuming that growth firms have high R&D intensity. However, as Krishnan and Moyer [1994] suggest, this variable is likely instead to indicate a company's asset type. The generally negative (though insignificant) relationship between this variable and leasing suggests that companies are not likely to lease their specific production and research and development facilities because these assets are specialised to them.[210] Thus, companies are more likely to buy these assets than enter into a lease contract. The lessor's incentive to lease may be reduced (resulting in high lease rentals for these assets) because the lessor has no comparative advantage in disposing of the assets.

The results reported by Beattie et al. [2000] are worth noting as they use both the finance lease ratio and a comprehensive lease measure as dependent variables. In general they report a mixed picture for the two growth variables used (price earnings ratio and growth in total assets). In a result inconsistent with the study undertaken by Adedeji and Stapleton [1996], they find no significant relationship between the price earnings ratio and the use of finance leases. When operating leases are included in the lease variable, Beattie et al. report a significant positive relationship. Where the variable is the growth in total assets, the authors report conflicting results: positive relationship with the finance lease variable (significantly so under the Tobit regression method), largely negative but insignificant for the comprehensive lease measure.

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[208] Defined as the ratio of the market value of equity to shareholders' fund.
[209] Lasfer and Levis [1998], p. 182.
[210] Krishnan and Moyer [1994] use this variable as a measure of asset specificity and their suggestion that manufacturing companies make greater use of firm-specific assets is based on their finding that these companies report significantly higher research and development expenditure as a proportion of both sales and the market value of total assets.

On the basis of the above UK studies, the evidence on the relationship between growth opportunities and the use of leasing finance is mixed, with some evidence for the hypothesis that companies with high growth prospects seem to use more lease finance. This is possibly a reflection of the various influences that are captured in the growth variables used, particularly the use of the price earnings ratio, and also the type of lease variable employed in the studies.

9. Ownership structure

Lasfer and Levis [1998] suggest an alternative mechanism that can work to reduce the agency problem is the ownership structure of a company. Smith and Wakeman [1985] consider the potential role of ownership structure as a determinant of leasing activity. They suggest that closely-held companies[211] could realise gains in contracting and transacting costs from better management control. Smith and Wakeman further contend that closely-held shareholdings could mitigate the problem that the ownership of capital assets makes it difficult to reduce risk through product-line diversification by leasing assets. In this way, the lessor bears some of the risk associated with the use of the asset by the lessee; the lessor will vary the rental depending on use. They, thus, share the view of Flath [1980] that leasing is more likely to occur if the company is closely held because leasing acts as a risk reduction mechanism for such companies, especially if the lessor has a comparative advantage in disposing of the asset in the second hand market.

Empirically, the survey undertaken by Mukherjee [1991] showed that the desire to avoid the risk of obsolescence is one of the most important motives for leasing, this factor being deemed important by 82 per cent of the respondent companies.[212] Lasfer and Levis [1998] report that a study undertaken by Mehran and Taggart found that companies with high proportions of insider ownership are more

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[211] Companies whose equity is concentrated in the hands of a small number of shareholders
[212] *Ibid.* p. 105.

likely to use lease finance. Adams and Hardwick [1998] use the proportion of the total number of shares held by the top three shareholders as a proxy measure of ownership structure. They report findings consistent with the view that closely-held companies are more likely to lease than companies with more diffuse ownership structures, suggesting that an increase of 0.1 in the proportion of total shares held by the top three shareholders will, *ceteris paribus*, lead to an increase in the leasing share of almost 0.05.

10. Leasing and company size

Sharpe and Nguyen [1995] argue that the quality of information about a company's performance and future prospects is a negative function of its size. In such circumstances, the contracting costs (e.g. monitoring expenditures) associated with transacting business are likely to be greater for small companies compared with large companies. As evidence that company size is negatively related to risk, Schallheim et al. [1987] find that yields charged on financial leases are higher for leases to small companies. Sharpe and Nguyen [1995] suggest that another reason why leasing could be related to size occurs if there are significant 'nonconvexities', or indivisibilities, associated with the use of certain fixed assets. For example, small companies may only make partial use of such assets as an office building and may face greater uncertainty regarding the future requirements of those assets. In such cases, leasing could help small companies minimise the costs associated with ascertaining asset requirements *ex ante* (e.g. in terms of search and screening costs) and *ex post* (e.g. costs of monitoring asset usage and the costs associated with asset disposal and resale).

Smith and Wakeman [1985] also suggest that the volatility of free cash flows is likely to be more severe in small rather than large companies. Therefore 'metering' clauses may be written in lease contracts to enable the lessor to charge more for the asset when usage is high, less when usage is low, allowing small companies to reduce their cash-flow volatility and hence maximise firm value. In contrast, large companies are both more likely to fully utilise capital assets and have more readily

available alternative uses for buildings, equipment and other assets that are no longer required for their original use. As a consequence, large companies are likely to purchase rather than lease assets in order to reduce the costs of switching between different assets (e.g. legal and re-negotiation costs), as suggested by Krishnan and Moyer [1994]. Furthermore, as Schallheim et al. [1987] point out, '... transaction costs are the per-unit costs of writing the [lease] contract, specifying the security agreement, identifying the asset, negotiating the terms ... [and that] most of these costs are fixed ...'.[213] Adams and Hardwick [1998] suggest that small companies could therefore achieve cost savings, such as from lower insurance and maintenance expenses, by sharing leased assets with other users.

Sharpe and Nguyen [1995] recommend that a degree of caution should be used in interpreting size effects. In particular, they argue that the use of the standard measure of size – book value of total assets – is inappropriate here because of its endogeneity: all else equal, companies that lease more will have a lower level of book assets. In their study they report results using the log of the number of employees, although they also report results using the log of sales. The results generally support the hypothesis that small companies are more likely to resort to lease financing than large companies.[214] Using the market value of the firm as a measure of firm size, Barclay and Smith [1995] report that large companies are less likely to use capital leases than small companies. This result is supported to a limited extent in the UK study of Adedeji and Stapleton [1996], who, however, use the book value of total assets.

In their replication of the Adedeji and Stapleton study, Beattie et al. [2000] also report weak evidence of a negative relationship between company size and the

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[213] *Ibid.* p. 49.

[214] Sharpe and Nguyen's [1995] results show that, whereas when the dependent variable is: 1) total lease share (including capital and operating leases) of total capital costs; or 2) operating lease share of total capital costs the results are as expected, when the dependent variable is the capital lease share of fixed assets the reverse is the case. The authors suggest that it is thus '... inappropriate to ignore the operating lease option when testing for the information-cost rationale behind leasing', *ibid.* p. 286.

use of finance leases.[215] Where the lease variable incorporates the use of operating leases, the relationship is broadly consistent with that hypothesised. Beattie et al. report mildly significant results from the OLS regression estimates. However, when they ranked companies by size of lease ratio (finance plus operating leases), they found that although the typical non-leasing company was very small (measured by total assets), the greatest use of lease finance was by small and medium-sized companies.

Adams and Hardwick [1998] use both the log of sales and its square as their measure of size in their investigation into possible links between firm size and the total lease share of companies in the UK. The latter is included to allow for the possibility that changes in company size may have different effects on the leasing propensity of different size groups. After taking the partial derivative, ∂lease/∂size, they report that the leasing share tends to fall as company size increases up to £30 million turnover, in support of the hypothesis, but for larger companies the leasing share tends to rise as company size increases. The results thus provide only partial support for the hypothesis that small companies are more likely to lease than large companies. However, as the authors themselves recognise, the aggregate nature of the dependent variable (including finance and operating leases) may be capturing other factors explaining why large companies use lease finance. Thus Drury and Braund [1990], in their survey of UK companies, suggest that large companies may be attracted to leasing certain types of assets such as cars and office equipment using operating leases rather than finance lease arrangements.

Lasfer and Levis [1998] run regression models investigating the growth, gearing, taxation and profitability hypotheses using the full sample, followed by a small company, then a large company sample. Their results suggest a number of different factors behind the decision to lease for small and large companies. For large companies leasing appears to be driven by tax savings and is a complement to debt

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[215] Largely based on the pooled cross-sectional Tobit regression estimates (see *ibid.* Table 5, p. 452). The pooled cross-sectional OLS regression estimates are less significant.

financing. For small companies taxation factors are not important, leasing instead being a substitute for debt, or enables companies which cannot access the debt market to obtain financing. In addition, size is positively related to leasing for the small company sample.

One can see from the above review of the literature that a number of hypotheses have been put forward as possible explanations for the use of leasing finance. Due to the complex relationships between the various competing theories discussed above, it is perhaps not surprising that many of the studies analysed above have not always agreed on the main determinants of the corporate decision to use lease finance. The next chapter details the hypotheses and methodology adopted in the current study to investigate some of the issues discussed here, with the test results appearing in Chapter 5.

4. Research Hypotheses, Samples and Methodology

1. Introduction

This chapter is split into three main sections detailing the hypotheses to be tested, the data sample collected and the research methodologies performed. This hypotheses, sample and methodology chapter builds upon the previous chapter's discussion of the literature by providing an overview of the various hypotheses tested in this study in order to investigate the corporate use of leasing finance in the UK. It also details the sample data collected and sets out the methodologies of the different tests undertaken, the results themselves being set out in Chapter 5.

The core data for the thesis comprises company accounts data from the FT All Share Index and was obtained from the Datastream database for each of the years 1993-95 inclusive. In addition, a second sample of companies reporting annual operating lease commitments was obtained from the Exteldat database. This latter data sample allows a more compehensive analysis of the corporate leasing decision to be undertaken. Where additional data was required, comprising additional variables and/or additional periods, this is referred to in the relevant section.

The following sub-section details the hypotheses constructed to enable an analysis of the relationship between the corporate use of leasing and debt finance in the UK. The first part investigates the so-called leasing puzzle discussed in Chapter 3 section 4. This is followed by an analysis focusing on changes in a company's use of leasing and debt finance rather than on absolute levels. The third sub-section provides an overview of the hypotheses developed to investigate the influence on the use of leasing finance of certain firm and asset characteristics. In particular, it focuses on factors such as a company's investment opportunity set, bankruptcy potential and industry category as detailed in Chapter 3 sections 5 to 10. The hypotheses developed to analyse the influence of a company's contracting costs on leasing is the subject of

section four. Finally, section five outlines the hypotheses associated with the analysis of the leasing decision of small and large companies.

The hypothesis section is followed in the second part of the chapter by an overview of the sample data collected, before an outline is provided of the methodologies utilised to test the hypotheses. To enable the reader to negotiate their way around this chapter, this latter part is set out in a similar style to the hypothesis sub-sections.

2. Research Hypotheses

2.1 Relationship between leasing and debt capacity

The following two sub-sections provide an overview of the hypotheses that will be tested relating to the examination of the relationship between leasing and debt finance. Principally, the aim is to investigate, using UK data, the relationship between the use of leasing finance and a company's debt capacity. The issue is of some importance since, by analysing leasing as one form of equipment financing (alongside equity and debt), insights into this relationship may allow a more complete understanding of the broader issue of capital structure to be formed. In building upon the initial direct empirical test of the relationship between leasing and debt capacity via an investigation of the changes in a company's use of the two forms of financing,[216] I hope to provide a more comprehensive analysis of this issue.

2.1.1 Substitution of lease and debt finance

This section explores the hypotheses to be tested arising from the examination of the relationship between a company's use of leasing finance and its debt capacity. Furthermore, and as discussed in Chapter 3, certain industry and asset characteristics have been suggested as impacting on the corporate use of leases, and a number of

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[216] The subject of sections 4.2.1.1 and 4.2.1.2, respectively

hypotheses can be set out in order to examine whether they play a critical role in the leasing decision.

Hypothesis 1: Following the discussion in Chapter 3 section 4, it is anticipated that there is a substitutional relationship between leasing and debt finance. This hypothesis is the central hypothesis that will be tested, not only directly in the tests that follow, but also indirectly, as part of the wider analysis of the factors influencing the use of leasing finance in the UK.

Hypothesis 2: The relationship between a company's tax status and its use of leasing finance is expected to be a negative one. This is consistent with the generally accepted view in the finance literature that corporate tax has a negative influence on the leasing decision.[217]

Hypothesis 3: Following the discussion of the relationship between leasing and financial distress in Chapter 3 section 5, a shortage of liquidity and retained profits may be strong reasons for firms undertaking lease finance. Therefore the sign of variables proxying for the operating gearing, profitability and liquidity of a company are expected to be negative. At the same time, proxies for a company's sales variability are hypothesised to be positively related to the use of leasing finance: an increase in sales variability is consistent with a higher risk business and, hence, a higher potential for financial distress.[218]

Hypothesis 4: Variables acting as proxies for firm size are predicted to be inversely related to the decision to use financial leases since, as discussed in Chapter 3 section 10, small companies will have less easy access to other forms of finance.

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[217] The study by Beattie et al. [2000], as discussed in Chapter 3 section 3, however found no significant relationship between the use of leasing and the tax-paying status of the lessee. They suggested that the non-tax paying position of lessors and not lessees might be a significant factor behind the leasing of, in particular, retail assets in the UK via operating leases.
[218] Krishnan & Moyer [1994], p. 37 argued similarly in their interpretation of earnings variability.

Hypothesis 5: The sign of the growth variable is less easy to estimate in line with disagreements in the literature. There is a general consensus that, following Myers [1977], growth firms will employ less debt finance due to the investment disincentive and asset substitutability problems.[219] Adedeji and Stapleton [1996] argue that since financial leases and debt are similar such firms will also be expected to use less finance leases. However, Krishnan and Moyer [1994] suggest that because a lease is associated with a specific asset it 'solves' these problems and argue that lease financing may be the only financing alternative to equity for rapidly growing companies.[220] This research will therefore test the hypothesis that growth has a significant explanatory influence on the use of leasing.

2.1.2 Changes in the levels of leasing and debt finance

The approach adopted in this section is an examination of changes in, rather than levels of, lease and debt financing by individual firms in order to control for differences in capital structure across companies. I am therefore building upon the analysis adopted in the previous section, the aim being to provide a more complete analysis of the relationship between the use of leasing and debt finance.

Hypothesis 1: Following the review of the extant literature outlined in Chapter 3 section 4, one would expect that a proportionate increase in leasing be accompanied by a decrease in the use of non-leasing debt. We can take as a starting point the assumption that a company finances part of its total assets with fixed obligations that can either be in the form of leasing or non-leasing debt. If the substitutional hypothesis is correct and, assuming there are no major changes in the operating risk of the company, one would expect increases in the proportion of financing through leasing to be accompanied by decreases in the proportion of financing via non-leasing debt.

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[219] See Chapter 3 section 8 for a summary of Myer's thesis.
[220] In addition, they argue that due to the lower required down payment (equity commitment) of finance leases, relative to debt financing, at the inception of the agreement, lease financing may be a more attractive form of investment to rapidly growing (and often cash-strapped) companies. *Ibid.* p. 36.

2.2 Company and asset characteristics

In this section the lease-versus-borrow decision is examined in relation to firm characteristics such as bankruptcy potential, growth potential and industry characteristics by analysing UK company accounts and market valuation data. This study is relevant due to the differences in the accounting, legal and tax authority treatment of financial leases in the two countries as detailed in Chapter 2 and also the differences in US and UK bankruptcy procedures as outlined in Chapter 3 section 5. By widening the leasing analysis away from purely tax considerations or its relationship to debt financing, I am hoping to mirror some of the developments in capital structure theory to provide additional insights into corporate decision to use finance leases in the UK.

In general, the lease-versus-borrow analysis for a firm with a low probability of financial distress and contemplating a small additional amount of investment would be dominated by transaction cost factors, with the result that lease financing on a large scale would be unlikely. As discussed in Chapter 3 section 5 in relation to the work of Sharpe and Nguyen [1995], for a company facing financial distress, the lower expected bankruptcy costs associated with leasing relative to secured borrowing are expected to offset the higher transaction costs of leasing and such companies would be expected to pursue lease financing on a larger scale.

In order to test this proposition a number of hypotheses may be developed and are outlined as follows:[221]

Hypothesis 1: Following the discussion in Chapter 3 section 5, companies undertaking lease financing have a greater probability of facing bankruptcy than non-leasing companies, *ceteris paribus*.

Hypothesis 2: Rapidly growing companies are expected to make greater use of lease financing than debt financing, following Myers' [1977] proposition that, due to the investment disincentive and asset substitution problems, growth opportunities are less likely to be financed by debt.[222]

Hypothesis 3: It is predicted that firm-specific assets are less likely to be offered for leasing than non-firm-specific assets. This hypothesis follows from the discussion in Chapter 3 section 6 of Smith and Wakeman's [1985] suggestion that the leasing of organisation-specific assets is unlikely due to the high costs of negotiation, administration and enforcement as a result of the conflicts of interest between lessors and lessees.

Hypothesis 4: A further, related hypothesis states that manufacturing companies make greater use of firm-specific assets than companies in other industries. For example, equipment used by mining, construction and transport companies can be used by other companies with little need of modification. In addition, as discussed in Beattie et al. [2000], retail and wholesale assets such as buildings can often be adapted to multiple uses.

2.3 Financial contracting costs

This section moves the analysis further from the Modigliani and Miller [1958] perfectly competitive capital markets framework by exploring the influence of financial contracting costs on the corporate use of leasing. In so doing, I am trying to build upon the hypotheses set out in the previous section, which dealt with the impact of financial distress and asset-specificity on the use of leasing finance. In particular, and following the discussion outlined in Chapter 3 section 5, it was suggested that companies facing the possibility of financial distress are, on average, more likely to

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[221] The pioneering work in this area was undertaken by Krishnan and Moyer [1994] using US company data.
[222] See Chapter 3 section 8 for a discussion of this point.

face high external financing costs and may resort to leasing finance as a way of mitigating these costs.

Hypothesis 1: Following the discussion of a company's investment opportunity set in Chapter 3 section 8 it was suggested that young, fast growing companies are more likely to have investment opportunities than large, well-established firms. Furthermore, the former are also likely to face severe information asymmetry problems and thus may only be able to raise finance from retained earnings. Companies that pay no cash dividend are likely to be among those faced by asymmetry costs and, hence more likely to use leasing finance.

An alternative interpretation of this 'no-dividend' hypothesis, that is however consistent with Hypothesis 1, is as follows. Smith and Watts [1992] argued that dividend payouts should be lowest for companies at greatest risk of facing the underinvestment problem. Furthermore, it is hypothesised that companies with more growth opportunities 'can tolerate more restrictions on dividends before expected benefits of controlling payout are offset'[223] by the risk of triggering negative net present value investments. If non-dividend-paying companies are found to be more inclined to lease it may be viewed instead as evidence that leasing helps alleviate some of expected costs associated with the underinvestment problem.

Hypothesis 2: It is suggested that, all else equal, companies generating low cash flows are likely to face higher funding costs: a greater cash flow provides a company with cheap funds directly and also enhances debt capacity.

Hypothesis 3: Following Sharpe and Nguyen [1995], companies that have low or unrated debt are probably closer to exhausting their debt capacity as well as internal funding and, thus, should be facing higher information- or agency cost premiums on marginal financing.

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[223] *Ibid.* p. 271.

Hypothesis 4: In general, one would expect that the size of a company is correlated with the quality of outsider information with regard to the company's operations and prospects; thus smaller companies are more likely to lease for financial contracting reasons. It was noted in Chapter 3 Section 10 that Schallheim, Lease, Johnson and McConnell [1987] provide evidence that company size is negatively related to risk. In particular, they find that yields charged on financial leases are higher for smaller companies. If leasing reduced the information cost premium on outside funds, then a decline in issuer size would be associated with an even steeper rise in yields on straight debt. Leasing propensity will also be greater for smaller companies if there are significant indivisibilities associated with the use of certain fixed assets (for example, smaller companies may not require an entire building or may face greater uncertainty over their future needs for a piece of capital equipment). Thus, leasing could minimise the transaction costs associated with resale. Large companies are more likely to have alternative uses for equipment no longer required for its original use; they are also likely to have more highly developed mechanisms for re-marketing equipment.

Hypothesis 5: As discussed in Chapter 3 Section 3, leasing is generally believed to be motivated by tax incentives. Under a standard leasing arrangement, if the lessee faces a lower marginal tax rate than the lessor, both parties may benefit from a leasing-related transfer of the tax shields to the lessor. Thus, it is hypothesised that leasing is negatively related to the company's marginal tax rate.

Hypothesis 6: Following Smith and Wakeman [1985], it is suggested that highly capital intensive companies are likely to use specialised equipment that is less appropriate for leasing. Therefore, the capital intensity of the production process is hypothesised to be negatively correlated with the propensity to lease.

Hypothesis 7: An attempt is made to control directly for economic motivations arising from real-world market conditions characterised by uncertainty. Companies in such environments could have requirements for assets that are unpredictable or

temporary; leasing may alleviate the problem of owning assets that are not expected to have a productive use full time.[224] Therefore, the hypothesis is that variability of sales should be positively correlated with the option value of a short-term lease, and positively correlated with the (expected) instability of earnings and can thus proxy for tax-motivated leasing, as predicted by Lewis and Schallheim [1992].

The sample data and methodology used to test these hypotheses is detailed in sections 3.1 and 3.2.4, respectively.

2.4 The leasing decision of small and large companies

A number of studies have analysed the relationship between firm size and the use of leasing finance, a summary of which was outlined in Chapter 3 section 10. Following this discussion, a number of hypotheses can be developed to explain the predicted negative relationship between firm size and the corporate use of leasing, which is the focus in this section of the study. In addition, this section aims to bring together the various theories (e.g. taxation, debt-lease substitutability, financial distress, etc.) into a unified analysis of the use of leasing by small and large companies.

Hypothesis 1: It is anticipated that there is an inverse relationship between a company's use of leasing and debt finance. This follows the discussion of debt-lease substitutability in Chapter 3 section 4.

Hypothesis 2: There is expected to be a further negative relationship between a company's marginal tax rate and its use of leases, following the discussion of the effect of taxation on the leasing decision, contained in Chapter 3 section 3.

Hypothesis 3: Following the discussion in Chapter 3 section 8, rapidly growing companies are hypothesised to make greater use of leasing than debt financing. This is consistent with Myers' [1977] proposition that, due to the investment disincentive

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[224] As discussed in the context of the relationship of leasing and firm size in Chapter 3 section 10.

and asset substitution problems, growth opportunities are less likely to be financed by debt.

Hypothesis 4: Companies with low levels of profitability and, hence, at greater risk of facing bankruptcy are anticipated to be more likely to use lease financing, further debt financing being deemed unlikely to be made available at reasonable cost. This follows the discussion of the impact of financial distress on the leasing decision in Chapter 3 section 5.

Hypothesis 5: Following the comprehensive review of the literature in Chapter 3 section 10, it is expected that a company's size is inversely related to its use of leases as small companies will have less easy access to other forms of finance.

The sample data and methodology used to test these hypotheses is detailed in sections 3.1 and 3.2.5.1, respectively.

3. Sample and methodology

3.1 Data

To test the hypotheses set out in the preceding sections, I collected a core sample of company accounts data that formed the basis for the tests performed. There were in fact two main samples, comprising an initial 'core' sample of company accounts data that was used for the majority of the tests and a subsequent, smaller sample that included data specifically relating to operating leases. These two samples are detailed below.

The core sample comprised company accounts data collected for the years 1993 to 1995 from the FT All Share Index and were obtained from the Datastream database. This core sample of 351 companies was taken from an original sample of 704 companies covering the period 1986 to 1995. As a result of a large number of companies having incomplete data, and/or negative values for debt and equity, etc.,

the initial sample of 704 companies was reduced by approximately 50 per cent to produce a workable sample.[225] In order to classify the companies into industries the Datastream London Stock Exchange classification codes were used.

There were three criteria governing the samples. The first was that the companies included in the sample in each year must have all the relevant data for the calculation of the variables, therefore companies with negative or zero levels of debt and/or equity were excluded from the final sample. Secondly, financial companies (banks, insurance groups, etc.) were excluded in order to maintain a degree of homogeneity in the sample[226]. Lastly, the companies selected must belong to fairly large industry groups in order to carry out a meaningful test of industry influence on leasing.

The second sample comprised a smaller number of companies from the original sample (in order that there was some degree of comparability between the two samples) and covered the period 1990 to 1995. It was collected after the main sample was utilised in the testing of the above hypotheses since it was felt that a more comprehensive analysis of leasing required the inclusion of data on the operating lease commitments of UK companies. The sample was taken from the Exteldat database, which provided data in the form of the total commitment under operating leases which the lessee is committed to make during the next year, as detailed in Chapter 2.Part A3.3.2. The final sample comprised 190 companies, all of which appear in the core sample.[227]

In the following sections the methodologies adopted in order to test the hypotheses are set out. In a number of cases, the core and/or smaller operating lease

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[225] From of the original sample of 704 companies there were, *inter alia*, 35 companies with incomplete market data, 34 companies with negative equity, 83 companies with missing leasing data, and 185 companies with no debt in any year.

[226] Financial companies are primarily lessors not lessees of capital equipment. Their inclusion in the data sample therefore would distort the results, in particular of the relationship between leasing and debt finance, and also of taxation effects. It was felt therefore that such companies should be excluded from the sample.

[227] From the initial sample of 551 companies from which data was sought, 239 records were collected for the period 1990 to 1995. As a result of the core sample being reduced to 351 companies from the initial 704 as stated in footnote 225, this left a final total of 190 companies common to both samples.

sample were adjusted to take into account the specific requirements of that test. Where this occurred this will be explained in the relevant methodology section.

3.2 Variable definition and methodology

3.2.1 Introduction

This section of the chapter has been set out in a way that will allow the reader to see how the hypotheses discussed in section 2 were tested, by using the same format as in the hypothesis section. This format is then carried over into the chapter detailing the results, allowing the reader to either follow the individual test from the hypotheses through the test methodology to the results in turn, or to read the whole experimental process as presented here.

3.2.2 The Relationship between leasing and debt capacity

The two sub-sections that follow outline the methodologies adopted in order to examine the relationship between firm's use of leasing and debt finance. The first section is a direct test of this relationship, building upon the work undertaken in this area by Ang and Peterson [1984]. Section 3.2.2.2 provides an overview of the methodology used to examine changes in the corporate use of these two forms of financing.

3.2.2.1 Substitution of leasing and debt finance

In this section the extent to which finance leases and debt finance are substitutes will be explored, by building upon the initial test of this relationship undertaken by Ang and Peterson [1984]. Following the approach of Myers et al. [1976],[228] the debt-to-lease displacement ratio may be defined by the following equation:

$$DR_{NL} = DR_L + \lambda LR_L \qquad (1)$$

where: DR_{NL} = debt ratio of a non-leasing firm,

DR_L = debt ratio of a firm that uses finance leases,

LR_L = lease ratio of a leasing firm; and

λ = debt-to-lease displacement ratio.

From the review of the literature as detailed in Chapter 3 section 4 it was noted that there are competing views on the value of the debt-to-lease displacement ratio. The most popular view in the literature at around the time of Ang and Petersons' [1984] study was that $\lambda = 1$, i.e. that leasing and debt finance were perfect substitutes. To test this hypothesis, and recognising that the debt ratios of non-leasing firms are determined by a number of different factors, we can rewrite Equation (1) as:

$$DR_{NL} = DR_L + \lambda LR_L = C(x_1, x_2, \ldots) \qquad (2)$$

where $C(...)$ is a general function and $x_1, x_2, \ldots$ are a set of explanatory variables.

This expression may then be rearranged to obtain the following lease ratio:

$$LR_L = \frac{-1}{\lambda} DR_L + \frac{1}{\lambda} C(x_1, x_2, \ldots) \qquad (3)$$

Equation (3) expresses the lease ratio as a negative function of the debt ratio, consistent with the hypothesis that leases and debt are substitute forms of financing, and the coefficient $(-1/\lambda)$ measures the extent of this substitution. A value of $\lambda = 1$ (coefficient on *DR* equal to -1) indicates that debt and leases are perfect substitutes. A value of $0 < \lambda < 1$ (coefficient on *DR* less than -1) indicates that debt and leases are imperfect, less than one-to-one substitutes. Complementarity between leasing and debt finance would be indicated in the above equation by a negative value for λ. The other financial variables, $x_1, x_2, \ldots$, account for the differences in debt capacity among firms.

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[228] As detailed in Chapter 3 section 4.

Since the initial analysis utilises the methodology used by Ang and Peterson [1984], the variables, x_1, x_2, ..., to be used in a regression model based upon Equation (3) are as follows:

- Operating gearing (*OL*), calculated as the regression slope of operating earnings on sales over the previous seven years,[229]
- Sales variability (*SV*), measured as the coefficient of variation of sales over the previous seven years,
- Profitability (*RA*), calculated as the return on net fixed assets,[230]
- Expected growth (*PE*), as proxied by the price-earnings ratio,
- Size (*TA*), measured by total year-end assets (in £ millions), and
- Liquidity (*LQ*), as proxied by the current ratio (current assets divided by current liabilities).

The lease ratio (*LR2*) was defined as the ratio of capitalised leases to the book value of equity, with the ratio of the book value of debt to the book value of equity being used to measure the debt ratio (*DR2*).[231] The following linear regression model was estimated:

$$\mathrm{LR2} = \beta_0 + \beta_1(\mathrm{DR2}) + \beta_2(\mathrm{OL}) + \beta_3(\mathrm{SV}) + \beta_4(\mathrm{RA}) + \beta_5(\mathrm{PE}) + \beta_6(\mathrm{TA}) + \beta_7(\mathrm{LQ}) + \varepsilon \quad (4)$$

It follows from the discussion of the hypotheses in section 2.1.1 that the signs of the coefficients *DR, OL, RA, LQ, TA* are expected to be negative, whist that of the coefficient *SV* is expected to be positive. It was noted above that the sign of the coefficient of the growth variable (*PE*) is less easy to determine, and this will therefore be closely examined when the results of the tests are presented in Chapter 5.

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[229] Items 137 and 104 in Datastream.
[230] Item 709 in Datastream.
[231] Two further measures of the debt ratio were also used in the study: DR1 = book value of debt divided by total assets (the same measure as used in Equation 5 below), and DR3 = book value of debt divided by market value of equity.

A number of questions regarding the above methodology used by Ang and Peterson have been raised by Adedeji and Stapleton [1996]. In particular, they point out that, as the denominator of both the lease ratio and the debt ratio is defined as the book value of equity, a positive bias is introduced[232] and therefore redefine the denominator as total assets. In addition, they state that there may be ambiguity regarding Ang and Peterson's definition of debt, in particular, whether leases are or are not included in their debt measure. To avoid the problem of positive interdependence between the lease ratio and the debt ratio finance leases should be removed from the latter variable.

A major factor that could explain the positive relationship between the lease ratio and the debt ratio observed by Ang and Peterson is the fact that 45 per cent of the companies in their sample had a lease ratio of zero. Ang and Peterson themselves noted that such firms had lower debt ratios, on average, than leasing companies. Adedeji and Stapleton therefore argue that differences in debt capacity, and in the degree of use of debt capacity,[233] among the firms may not have been controlled for by Ang and Peterson. In addition, since it is generally accepted that a company's tax rate may explain the use of finance leases, their test could be mis-specified due to a failure to include a tax variable as an explanatory variable.[234]

As a result of the questions raised regarding the above methodology, Adedeji and Stapleton, in their investigation of the US study, chose a variation on the estimation model represented by Equation (4). In addition, an analysis of a sub-sample of leasing firms was performed in order to overcome problems caused by

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[232] For an illustrative example see *ibid.* footnote 5, p. 73.
[233] For example, a company reporting low debt and lease ratios may have a relatively low debt capacity or a low degree of use of its debt capacity.
[234] Ang and Peterson [1984] report that, contrary to expectations, there is very little difference between the tax rates of leasing and non-leasing companies. In their sample non-leasing companies had consistently lower tax rates than leasing companies in every year, indicating that in the USA taxable capacity may not be a significant variable. *Ibid.* footnote 10, p. 1064. For an overview of the relationship between taxes and leasing see Chapter 3 section 3.

differences among companies' debt capacities and the degree of use of their debt capacities and, thus, to provide greater insight into the 'leasing puzzle'.

The variables used in the modified model are defined as follows:

$$\text{Debt Ratio (DR1)} = \frac{\left[\begin{array}{l}\text{(Total loan capital plus subordinated debt)} \quad \underline{\text{less}} \\ \text{(capitalised value of finance leases and hire purchase)}\end{array}\right]}{\text{total assets}} \quad ^{235}$$

$$\text{Lease Ratio (LR1)} = \frac{\text{(capitalised value of finance leases and hire purchase)}}{\text{total assets}}$$

The explanatory variables for the debt ratio, i.e., x_1, x_2, ..., are the following:

$$\text{Expected Growth (PE)}_t = \frac{\text{share price, time t}}{\text{earnings per share, year t}}$$

$$\text{Liquidity (LQ)}_t = \frac{\text{current assets, year t}}{\text{current liabilities, year t}}$$

$$\text{Size (TA)}_t = \text{(Total assets, in £ millions, year t).}$$

$$\text{Tax rate (TR)}_t = \frac{\text{total tax charge (current and deferred), year t}}{\text{profit before tax, year t}} \quad ^{236}$$

The following regression equation is thus estimated:

$$LR1 = \beta_0 + \beta_1(DR1) + \beta_2(PE) + \beta_3(LQ) + \beta_4(\ln(TA)) + \beta_5(TR) + \varepsilon \qquad (5)$$

The expected signs of the debt ratio (*DR1*), expected growth (*PE*), size (*TA*), and liquidity (*LQ*) variables were discussed above in relation to Equation (4). The

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[235] For the definition of total assets see section 3.2.2.2 below.
[236] Items 172 and 157 respectively from Datastream.

sign of the tax rate (*TR*) variable is expected to be negative, consistent with the generally accepted view in the finance literature that corporate tax has a negative influence on the leasing decision.[237] Therefore, the signs of the above coefficients β_1, β_2, ..., β_5 are predicted to be negative, the dispute over the sign of the growth variable (*PE*) excepted.

I additionally utilised Equation (5) to test Hypotheses 1 to 5 by incorporating operating lease data, and used the smaller sample of companies as detailed in section 3.1. In addition to the lease variable (*LR1*), I developed the following two dependent variables:

- Operating Lease Ratio (*OLR*) = Annual commitment under operating leases / Total Assets
- Total Lease Ratio (*TOLR*) = OLR + LR1

Descriptive statistics

The data required by the two models was that as outlined in section 3.1, with the exception of the operating gearing and sales variability variables, which required the collection of data for the seven-year period prior to 1993. The final core sample therefore contained 351 companies for the period 1993 to 1995, classified according to their industry classification code. Details of the industries selected from the full sample appear in Appendix 1, and the summary statistics for the sample are shown in Table 4.1 below.

In addition, Table 4.2 provides a summary of the companies included in the smaller sample of firms reporting operating leases in their financial statements. This smaller sample was used to test hypotheses 1 to 5 in a more robust manner, by incorporating operating lease data. The latter sample was used only with Equation

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[237] The study by Beattie et al. [2000], as discussed in Chapter 3 section 3, however found no significant relationship between the use of leasing and the tax-paying status of the lessee. They suggested that the non-tax paying position of lessors and not lessees might be a significant factor behind the leasing of, in particular, retail assets in the UK via operating leases.

(5). The following paragraphs provide an analysis of the variables contained in the two tables, looking first at the variables corresponding to those used in Equation (5), followed by an analysis of those variables used in Equation (4), where different.

The first point to note from Table 4.1 is that the proportion of companies using finance leases at 71 per cent is rather high in relation to previous studies.[238] The average value of the lease ratio (LR1) is approximately 2 per cent over the sample period.[239] The maximum lease ratio over the three years is 55 per cent which, although volatile over the sample period, is higher than the 21 per cent found in the Adedeji and Stapleton sample. However, consistent with the findings from the earlier studies is the observation that the mean value of the debt ratio (DR1) is higher than the lease ratio in each year, here averaging 16 per cent of total assets. Due to the way the sample was created, the minimum value of the debt ratio is zero rather than negative, as reported by Adedeji and Stapleton. The maximum value of the debt ratio is fairly constant across the sample period, at 67 per cent.

Turning to the other variables in the table, one can see that the mean value of the liquidity variable (LQ) is stable at around 1.5, slightly lower than reported by Adedeji and Stapleton. Consistent with the earlier studies is the gradual rise of the size variable (TA) over the sample period, from £543 million in 1993 to £587 million in 1995. One further point to note regarding the size variable is that it is widely dispersed, with a minimum value of £1.35 million in 1994 to a maximum value of more than £17 billion in 1995.[240] The mean values of the price/earnings ratio (PE) are in the range 23 and 35. The median values, however, reveal the influence of outliers as they are between 14 and 19. All values of the PE ratio greater than 100 and less than zero were assigned the number 100. A look at the distribution of the PE

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[238] Adedeji and Stapleton [1996], Ang and Peterson [1984] and Beattie et al. [2000] record percentages of companies reporting the use of finance leases of 56, 55 and 51 per cent, respectively.
[239] The corresponding value of Adedeji and Stapleton's lease ratio measure was ca. 0.87 per cent for the period 1990-92, *ibid.* Table 2, p. 76, that of Beattie et al.'s lease ratio measure (LR_P) 0.65 per cent over the period 1990-94, *ibid.* Table 3, p. 448.
[240] Adedeji and Stapleton record a wider level of dispersion in the size variable in their sample, ranging from a minimum value of £470, 000 to a maximum value of £35 billion (*ibid.* footnote. 12, p. 22).

ratio in Appendix 2 confirms that the number of companies assigned a PE of 100 are much higher than was the case for Adedeji and Stapleton. This was largely due to the higher number of negative price/earnings figures recorded in the sample (at between 26 and 56) compared to Adedeji and Stapleton (between 2 and 5).

The mean values of the tax variable (TR) are stable over the three years at between 33 and 36 per cent. These values are slightly higher than those found in Adedeji and Stapleton and the difference could partly be explained by the different treatment of outliers. Adedeji and Stapleton replaced all negative values of TR with zero. Due to the way in which the tax ratio is defined (as the tax charge divided by pre-tax profit) there are two reasons why the tax variable is negative. Firstly, the tax charge is positive whilst the pre-tax profit is negative (i.e. a loss) in which case the tax variable should be high reflecting the high burden of taxation in relation to current profit. Therefore, a negative or zero value should not be assigned to the variable TR, a value of plus one being recorded instead. In the second case, there is a negative tax charge and a positive pre-tax profit: in this instance, the tax burden is low and a negative value is acceptable. As a result, it was felt that the tax ratio variable should be truncated to the values of plus/minus 1.[241]

Turning to the variables used in Equation (4), the mean value of the lease ratio (LR2) is in the range 2.3 to 2.9 per cent, higher than for LR1, reflecting the different denominator used (book value of equity rather than total assets). An interesting point to note is the high maximum value of the ratio, with the capitalised value of finance leases of one company reaching more than 137 per cent of the book value of assets in 1994. Both measures of the debt ratio (DR2 and DR3) record

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[241] The following table summarises the treatment of the variable (TR):

	1993	1994	1995
No. of negative TRs	26	16	11
Instances where TC>0, PBT<0	19	14	8
Instances where TC < 0, PBT > 0	7	2	3
Outliers: TR < -1.0	3 (2)	1 (0)	3 (1)

Key: TR = Tax ratio; TC = Tax charge; PBT = Profit before tax. Figures in parentheses indicate the number of companies assigned a value of TR = -1.0, all other companies had TC > 0, PBT < 0.

higher mean values than for DR1 and substantially higher maximum values (at more than 100 per cent on both measures). The main point to note is that, once again, the mean values of both measures of the debt ratio are higher than that of the lease ratio.[242] The mean values of the remaining variables, profitability (RA), operating leverage (OL) and sales variability (SV), are largely stable over the three years.

Table 4.1 Sample Statistics

Sample Composition	1993	1994	1995
Companies using finance lease	251	247	251
Companies not using finance leases	100	104	100
Total	351	351	351

1993 Variable	No.	Mean	Median	StDev	Min	Max
LR1	351	0.0200	0.0040	0.0406	0.0000	0.3999
DR1	351	0.1610	0.1391	0.1398	0.0000	0.6432
PE	351	34.86	18.81	33.20	0.30	100.00
LQ	351	1.5013	1.4056	0.6634	0.1593	4.9490
TA	351	543.80	62.26	1,701.7	1.766	16,892
TR	351	0.3645	0.3300	0.2333	-1.0000	1.0000
LR2	351	0.0261	0.0046	0.0582	0.0000	0.6854
DR2	351	0.2386	0.1621	0.2633	0.0000	1.8181
DR3	351	0.2352	0.0958	0.6328	0.0000	14.45
RA	351	0.1854	0.1152	0.4251	-1.7866	4.7266
OL	351	0.0911	0.0742	0.1129	-0.3187	0.7747
SV	351	0.2823	0.2327	0.1881	0.0330	1.3691
1994 Variable	**No.**	**Mean**	**Median**	**StDev**	**Min**	**Max**
LR1	351	0.0205	0.0038	0.0482	0.0000	0.5512
DR1	351	0.1596	0.1398	0.1367	0.0000	0.6443
PE	351	28.34	16.77	29.13	0.36	100.00
LQ	351	1.5210	1.3852	0.8239	0.1893	9.9404
TA	351	552.48	66.32	1,686.5	1.348	16,762
TR	351	0.3479	0.3300	0.1715	-0.0273	1.0000
LR2	351	0.0295	0.0050	0.0996	0.0000	1.3785

[242] A table showing the mean values of the three versions of the debt ratio for both leasing and non-leasing companies has been constructed and appears in Appendix 3. The results show that, in contrast to those reported by Ang and Peterson, non-leasing companies exhibit higher debt ratios than leasing companies for every year for the DR2 (book value of debt divided by book value of equity) and DR1 (book value of debt divided by total assets) variables and for two out of three years for the DR3 (book value of debt divided by market value of equity) variable. However, none of the differences are significant except for the variable DR1 in 1993 and are thus not shown here.

DR2	351	0.2354	0.1654	0.2633	0.0000	1.8111
DR3	351	0.1957	0.1013	0.6328	0.0000	10.217
RA	351	0.2310	0.1440	0.5127	-1.0412	6.0309
OL	351	0.0770	0.0634	0.1287	-0.9194	0.6482
SV	351	0.2435	0.2024	0.1661	0.0164	1.0560
1995 Variable	**No.**	**Mean**	**Median**	**StDev**	**Min**	**Max**
LR1	351	0.0177	0.0035	0.0331	0.0000	0.2406
DR1	351	0.1593	0.1415	0.1375	0.0000	0.6786
PE	351	22.63	14.56	24.65	1.76	100.00
LQ	351	1.4871	1.4237	0.6778	0.1658	5.2426
TA	351	587.40	71.07	1,766.0	1.548	17,197
TR	351	0.3296	0.3299	0.1702	-1.0000	1.0000
LR2	351	0.0232	0.0043	0.0465	0.0000	0.4226
DR2	351	0.2350	0.1729	0.2669	0.0000	2.1621
DR3	351	0.2404	0.1036	1.2758	0.0000	23.608
RA	351	0.2379	0.1565	0.4685	-2.4263	4.8525
OL	351	0.0710	0.0584	0.1310	-0.8152	0.6264
SV	351	0.2154	0.1730	0.1643	0.0180	1.3143

Notes: LR1 = capitalised value of finance leases and hire purchase contracts divided by total assets; DR1 = (long term loans + short term loans and overdrafts - (finance leases, hire purchase and short term investments)) divided by total assets; PE = share price divided by earnings per share*; LQ = current assets/current liabilities; TA = book value of total assets (measured in £ millions); TR = tax charge (current and deferred)/profit before tax for the year; LR2 = capitalised value of finance leases and hire purchase contracts divided by book value of equity; DR2 = Debt (as above) divided by book value of equity; DR3 = Debt (as above) divided by market value of equity; RA = return on net fixed assets; OL = regression slop of operating earnings on sales over the previous ten years; SV = coefficient of variation of sales over the previous ten years. * Incorporating the adjustments as explained above. The data used were obtained from Datastream. The summary descriptive statistics procedure in Minitab (version 10) was used to obtain the estimates in this table.

Table 4.2 presents the summary statistics for the second, operating lease data sample in a similar format to that displayed in the previous table. The first point to note is that all of the companies in the sample recorded some operating leases data, however the proportion recording finance leases in their financial statements was approximately 72 per cent over the three year period 1993-95. This latter statistic is similar to that recorded for the core sample discussed above.

As one would expect, given the fact that the smaller sample is taken from the core sample, the summary statistics for most of the variables common to the two samples (LQ, PE, TR) are similar. The average company in the second sample appears, however, to be larger (book value of total assets (TA) of ca. £800m versus £550m), to borrow more (debt ratio (DR1) of ca. 18 per cent versus 16 per cent) and

to utilise finance leases to a slightly lesser extent (finance lease ratio (LR1) of ca. 1.5 per cent versus ca. 2 per cent) than its counterpart in the core sample. This latter comparison is rather interesting, particularly in light of the fact that the average operating lease ratio (OLR) is approximately three times the finance lease ratio, implying that annual operating lease commitments are, on average, three times the capitalised value of finance leases. Boosted by the inclusion of annual operating lease commitments, the average company's total lease ratio (TOLR) is now approximately one-third of its debt ratio, providing perhaps a more representative picture of the importance of leasing finance (in all its guises) as an important form of financing in the UK.[243]

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[243] Indeed, for some companies total lease financing appears as important if not more so than debt financing: Table 4.2 records that the maximum values of the ratios TOLR and DR1 are very similar with the maximum value of the total lease ratio actually exceeding that of the debt ratio in 1994.

Table 4.2 Sample Statistics of operating lease sub-sample

Sample Composition	1993	1994	1995
Companies using finance lease	133	132	135
Companies not using finance leases	51	55	51
Total (companies using operating leases)	184	187	186

1993 Variable	No.	Mean	Median	StDev	Min	Max
OLR	184	0.0438	0.0221	0.0687	0.0004	0.4831
LR1	184	0.0152	0.0035	0.0271	0.0000	0.2229
TOLR	184	0.0590	0.0343	0.0790	0.0004	0.5799
DR1	184	0.1835	0.1613	0.1460	0.0000	0.6432
PE	184	31.90	18.65	30.34	3.99	100.00
LQ	184	1.5141	1.4158	0.6163	0.4651	4.9490
TA	184	815.97	30.05	2,185.38	4.30	16,892
TR	184	0.3768	0.3301	0.2165	-1.00	1.00
1994 Variable	**No.**	**Mean**	**Median**	**StDev**	**Min**	**Max**
OLR	187	0.0462	0.0242	0.0700	0.0003	0.4279
LR1	187	0.0155	0.0036	0.0296	0.0000	0.2231
TOLR	187	0.0617	0.0330	0.0850	0.0003	0.6311
DR1	187	0.1810	0.1630	0.1413	0.0000	0.6275
PE	187	26.81	17.21	26.69	4.29	100.00
LQ	187	1.5111	1.4116	0.5930	0.2009	5.1898
TA	187	824.74	138.21	2,150.41	2.01	16,762
TR	187	0.3549	0.3300	0.1897	-1.00	1.00
1995 Variable	**No.**	**Mean**	**Median**	**StDev**	**Min**	**Max**
OLR	186	0.0433	0.0225	0.0710	0.0009	0.5119
LR1	186	0.0153	0.0035	0.0294	0.0000	0.2107
TOLR	186	0.0586	0.0318	0.0824	0.0023	0.5290
DR1	186	0.1855	0.1785	0.1419	0.0000	0.6786
PE	186	20.22	14.86	20.36	3.80	100.00
LQ	186	1.4862	1.4384	0.5621	0.2892	4.8335
TA	186	878.01	160.10	2,243.99	3.08	17,197
TR	186	0.3464	0.3299	0.1370	0.0022	1.0000

Notes: OLR = annual commitment under operating leases divided by total assets; LR1 = capitalised value of finance leases and hire purchase contracts divided by total assets; TOLR = Total lease ratio = sum of OLR and LR1; DR1 = Debt (Total loan capital plus subordinated debt minus capitalised value of finance leases and hire purchase contracts) divided by total assets; PE = the PE ratio, measured by dividing share price by earnings per share; LQ = Current Assets/Current Liabilities; TA = Book value of total assets (measured in £ millions); TR = Total tax charge for the current year/Profit before tax for the current year. The data used were obtained from Datastream. The summary descriptive statistics procedure in Minitab (version 10) was used to obtain the estimates in this table.

Details of the testing of the hypotheses developed above using the two samples and the associated results are presented in Chapter 5 section 2.1.

3.2.2.2 Analysing changes in the levels of leasing and debt finance

This section details the sample and methodological issues arising from the hypothesis of a substitutional relationship between leasing and debt finance, as detailed in section 2.1.2. Since the analysis examines changes in the two forms of finance a test of this relationship can be shown in the following regression equation:

$$(\Delta NLD_j - n_j \Delta A_j) = \alpha + \beta(\ell_j \Delta A_j - \Delta L_j) + \varepsilon_j \qquad (6)$$

where NLD. A and L represent levels of non-leasing debt, total assets and leasing;

n_j and ℓ_j are the observed proportions of non-leasing debt and lease financing respectively for company j in a historical period;

α and β are the coefficients to be estimated; and

ε_j is a random error term with zero mean.

New investment undertaken by a company is represented by the term ΔA_j, thus $n_j \Delta A_j$ and $\ell_j \Delta A_j$ represent the proportion of new investment financed by non-leasing debt and leasing respectively if the company maintained prior financing ratios.

In Equation (6), the left-hand side denotes the increase in non-leasing debt relative to a policy of maintaining a constant proportion of financing from this source. Conversely, the term in parentheses on the right-hand side is the reduction in finance achieved via leasing relative to a policy of maintaining a constant proportion of such financing. If leasing and debt are substitutes, the value of the coefficient β is expected to be positive, implying that companies use debt capacity as a result of reductions in leasing to increase their financing via non-leasing debt. A positive

relationship would also be observed if firms reduced their use of non-leasing debt financing as they made greater use of leasing. A positive (negative) value of α signifies an increase (decrease) in non-leasing debt independent of changes in leasing. If non-leasing debt and leasing finance were perfect substitutes and firms maintained constant debt and leasing ratios over time (n and ℓ are held constant), one would expect α to be zero and β to equal one.[244]

The final sample contained the same 351 companies as in the core sample but his time for the eight-year period 1988 to 1995, and is used to derive measures of leasing (L), non-leasing debt (NLD), and assets (A) as required by Equation (6). Table 4.3 and Table 4.4, below, summarise the variable definitions and descriptive statistics.

A theoretically correct measure of lease financing should include the present value of all non-cancellable leases (both finance and operating) since these represent contractual obligations. It is pertinent at this stage to mention an important difference between the lease variable used by Marston and Harris [1988] and that used in this study. In order to capture all non-cancellable leases whether capitalised or not, Marston and Harris' sample included only companies that reported the present value of minimum rental commitments.[245] The authors thus utilised Compustat financial statement data to derive a measure of leasing finance that included both capitalised and non-capitalised leases. The measure of leasing used in this study is the capitalised value of finance leases as defined by SSAP 21. This is due to the fact that the data available from the Datastream database in the UK is restricted to capitalised (finance) leases, companies currently being required to report only a limited amount of information as to their operating lease liabilities, as detailed in Chapter 2 Part A section 3.3.2. Although I was subsequently able to collect operating lease data (see section 3.1 for details), the sample period was felt to be too short to undertake the methodology as set out below.

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[244] If companies were to maintain constant debt and leasing ratios, both sides of Equation (6) would be zero and the coefficients could not be estimated. Thus, Equation (6) relies on the shifting of financing patterns between leasing and debt among companies.

The measure of non-leasing debt used in this study is defined as all non-leasing debt less minority interests and long-term provisions, which are excluded on the basis that they: i) are not contractual obligations; and ii) can be negative in value and, hence, lead to negative debt values. This measure of debt is most closely comparable to the second measure used by Marston and Harris.[246]

Total assets are calculated as the sum of leasing debt, non-leasing debt and equity, where the value of equity is total equity as reported on the balance sheet. The ratios n and ℓ are calculated as the average values of non-leasing debt (NLD/A) and leasing ratio (L/A), respectively, during 1988-1990.[247] In addition, the gearing ratio, c, is calculated as the sum of n and ℓ and acts as a summary measure of financial gearing.

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[245] *Ibid.* footnote 8, p. 153 provides details of the procedure adopted to estimate the present value of non-cancellable, noncapitalised leases.

[246] The authors defined three measures of debt. The measure chosen in this study corresponds to Marston and Harris' NLD_2 as defined in *ibid.* Table 1, p. 154.

[247] Debt and equity are measured in terms of book rather than market value. Essentially, book values are used because: i) book values of newly issued debt or leasing are likely to be close approximates of their market value; ii) fluctuations in the market values of different forms of debt make book values more practical; and iii) changes in book values indicate levels of incremental funding, whereas one cannot interpret this from changes in market values. See Marston and Harris [1988], footnote 9, p. 156 for a discussion of these points.

Table 4.3 Variable Definitions and Descriptive Statistics

Variable	Mean	Standard Deviation
c	0.16551	0.12127
ΔL	£2043	16796
ΔNLD	£3043	150047
ΔE	£125261	456296
ΔA	£150347	557620

Notes: L = Total leasing = Capitalised value of finance leases; NLD = Total non-leasing debt = $A - E - L$ (where A and E are as defined below); E = Shareholders' equity; A = Total assets = $L + NLD + E$;[248] c = Gearing ratio = $(L + NLD)/A$; n = Non-leasing debt ratio = NLD/A;[249] l = Leasing ratio = L/A;[250] Δ represents the change (in £000s) in the value of leasing (L), non-leasing debt (NLD), equity (E) and assets (A) respectively over the period 1991-95. Gearing ratio (c) calculated as average of yearly ratios for the three years 1988, 1989 and 1990.

Table 4.4 reports mean values of the ratios leasing to total debt and leasing to total assets for the years 1990 and 1995 as well as the average for the sample period 1991-95. The table shows that the ratio of leasing to total debt is stable over the period 1990-95 at approximately 20 per cent, a figure that is slightly lower than the 23.4 per cent reported by Marston and Harris [1988] for the corresponding ratio (NLD_2) in their study. The ratio of leasing to total assets is also generally stable over the sample period at slightly less than two per cent. Comparisons with the equivalent measure (L/A_2) used by Marston and Harris reveal not only the importance of non-capitalised leases in the definition of leases but also that US companies finance a greater proportion of their assets with finance leases at approximately 5.2 per cent in 1982.[251]

As a result of using the capitalised value of finance leases as the only measure of leasing in this study, it is not possible to compute the ratio of capitalised to total

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[248] Total assets are defined as equal to total capital employed (Item 322 in Datastream) and, thus equal to the sum of equity (307), long term provisions (314), minority interests (315), total loan capital (321) and subordinated debt (295). Rearranging the formula for nonleasing debt gives:
NLD = A - E - L.
As items 314 and 315 can lead to negative debt in some companies they were omitted from the equation. Therefore, A = total capital employed less long term provisions and minority interests.

[249] Corresponds to the debt ratio variable (DR1) used in Equation (5).

[250] Corresponds to the lease ratio variable (LR1) used in Equation (5).

[251] Marston and Harris [1988] report a capitalised lease to total lease ratio of 35.4 per cent and leasing to total assets ratio of 14.6 per cent. See *ibid.* Table 2, Part A, p.155.

leases. The results of Marston and Harris [1988] suggest that non-capitalised leases (i.e. operating leases) make a much larger contribution to total financing than do capitalised leases, with the latter only representing 35 per cent of total leasing in 1982. If the sample collected on companies reporting operating leases is any guide, it is probable that the situation in the UK is not dissimilar to that in the USA, Table 4.2 reporting that finance leases represent only 25 per cent of total leasing in the period 1993 to 95. Similarly, the recent study undertaken by Beattie et al. [2000] reported that the average liability in respect of operating leases for their sample of companies was thirteen times larger than the finance lease liability for the period 1990-94.[252] This is likely to remain the case since it is expected that restrictions on the way in which lessors are allowed to apportion capital allowances, introduced in the July 1997 Budget, would lead to an increased use of operating leases (which were left unscathed).[253]

Table 4.4 Gearing Ratios: Mean (Standard Deviation)

	1990	1995	Average
Leasing to Total Debt [L/(L+NLD)]	0.1948 (0.3103)	0.2036 (0.3270)	0.1992 (0.2722)
Leasing to Total Assets [L/A]	0.0201 (0.0436)	0.0177 (0.0331)	0.0189 (0.0318)

Notes: All variables are as defined in Table 3.2. Averages for the sample period are calculated as the average of the statistic in the beginning (1991) and ending years (1995).

If the operating risks of new investments differ from those of the company's existing assets, the leasing and non-leasing debt ratios (n and ℓ respectively), measured on the companies existing assets would not be appropriate gearing ratios for new investments. On average, however, one would not expect dramatic shifts in operating risk as the sample size is large. Calculating n and ℓ over the period 1988-

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[252] They report, for example, that average total finance lease and operating lease liabilities were £3.8 million and £50.8 million, respectively. *Ibid.* p. 447.
[253] As reported in 'Trains, planes and oil rigs hit by tax changes', by Charis Gresser, Financial Times, 15th January 1998, p. 10.

1990 implicitly assumes that companies were then operating at approximately their target debt ratios which were not then expected to change over time.

However, if a company was using less-than-optimal gearing in the period 1988-1990, due to lags in adjusting capital structure or as-yet-unrecognised policy errors, the values of n and ℓ would understate the debt capacity available for two reasons: i) unused debt capacity on existing assets would be available; and ii) a higher gearing ratio may be applied to new investments. If this was the case for most companies in the sample the effect would probably lead to an estimated value, using Equation (6), of β of less than one - not necessarily because leases consume debt capacity at less than one to one but because the company's debt capacity was currently under-utilised. The reverse effect on β would be the case if companies were systematically over-geared in this period.

Over a large sample of companies, these effects on β are expected to cancel out (particularly since n and ℓ are averaged over a three-year period). Table 5.10, however, shows that there were changes in the composition of lease and debt financing of assets for different companies. This is supported by the findings reported in Table 4.5, below. Although the mean value of the lease ratio (ℓ) is stable over the two periods (1988-90, 1991-95) at 2 per cent, there are quite significant changes in the non-leasing debt ratio (n) and thus the total gearing ratio (c). The non-leasing debt ratio increases by 10.38 per cent over the two sample periods (from 14.55 to 16.06 per cent), while the gearing ratio increases by 9.24 per cent over the same period. This change is more pronounced than that found by Marston and Harris for all three measures of gearing in their study, suggesting that, perhaps, UK companies were under-geared in the late 1980s and that an adjustment process took place in the early 1990s. This of course should be borne in mind when interpreting the results contained in Chapter 5 section 2.2.

Table 4.5 additionally reveals a further reason why the two ratios, leasing to total debt and leasing to total assets show conflicting results in comparison with the

corresponding result of Marston and Harris. It shows that the non-leasing debt ratio (*n*) is approximately one-third of the value of the corresponding measure in Marston and Harris in both years (at between 14.5 per cent and 16 per cent compared with 46 per cent). Therefore, although UK companies maintained a similar proportion of leasing to debt in the 1990s to US companies in the 1970s, their willingness to resort to both debt and lease finance appears to be much lower. The gearing ratio (*c*) is, as a consequence, much lower than the corresponding ratio of Marston and Harris (less than 20 per cent compared to 61 per cent).[254]

Table 4.5 Comparison of Leasing and Gearing Ratios during the pre-sample (1988-1990) and sample (1991-1995) periods.

	1988-90		1991-95	
	Mean	Standard Deviation	Mean	Standard Deviation
l	0.0200	0.0458	0.0198	0.03280
n	0.1455	0.1208	0.1606	0.1192
c	0.1655	0.1213	0.1808	0.1183

Notes: Averages for each company are the simple average of the variable in each of the years covered by the pre-sample and sample periods. All variables are defined in Table 4.2.

Given the variable definitions, Equation (6) is estimated in Chapter 5 section 2.2 using the ordinary least squares regression methodology. The variables were normalised by total assets to control for possible heteroscedasticity. The regression is estimated for the entire five-year period (1991-95), with changes in non-leasing debt (ΔNLD), leasing (ΔL) and assets (ΔA) representing actual changes for the period 1991-1995. The five-year horizon is used to control for possible deviations from target capital structure that can occur from year to year but which one would expect to average out over time.

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[254] Evidence in support of this comes from the study of the capital structure of seven major industrialised countries undertaken by Rajan and Zingales [1995]. They report that in 1991, and using various alternative measures of gearing, that UK companies exhibited far lower gearing ratios than their US counterparts - in some instances less than half (*ibid.* Table 3, pp. 1430-2). This conclusion holds independent of company size (*ibid.* p. 1435). With the larger increase in debt issuance by US companies vis a vis UK companies in the 1980s, the comparison reported in the main text would appear to be greater still (*ibid.* Table 4, p. 1439).

3.2.3 Company and asset characteristics as determinants of the use of lease finance

3.2.3.1 Sample and Variable Definition

The sample includes the same 351 companies as detailed in section 3.1. All profit and loss account and balance sheet items, except those used to calculate the 1993 book-to-market ratio, were averaged over the three years (1993 to 1995) to develop an arithmetic average profit and loss account and balance sheet that is the source of the data for the ratio calculations.[255]

The following variables were calculated:

- Lease ratio (LR)[256]
- Ratio of research and development to sales (RDTS)[257]
- Ratio of research and development to total assets (RDTA)

Previous studies, for example, Altman [1968],[258] suggest that measures of current and accumulated past performance, measures of debt servicing capacity, gearing and operating risk are useful in forecasting the likelihood of bankruptcy across firms. The following details the ratios used as proxies for these measures:

- The ratio of earnings before interest and taxation to total assets (ETA): a measure of current profitability;
- The ratio of retained earnings to total assets (RET): a measure of accumulated past profitability;
- The ratio of the market value of equity to the book value of equity (MB): a measure of the market's assessment of company performance;

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[255] This averaging procedure was designed to reduce measurement noise inherent in one year's accounting data. The tests reported in this study were also conducted using financial statement data for the individual years 1993 to 1995 and the results are stored in the Appendix. Where there are differences in the two approaches for the different tests these are noted in the main text.

[256] Corresponds to the variable LR1 as used in Equation (5) (see section 3.2.2.1 for details of how this variable was calculated).

[257] Items 119 and 104 respectively from Datastream.

[258] The studies undertaken in this area by Beaver in 1966 Ohlson in 1980 are documented in Krishnan and Moyer [1994].

- The ratio of earnings before interest and taxation to total interest payments (EBTI): a measure of the company's ability to service its debt obligations;
- The ratio of long term debt to total assets (LDA): a measure of the level of gearing of a company; and
- Coefficient of variation of earnings before interest and taxation over the previous seven years (EVAR): a measure of the operating risk facing a company.

- It is predicted that companies making use of finance leases are expected to have greater risk of facing bankruptcy as measured by the above variables. In addition, Altman's [1968] Z-score (ZSCORE)[259] was used as a single measure of bankruptcy potential within a company. A company using lease finance is expected to record a lower Z-score, indicating the greater risk of bankruptcy.

- The test of the growth hypothesis (TAG) is conducted by calculating the geometric mean of the growth in total assets over the previous six years. Following the discussion in Chapter 3 section 8, it is predicted that companies with more growth opportunities are more likely to use lease financing as a way of resolving the underinvestment and asset substitution problems.
- The effective tax rates (TR) of leasing and non-leasing firms are calculated via the ratio of total tax charge to pre-tax profit.[260] It is predicted that there is an inverse relationship between a company's marginal tax rate and its use of finance leases.

In order to test the bankruptcy potential and asset specificity hypotheses a number of univariate and multivariate tests were undertaken and are detailed in Chapter 5 section 3. In particular, ordinary least squares (initially) and the more

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259 $$ZSCORE = 1.2*\frac{\text{Current Assets - Current Liabilities}}{\text{Total Assets}} + 1.4*\frac{\text{Retained Earnings}}{\text{Total Assets}} + 3.3*\frac{\text{Operating Profit}}{\text{Total Assets}} + 0.6*\frac{\text{Market Value of Equity}}{\text{Book Value of Debt}} + \frac{\text{Total Sales}}{\text{Total Assets}}$$

260 This corresponds to the tax variable used in Equation (5) (see section 3.2.2.1 for details of how this variable was calculated).

robust logistical regression methods (in recognition of the truncated nature of the lease ratio as the dependent variable) were adopted.

3.2.4 The influence of financial contracting costs on the decision to lease

The following sections detail the proxy variables developed to test the hypotheses detailed in section 2.3. Later sections provide an outline of the sample data and descriptive statistics, before introducing the methodology to test the hypotheses. This is discussed in more detail, alongside a presentation of the results, in Chapter 5 section 4.

The main sample is based on the core sample of 351 companies as detailed in section 3.1. In addition, in order to compute the measure of volatility, I used daily share price data from Datastream for the sample of companies for the period 1/1/86 to 29/12/95. Only observations with complete data for all the relevant variables were used. The original sample of 351 companies was reduced to the final sample size of 330 due to missing company accounts data (two companies), missing share price data (one company) and changes in the company codes from Datastream (18 companies). The companies were classified into six broad industry groups according to their classification in Datastream (see Appendix 4) as detailed in Table 4.6 below.

The second sample was based on the smaller sample of firms reporting operating leases in their financial statements and is used in order to provide a more robust test of Hypotheses 1 to 7. The sample of companies in the smaller sample numbered 180 not 190 as before, due to the reduction in the core sample by 21 companies, 10 of which appeared in the smaller sample.

3.2.4.1 Variable definition

Leasing propensity:

I utilised three measures of leasing propensity as follows:

- Leasing propensity (LP) = Finance Lease Share = capitalised value of finance leases and hire purchase/ total assets[261]
- Leasing propensity (OLP) = Operating Lease Share = annual commitment under operating leases / total assets
- Leasing propensity (TOLP) = Total Lease Share = (LP1 + OLP)

These correspond to the three measures of leasing propensity used by Sharpe and Nguyen [1995] in their study. For their second measure of leasing propensity they included the annual amount of rental commitments due in one year on non-cancellable, non-capitalised leases divided by total capital costs as an approximation of 'operating lease share'.[262]

Asymmetric information costs:

Several explanatory variables acting as indicators of a company's information cost-related premium on external funds were constructed. These were used to test the central hypothesis that companies facing high costs of external capital as a result of financial contracting costs are more likely to lease.

- In order to test Hypothesis 1, a dummy variable (DD) equal to one for a zero dividend payment, zero otherwise is used as an indicator for companies paying high capital market information costs.[263]

Two additional proxies are developed to gauge relative marginal funding costs (Hypotheses 2 and 3, respectively):

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[261] Items 267 and 339 respectively from Datastream. The variable is calculated in the same way as the variable LR1 used in Equation (5) and corresponds to Sharpe and Nguyen's [1995] first measure of leasing propensity.. See section 3.2.2.1 for details of how this variable was calculated.

[262] Adams and Hardwick [1998] obtained similar data in their UK study. This was obtained, however, via the use of published annual reports from a small sample of UK companies for one year. The recent study by Beattie et al. [2000] also utilised the primary data from UK company financial accounts to estimate total operating lease liability, this time for the five-year period 1990-94.

[263] Sharpe and Nguyen [1995] footnote 6, p. 279 detail supporting evidence for the use of low dividend payout as an indicator of the likelihood of a company to be facing financial constraints.

- A measure of cash flow (CF) is developed and is defined as operating profit divided by total sales.[264]

- Sharpe and Nguyen formulated a tiered rating system for their sample based on Standard and Poor's senior debt ratings as a further proxy. Lacking debt ratings data from the Datastream database for my sample,[265] I constructed an alternative proxy of the riskiness of a company: the volatility (VOL) of the company's total return over the period 1 January 1986 to 29 December 1995.[266]

Other variable definitions:

- Hypothesis 4 - Firm size (SIZE): Unlike the proxy developed in the previous sections, firm size is defined here as the natural logarithm of the number of employees. The standard measure of size, total assets, is argued by Sharpe and Nguyen [1995] to be inappropriate as, all else equal, companies that lease more will have a lower level of assets (at book value). The number of employees is chosen because, like assets, this is a measure of inputs to production, but, unlike assets, it should be approximately invariant to the leasing choice.

- The tax proxy (TR) I used to test Hypothesis 5 is defined as the ratio of tax charge to pre-tax profit. This variable was truncated at plus/minus 1.[267,268]

- As a control for asset characteristics, industry dummy variables were included, defined as in Chapter 5 section 3.2.[269]

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[264] Items 137 and 104 from Datastream.
[265] The rating of corporate debt is more widespread in the US than in the UK, resulting in fewer UK companies with a bond rating from one of the rating agencies (Moodys, Standard & Poors, IBCA). I decided that this would have been too great a restriction on the sample selection procedure.
[266] Calculated as the annual standard deviation of daily stock returns: $\sigma_{\text{yearly return}} = \sqrt{(360 * \sigma^2_{\text{daily return}})}$.
[267] The tax rate variable is the same as that used in Equation (5) and in the previous section.
[268] Sharpe and Nguyen [1995] construct two alternative proxies for a company's tax status, including a measure of the tax-loss carry forward. Due to the lack of data for such a variable available from Datastream, I used the tax rate proxy (TR) only.
[269] See Appendix 4 for a breakdown of the industry groups used.

- Technological differences across companies are also controlled by using a measure of capital intensity (CI), defined as the ratio of total assets to number of employees, and was used to facilitate a test of Hypothesis 6. Sharpe and Nguyen [1995] suggest that failure to control for differences in the capital-labour ratio may result in spurious estimated effects for variables such as operating earnings.

- A proxy variable is constructed (SV) for the anticipated variation in demand equal to the company's realised variance of annual sales growth measured over the sample period (Hypothesis 7).

3.2.4.2 Sample statistics and sample correlations

Table 4.6 records the mean values of company leasing propensity for the years 1993 to 1995. The companies are grouped into broad industry categories and according to their size relative to the industry. In addition, results are given for the sample as a whole, once more split into large and small groupings. The results show that the use of finance leases as a proportion of total assets has remained stable over the period among both large and small companies, with only the small mining companies recording a systematic reduction in their use of finance leases over the period.

In accordance with the results of earlier sections of comparisons between the US and UK samples (see section 3.2.2.2 above) the table reveals that UK companies use finance leases to a lesser extent than do US firms. Whereas Sharpe and Nguyen [1995] record capital lease shares of between 5 and 25 per cent of net book property, plant and equipment, only the construction industry group in the current sample records a finance lease share above five per cent. In accordance with a number of studies as detailed in earlier sections, is the finding that smaller companies exhibit a higher proportion of finance leases than do larger firms. This is especially marked in the case of the construction industry, but also evident to a lesser extent in service and manufacturing industries.

Table 4.6 Measure of finance lease share of total assets 1993-95. Means by industry and firm size

Industry (no. of companies)	Finance lease share of Total Assets (% with finance leases)					
	1993		1994		1995	
	Small	large	Small	large	Small	large
Manufacturing (186)	0.037	0.019	0.036	0.019	0.035	0.020
	(0.796)	(0.710)	(0.785)	(0.688)	(0.774)	(0.699)
Mining & extractive industries (16)	0.038	0.011	0.021	0.012	0.011	0.012
	(0.5)	(0.625)	(0.5)	(0.625)	(0.375)	(0.75)
Construction (39)	0.101	0.005	0.120	0.005	0.118	0.008
	(0.737)	(0.55)	(0.737)	(0.55)	(0.789)	(0.5)
Wholesale (19)	0.026	0.028	0.034	0.024	0.034	0.019
	(0.667)	(0.7)	(0.667)	(0.7)	(0.667)	(0.8)
Retail (29)	0.021	0.016	0.019	0.014	0.019	0.013
	(0.643)	(0.733)	(0.643)	(0.667)	(0.714)	(0.667)
Services (41)	0.057	0.033	0.059	0.036	0.046	0.040
	(0.75)	(0.619)	(0.7)	(0.619)	(0.8)	(0.667)
Total (330)	0.045	0.019	0.046	0.019	0.043	0.020
	(0.75)	(0.68)	(0.74)	(0.66)	(0.75)	(0.68)

Notes: Finance lease share of total assets is the capitalised value of finance leases and hire purchase divided by total assets. Firm size classification is determined by dividing each industry into firms above and below the median size, as measured by the number of employees.

Table 4.7 below contains the sample means and correlations of the leasing and explanatory variables for the sample period 1993-95. The correlations are calculated after subtracting industry mean values from each observation. The mean values are shown in the second column with correlations between leasing propensity and the explanatory variable being presented in the remaining columns. In a result consistent with that of Table 4.6, the mean value of the leasing propensity (LP) variable reported in Table 4.7 (three per cent in all three years) is lower than the ten per cent reported by Sharpe and Nguyen.

Since the 'no dividend' variable (DD) is a dummy variable, its mean value indicates the proportion of firms paying no dividend: at less than 10 per cent this is much lower than the 59 per cent paying no dividend in the US study. The average number of employees reported by companies in the sample is approximately 2,300 (ln(2300) = 7.74), much higher than the 800 reported in the US study, a fact that

should be borne in mind in interpreting the results in Chapter 5 section 4 in comparison with those of the US study.

The correlations suggest that leasing propensity is positively related to the no dividend (DD), sales variance (SV) and volatility (VOL) variables and negatively related to operating income (CF), tax rate (TR) – with the exception of 1993 - and firm size (SIZE) variables. These results are in accordance with our hypotheses. However, unlike the US study, only the volatility and firm size variables are significantly correlated with the leasing propensity (LP) variable. In addition, the three indicators of information- or agency-cost premiums on marginal funding - the no-dividend dummy variable and the volatility and cash flow variables - all show significant correlation with firm size but not with the tax rate variable.

Table 4.7 Sample statistics for variables: Means and two-digit industry-adjusted correlations

1993

	Mean	DD	CF	VOL	TR	SIZE	CI	SV
LP	0.03	0.19*	-0.17*	0.16*	0.03	-0.19*	-0.01	0.06
DD	0.09		-0.27*	0.43*	0.07	-0.25*	0.13	0.20*
CF	0.07			-0.27*	-0.10	0.20*	0.06	-0.09
VOL	34.93				0.05	-0.17*	0.03	0.33*
TR	0.36					-0.01	0.00	0.02
SIZE	7.73						-0.13	-0.14
CI	68.68							0.09

1994

	Mean	DD	CF	VOL	TR	SIZE	CI	SV
LP	0.03	0.24*	-0.11	0.17*	-0.09	-0.17*	0.01	0.08
DD	0.09		-0.30*	0.43*	0.14*	-0.22*	0.04	0.24*
CF	0.07			-0.33*	-0.27*	0.15*	0.14*	-0.09
VOL	34.98				0.01	-0.20*	0.05	0.35*
TR	0.35					0.04	-0.02	-0.07
SIZE	7.74						-0.13	-0.11
CI	72.02							0.08

1995

	Mean	DD	CF	VOL	TR	SIZE	CI	SV
LP	0.03	0.18	-0.06	0.16*	-0.08	-0.16*	0.02	0.10
DD	0.06		-0.21*	0.46*	-0.19*	-0.22*	0.04	0.17*
CF	0.08			-0.30*	-0.05	0.17*	0.31*	-0.02
VOL	34.27				-0.02	-0.24*	0.06	0.26*
TR	0.33					0.06	0.01	-0.01
SIZE	7.78						-0.13	-0.11
CI	76.49							0.09

Notes: Sample size = 330 companies. Leasing propensity (LP) = capitalised value of finance leases and hire purchase divided by total assets; Dividend dummy (DD) = dummy set to one if firm paid no dividend that year, zero otherwise; Cash flow (CF) = operating profit divided by total sales; Volatility (VOL) = standard deviation of daily returns; Tax rate (TR) = ratio of total tax charge to pre-tax profit; Firm size (SIZE) = natural log of the number of full-time employees; Capital intensity (CI) = total capital costs divided by number of employees; Variance of sales growth (SV) = variance of annual change in ln(sales). * indicates correlations are significant at the 1 per cent level (two-tail test). The data used were obtained from Datastream. The estimates reported in this table were obtained using the Spearman's correlation procedure in SPSS.

Table 4.8 reports the means and sample correlations for the smaller operating lease sub-sample, performed in a similar manner to that recorded for the core sample. As the two samples are not too dissimilar (see narrative with regard to Table 4.1 and Table 4.2 above), the finance lease propensity variable (LP) was not included. The results are similar to those reported above, with the proportion of companies reporting a zero dividend payout being lower (less than 5 per cent), and the average number of employees reported by companies in the sample being higher than that reported by Sharpe and Nguyen, at approximately 4,700 (ln (4700) = 8.455).

The results of the correlations for the two leasing propensity variables are largely in accordance with Hypotheses 1 – 7 and supportive of the findings for the core sample, as noted above. Thus, leasing propensity (TOLP) is positively related to the no dividend (DD), sales variance (SV) and volatility (VOL) variables and negatively related to operating income (CF) and firm size (SIZE) variables and inconsistently related to the tax rate (TR) variable. The results using the operating lease variable (OLP) are similar, with the exception that it is positively, albeit not significantly, related to firm size.

As reported above for the finance lease variable, most of the correlation coefficients are not significant, although this time it is the volatility and cash flow variables that are significantly related to both lease variables. It is interesting to note that the total lease variable (TOLP) and firm size are not significantly negatively correlated, whereas this was the case for the finance lease variable (LP). This is a result of the positive correlation between the operating lease variable (OLP) and size variable, and provides some support for the findings of Lasfer and Levis [1998], who found that size was positively related to leasing.

In addition, the three indicators of information- or agency-cost premiums on marginal funding (the no-dividend dummy variable and the volatility and cash flow variables) largely show significant correlation with firm size and with the tax rate variable, the latter result at variance with the results recorded in Table 4.7.

Table 4.8 Sample Statistics for variables of Operating lease sub-sample: sample means and correlations

1993

	Mean	DD	CF	VOL	TR	SIZE	CI	SV
OLP	0.05	0.064	-0.194*	0.164*	-0.094	0.042	-0.107	0.083
TOLP	0.07	0.082	-0.237*	0.154*	0.006	-0.057	-0.089	0.064
DD	0.04		-0.375*	0.296*	0.379	-0.201*	0.189*	0.088
CF	0.07			-0.330*	-0.177*	0.238*	-0.057	-0.097
VOL	33.06				0.133	-0.082	0.024	0.251*
TR	0.37					-0.107	-0.022	-0.021
SIZE	8.45						-0.185*	-0.135
CI	80.70							0.125

1994

	Mean	DD	CF	VOL	TR	SIZE	CI	SV
OLP	0.05	0.070	-0.266*	0.181*	-0.027	0.032	-0.125	0.088
TOLP	0.07	0.146*	-0.306*	0.215*	-0.026	-0.064	-0.104	0.084
DD	0.04		-0.243*	0.235*	0.236	-0.160*	-0.037	0.006
CF	0.08			-0.292*	-0.405*	0.154*	0.140	-0.043
VOL	32.70				-0.015	-0.147*	0.051	0.164*
TR	0.36					-0.105	-0.008	-0.050
SIZE	8.43						-0.185*	-0.095
CI	84.70							0.125

1995

	Mean	DD	CF	VOL	TR	SIZE	CI	SV
OLP	0.05	0.217*	-0.281*	0.184*	0.128	0.045	-0.104	0.008
TOLP	0.07	0.189*	-0.342*	0.246*	0.240*	-0.068	-0.081	0.034
DD	0.02		-0.071	0.290*	0.120	-0.095	-0.030	-0.029
CF	0.08			-0.290*	-0.316*	0.178*	0.299*	0.054
VOL	31.69				0.080	-0.183*	0.027	0.073
TR	0.35					-0.131	0.019	0.051
SIZE	8.49						-0.114	-0.086
CI	75.00							0.123

Notes: Sample size = 174, 177 and 176 companies, respectively. Leasing propensity OLP = annual commitment under operating leases divided by total assets; Leasing propensity TOLP = OLP + LP where LP = capitalised value of finance leases and hire purchase divided by total assets; Dividend dummy (DD) = dummy set to one if firm paid no dividend that year, zero otherwise; Cash flow (CF) = operating profit divided by total sales; Volatility (VOL) = standard deviation of daily returns; Tax rate (TR) = ratio of total tax charge to pre-tax profit; Firm size (SIZE) = natural log of the number of full-time employees; Capital intensity (CI) = total capital costs divided by number of employees; Variance of sales growth (SV) = variance of annual change in ln(sales). * indicates correlations are significant at the 1 per cent level (two-tail test). The data used were obtained from Datastream. The sample mean and correlations reported in this table were obtained using Minitab (version 10).

The models used to examine the hypotheses arising from the relationship between the financial contracting costs facing companies and their use of finance leases, together with the results of the tests undertaken is contained in Chapter 5 section 4.1.

3.2.5 The leasing decision of small and large companies

3.2.5.1 Summary of the sample

The sample data was taken from the original sample of 704 companies covering the period 1988 to 1995 as outlined above in Section 3.1. The criteria used to govern the collection of the data were as stated in Section 3.1, with the exception of the large industrial group requirement. The sample period used here was restricted to the years 1992-95 due to the lack of data for the bank loan and research and development variables, with only 62 companies out of 536 appearing in 1992 as a result of this and no data being available from Datastream before this time. Table 4.9 provides a summary of the final sample used. It shows that the maximum number of companies in any one year totalled 399, resulting in 1246 pooled time series and cross-sectional

observations.[270] As a comparison, Lasfer and Levis [1998], in their study utilised a larger sample of companies and included data from both quoted and unquoted UK companies for the period 1982-96.

As one would expect, given the similar data sample being used here to that used in previous sections, the proportion of companies using finance leases at slightly over two-thirds is similar to that reported in the above, but is slightly higher than the 57 per cent average reported by Lasfer and Levis. The table also shows that the proportion of companies using finance leases has remained stable over the period 1992-95. Further points to note are that the mean values and maximum size of the companies in this sample are smaller than those reported by Lasfer and Levis and should be borne in mind when the results are presented, particularly in respect of the test of the impact of size on the decision to lease.[271]

Table 4.9 Sample Characteristics

Years	N	Proportion of companies using finance leases (%)	Total assets (£m)		
			Mean	Min.	Max.
1992	62	62.90	342.68	1.92	3,932.1
1993	393	66.92	412.06	1.75	16,892
1994	392	68.37	382.14	1.24	9,636
1995	399	67.67	400.68	1.39	9,837
All (92-95)	1246	67.42	395.55	1.24	16,892

Notes: N represents the number of companies in the total sample. The data were obtained from Datastream.

3.2.5.2 Methodology and variables used

The methodology used is based upon univariate and logit regressions to analyse the determinants of the leasing decision in the UK. In this section a number of proxy

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[270] The problems encountered previously with the sample data as outlined in footnote 225 continue to apply here.

[271] The mean value of the companies in the sample is approximately £400m versus a range of between £900m -£1,300m in the corresponding period reported by Lasfer and Levis [1998]. The maximum size of companies is less than one-tenth of that reported in Lasfer and Levis. See *ibid.* Table 1, p.166.

variables are defined to test the hypotheses relating to effect of taxes, debt capacity and agency costs on the leasing decision as detailed in section 2.4 and are as follows:

- Lease percentage (LE): the ratio of the capitalised value of finance leases to total debt (defined as total loan capital and subordinated debt);
- Lease ratio (LR): the ratio of the capitalised value of finance leases to total assets;[272]

Variables set up to investigate the relationship between corporate taxation and the use of leasing finance (Hypothesis 2):

- Tax charge (TC): the ratio of tax charge to profit before tax;[273]
- Tax ratio (TR): the ratio of the total tax charge to pre-tax profit (including pre-tax profit of associates) and corresponds to the definition of the tax ratio provided by Datastream; [274] and
- (IACT): the ratio of irrecoverable advance corporation tax to total assets.

Variables examining the relationship in company growth opportunities and use of finance leases (Hypothesis 3):

- (FAPTA): the ratio of fixed assets payments to total assets;
- (RDSA): the ratio of research and development expenditure to total sales[275]
- Sales growth (SG): the percentage change in turnover over the previous two years;
- Payout ratio (PO): the ratio of dividends to earnings; and
- Tobin's q (TQ): the ratio of the market value of equity to shareholders' fund.

Variables used to investigate the substitutional hypothesis between leasing and corporate debt (Hypothesis 1):

- (LDCE): the ratio of long-term debt (excluding leases) to capital employed; and

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[272] The same variable as used in sections 2.1 to 2.3.
[273] As used in section 3.2.3?? above.
[274] Item 761 from Datastream.
[275] This variable corresponds to that used in section 3.2.2 above.

- (BLTD): the ratio of bank loans and overdrafts over total debt (defined as for the lease percentage variable).

Variables set up to examine the relationship between profitability and the corporate use of finance leases (Hypothesis 4):

- Earnings before interest and taxation (EBIT);
- Pre-tax profit excluding associates (EBTa);[276]
- Pre-tax profit including associates (EBTb);[277]
- Return on shareholders equity (ROE);
- Earnings per share (EPS); and
- Dividends per share (DPS).
- (DY): the ratio of dividends to market value of equity;

Variables developed to investigate the hypothesis of a negative relationship between firm size and use of finance leases (Hypothesis 5):

- Total assets (TA);
- Sales (SA); and
- Market value of equity (MV).

Chapter 5 sections 5.1 and 5.2 outline the various univariate and logistic tests undertaken, together with a review of the methodology used to test Hypotheses 1-5.

The next chapter presents the results of the tests of the various hypotheses as presented in this chapter. The format of the chapter is similar to that set out here, with the results being presented in the same order as outlined in this chapter.

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[276] Item 155 from Datastream.
[277] Item 157 from Datastream.

5. Results

1. Overview

This chapter summarises the results obtained from the tests of the hypotheses set out in the previous chapter. The layout of the chapter itself is similar to the Methodology section to allow one to view the results of the different tests in conjunction with the appropriate section in Chapter 4. To make things a little easier to follow, many of the basic hypotheses have been restated in the appropriate section.

Section 2 sets out the results of the examination of the relationship between leasing and corporate debt capacity, firstly testing the methodology formulated by Ang and Peterson [1984] directly, before examining changes in the use of leasing and debt finance. The third section details the tests undertaken to analyse the various asset and company characteristics as determinants of the leasing decision. This is followed by an examination of the influence of financial contracting costs on leasing in Section 4. Finally, Section 5 looks at the various influences on the leasing decision of small and large companies.

2. Relationship between leasing and debt capacity

2.1 A further investigation of the 'leasing puzzle'

2.1.1 Analysis of the Determinants of the Lease Ratio

In this section Equations (4) and (5), presented in Chapter 4 section 3.2.2.1, are estimated using the tobit heteroscedastic technique rather than using the ordinary least squares (OLS) technique. The tobit model is used since we have a censored sample: approximately one third of the companies in the sample record a lease ratio equal to zero. Tobit analysis is a maximum likelihood estimation method designed for limited dependent variables, i.e. '... where values of the regressand are not

available for some observations, although values of the regressors are available for all the observations.'[278]

The first test performed was the estimation of Equation (5) on the full sample using the tobit heteroscedastic regression technique in TSP (version 4.2). Mathematically, the tobit model is expressed as follows:

$$LR1 = \beta_0 + \beta_1 DR1 + \beta_2(PE) + \beta_3(LQ) + \beta_4(\ln(TA)) + \beta_5(TR) + \varepsilon$$

$$\text{if RHS} > 0 \qquad (5a)$$

$$= 0, \quad \text{otherwise}$$

The summary of the estimates is shown in Table 5.1 below. The table shows that there is generally a negative but insignificant relationship between the debt ratio (DR1) and the lease ratio (LR1), with one year, 1993, reporting a significantly negative relationship. This result is as one would expect given the hypothesis of a predicted substitutional relationship between the two variables. However, it is an interesting result, since Ang and Peterson [1984], Adedeji and Stapleton [1996] and Beattie et al. [2000], the latter two using variations on the above model, reported a positive relationship. It was this positive relationship, reported by Ang and Peterson that led to the coining of the term 'leasing puzzle', and led Adedeji and Stapleton to investigate the relationship further.

The expected growth variable (PE) reports a positive and mainly insignificant relationship with the lease ratio, similar to that reported by previous studies.[279] The table records that both the liquidity (LQ) and size (ln(TA)) coefficients have the predicted negative relationships with the lease ratio, being significant in all three years, a result supported in the study of Beattie et al. The results for the tax variable (TR) are mixed with one year recording a significant positive relationship, another year a significant negative one. The variable over the three years records a similar

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[278] Gujarati [1995], p. 576.
[279] See Adedeji and Stapleton [1996] and Beattie et al. [2000].

result to that of Adedeji and Stapleton,[280] offering weak support for the hypothesis of a negative influence of taxation upon the decision to use finance leasing.

In summary, the results shown in Table 5.1 are largely consistent with the predicted relationships. However, the debt ratio (DR1), in following this trend, records a relationship at variance with what might have been expected in the light of previous work.

Table 5.1 Tobit regression estimates

Model:

$$LR1 = \beta_0 + \beta_1(DR1) + \beta_2(PE) + \beta_3(LQ) + \beta_4(\ln(TA)) + \beta_5(TR) + \varepsilon$$

Variables	Coefficients	1993	1994	1995
Constant	β_0	0.1297 (4.5400)*	0.1700 (5.2649)*	0.1298 (5.2416)*
DR1	β_1	-0.0517 (-2.6031)*	-0.0411 (-1.7237)	0.0034 (0.1897)
PE	β_2	0.0001 (1.5968)	0.0006 (5.0655)*	0.0002 (1.6221)
LQ	β_3	-0.0204 (-4.8722)*	-0.0139 (-3.7456)*	-0.0084 (-2.5283)*
ln(TA)	β_4	-0.00541 (-3.4842)*	-0.0067 (-3.7521)*	-0.0060 (-4.4041)*
TR	β_5	0.0332 (2.8570)*	-0.0811 (-4.3527)*	-0.0049 (-0.3726)
No. of companies		351	351	351

Notes: T-statistics in parentheses. * indicates significance at the 5 per cent level. LR1 = Capitalised value of finance leases and hire purchase contracts divided by total assets; DR1 = Debt (Total loan capital plus subordinated debt minus capitalised value of finance leases and hire purchase contracts) divided by total assets; PE = the PE ratio, measured by dividing share price by earnings per share; LQ = Current Assets/Current Liabilities; TA = Book value of total assets (measured in £ millions); TR = Total tax charge for the current year/Profit before tax for the current year. All the data were obtained from Datastream and the estimates reported in the table were obtained using the tobit heteroscedastic regression procedure in TSP (version 4.2).

The above tobit heteroscedastic regression technique was also used to estimate Equation (4) using the same sample in order to extend Ang and Peterson's

[280] Beattie et al. [2000], however, record a positive but insignificant relationship between the tax

[1984] analysis directly to the UK with the results shown in Table 5.1 below. As in Table 5.2, the coefficient of the debt ratio (DR2) is negative in all three years and significantly so in 1993. This result offers some support for the hypothesis of a substitutional relationship between debt and lease finance but is not consistent with the findings of Ang and Peterson.

The coefficient of the growth variable (PE) is generally positive and significant, although one year records a non-significant negative coefficient. The mixed result may be indicative of the differing views, highlighted in Chapter 4 section 2.1.2, regarding the relationship between expected growth and the tendency to use leasing finance. The liquidity (LQ) and size (TA) variables used record similar results to those shown in Table 5.1. The coefficient of the liquidity variable (LQ) is negative and significant and supports our hypothesis, unlike the significant positive coefficients found by Ang and Peterson. The size variable (TA) has the same generally negative relationship with the lease ratio (LR), except that this time the relationship is not significant.

Turning to the variables which are specific to Equation (4) we see that, first of all, the profitability (RA) and operating leverage (OL) variables have negative but generally insignificant coefficients, similar to the findings of Ang and Peterson and in the direction hypothesised. The relationship between sales variability (SV) and the lease ratio (LR) is positive as hypothesised but largely insignificant.[281] The results shown in Table 5.2 therefore provide some support for our hypotheses regarding the influence of the variables chosen on the decision by companies to use finance leases. They are largely supportive of the findings of Table 5.1, with the main feature being the consistent negative (but not significant) relationship between the debt and lease ratios, irrespective of the way in which they are measured. This result contrasts with

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variable and their finance lease ratio. See *ibid.*, Table 5, p. 452.

[281] Ang and Petersons' results show that sales variability has a generally negative and insignificant relationship with the lease ratio, however for the first year they report a significant and positive relationship. *Ibid.* Table II, p. 1061.

those of Adedeji and Stapleton [1996], Beattie et al. [2000], and Ang and Peterson [1984], who observed non-significant positive coefficients for the debt ratio.

Table 5.2 Tobit regression estimates

Model:

$$LR2 = \beta_0 + \beta_1(DR2) + \beta_2(RA) + \beta_3(PE) + \beta_4(LQ) + \beta_5(TA) + \beta_6(OL) + \beta_7(SV) + \varepsilon$$

Variables	Coefficients	1993	1994	1995
Constant	β_0	0.0339 (2.5482)*	0.0126 (0.6574)	0.0184 (1.8600)
DR2	β_1	-0.0363 (-2.3846)*	-0.0351 (-1.3194)	-0.0053 (-0.4247)
RA	β_2	-0.0193 (-1.4658)	-0.0185 (-1.0053)	-0.0159 (-1.6986)
PE	β_3	0.0004 (2.7752)*	0.0008 (3.3900)*	-0.0003 (-1.8587)
LQ	β_4	-0.0244 (-3.6509)*	-0.0245 (-2.8107)*	-0.0067 (-1.2994)
TA	β_5	0.0000 (0.3998)	-0.0000 (-0.2720)	-0.0000 (-0.6936)
OL	β_6	-0.0032 (-0.0875)	-0.0450 (-0.8475)	-0.0554 (-2.2181)*
SV	β_7	0.0443 (2.1799)*	0.0719 (1.7749)	0.0285 (1.4809)
No. of companies		351	351	351

Notes: T-statistics in parentheses. * indicates significance at the 5 per cent level. LR2 = Capitalised value of finance leases and hire purchase contracts divided by book value of equity; DR2 = Debt (Total loan capital plus subordinated debt minus capitalised value of finance leases and hire purchase contracts) divided by book value of equity; PE = the PE ratio, measured by dividing share price by earnings per share; LQ = Current Assets/Current Liabilities; TA = Book value of total assets (measured in £ millions); RA = Return on net fixed assets; OL = Regression slop of operating profits as a function of sales; SV = Coefficient of variation of sales. All the data were obtained from Datastream and the estimates reported in the table were obtained using the tobit heteroscedastic regression procedure in TSP (version 4.2).

2.1.2 Test of industry effects on leasing

A number of previous studies have suggested that the use of debt is significantly influenced by the industrial classification of the company.[282] Due to the similarity between finance leases and debt one might also expect leasing to be influenced by

industrial classification. Indeed, a number of studies have suggested that the industrial sector of a company may be an important determinant in the use of leasing finance. A preliminary examination of the sample, as reported in Appendix 1, reveals that companies using lease financing can be found in every industry covered by the sample. This result is similar to that found in the samples of both Ang and Peterson [1984] and Adedeji and Stapleton [1996].[283]

In order to test whether there is an 'industry effect' on the leasing decision, I added industry dummy variables to Equation (5) and estimated the new equation, below, once again using the tobit heteroscedastic regression technique:

$$LR1 = \beta_0 + \beta_1(DR1) + \beta_2(PE) + \beta_3(LQ) + \beta_4(\ln(TA)) + \beta_5(TR) + \sum_{i=6}^{n+5} \beta_i(IND_{i-5}) + \varepsilon \quad (7)$$

where:

IND_i = dummy variable for industry i;

n = the number of industries in the large industry group (n =10); and

all the other variables are as described in Equation (5) above.

In order to perform the tests, the sample was divided into two groups, a large (test) and a small (control) industry group based upon the relative size of the nineteen industries in the sample. The test group contains industries with a mean of not less than fifteen companies in each year[284] to ensure that the estimates obtained from the regression are reliable. The other industries are pooled together to form a control group and are represented by β_0 in Equation (7) above.

Following the discussion in Chapter 3 sections 6 and 7, it is hypothesised that companies employing firm-specific assets are less likely to use leasing finance,

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[282] For a review of the references see Chapter 3 section 7.

[283] Beattie et al. [2000] report three industrial groups (oil, mining, and transport) which contained no company with finance leases for the year 1994. These companies did, however, make use of operating leases. *Ibid.* Table 1, p. 441.

[284] See Appendix 1 for a breakdown of both the test and control industry groups.

implying a negative coefficient for companies operating in industries such as engineering, electronics and possibly textiles. On the other hand, industries characterised by a high proportion of non-firm-specific assets, such as retail, leisure and distribution companies, are likely to employ leasing finance and thus record positive coefficients. For industries with a more varied mix of assets, such as building, diversified industries, printing and packaging and brewing, the expected sign is uncertain. The results of the regression are presented in Table 5.3 below.

The important point to note from the table is that, in comparison with the results of Table 5.1, there is little change in either the sign or the level of significance of any of the variables. The same conclusions therefore apply here: that the variables are generally supportive of theory with the debt ratio variable (DR1) once more having a generally non-significant but negative coefficient and contrasts with the findings of Adedeji and Stapleton [1996]. The result of the inclusion of the industry dummy variables in Equation (7) is disappointing as all the dummy variables with the exception of the brewery variable are generally insignificant.[285]

From the evidence thus far presented, industry classification appears not to be a significant factor behind the decision to use finance leases in the UK. As was discussed in Chapter 3 section 7, Beattie et al. [2000] reported similar findings when using a partial lease ratio incorporating only finance lease data. When operating leases were included in a comprehensive lease measure however, they reported a significantly positive coefficient for the retailing group dummy variable.[286]

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[285] Although the brewery dummy variable records a consistently significant negative relationship with the lease ratio in Table 5.3, further tests including the industry dummy variables reveal that the brewery industrial group has no such relationship with either the lease ratio (see Appendix 7) or the debt ratio (see Appendix 8). Furthermore, in both appendices other, different industry groups record significant coefficients (engineering and electronics industries respectively), leading us to conclude that the industry dummy variables do not provide robust results. The results recorded here are similar to those of Adedeji and Stapleton [1996].

[286] See *op cit.* Table 6, p. 454, and related discussion pp. 456-7.

Table 5.3 Tobit regression estimates

Model:

$$LR1 = \beta_0 + \beta_1(DR1) + \beta_2(PE) + \beta_3(LQ) + \beta_4(\ln(TA)) + \beta_5(TR) + \sum_{I=6}^{n+5} \beta_I(IND_{I-5}) + \varepsilon$$

Variables	Coefficients	1993	1994	1995
Constant	β_0	0.1282	0.1816	0.1229
		(4.2600)*	(5.3519)*	(4.7127)*
DR1	β_1	-0.0554	-0.0462	0.0037
		(-2.7886)*	(1.9536)	(0.2124)
PE	β_2	0.0001	0.0006	0.0001
		(1.6035)	(5.1096)*	(1.5312)
LQ	β_3	-0.0206	-0.0156	-0.0088
		(-4.6962)*	(-4.1586)*	(-2.5847)*
ln(TA)	β_4	-0.0049	-0.0064	-0.0056
		(-3.0278)*	(-3.4646)*	(-3.9597)*
TR	β_5	0.0304	-0.0872	-0.0040
		(2.5866)*	(-4.6940)*	(-0.3130)
Diversified Industries	β_6	-0.0003	0.0060	0.01631
		(-0.0200)	(0.3998)	(1.4940)
Brewery	β_7	-0.0400	-0.0558	-0.0322
		(-2.6670)*	(-3.0416)*	(-2.4947)*
Building	β_8	-0.0148	-0.0203	-0.0058
		(-1.5921)	(-1.9300)	(-0.7441)
Distribution	β_9	-0.0111	-0.0239	-0.0100
		(-0.9153)	(-1.6970)	(-0.9736)
Electronics	β_{10}	-0.0121	-0.0219	0.0006
		(-1.1353)	(-1.7596)	(0.0620)
Engineering	β_{11}	-0.0056	-0.0075	0.0011
		(-0.7154)	(-0.8241)	(0.1612)
Leisure	β_{12}	-0.0089	-0.0332	-0.0009
		(-0.6851)	(-2.1695)*	(-0.0811)
Printing & Packaging	β_{13}	0.0223	0.0082	0.0280
		(1.9341)	(0.6050)	(2.8354)*
Retail	β_{14}	-0.0073	-0.0223	-0.0015
		(-0.7219)	(-1.9056)	(-0.1812)
Textiles	β_{15}	-0.0102	-0.0144	-0.0067
		(-0.8950)	(-1.0755)	(-0.6743)
No. of companies		351	351	351

Notes: T-statistics in parentheses. * indicates significance at the 5 per cent level. LR1 = Capitalised value of finance leases and hire purchase contracts divided by total assets; DR1 = Debt (Total loan capital plus subordinated debt minus capitalised value of finance leases and hire purchase contracts) divided by total assets; PE = the PE ratio, measured by dividing share price by earnings per share; LQ = Current Assets/Current Liabilities; TA = Book value of total assets (measured in £ millions); TR = Total tax charge for the current year/Profit before tax for the current year. All the data were obtained

from Datastream and the estimates reported in the table were obtained using the tobit heteroscedastic regression procedure in TSP (version 4.2).

2.1.3 Determinants of the lease ratio

This section examines further the negative relationship between the lease and debt ratios reported in Table 5.1 toTable 5.3 above, by establishing whether the results are influenced by a failure to control for the differences between the debt capacities or the degree of use of debt capacities by leasing and non-leasing firms. The initial test performed was a cross-tabulation of the values of the debt ratio (DR1), expected growth (PE), liquidity (LQ), size (ln(TA)) and tax rate (TR) against the values of the lease ratio (LR1). The results are presented in Table 5.4 below.

From the table one can see that, unlike, non-leasing companies record higher average debt ratios (DR1) than their leasing counterparts. These values are higher than the average values for the entire sample in each year. Adedeji and Stapleton showed recorded the opposite and, based on this result refined the Ang and Peterson methodology. The result recorded in Table 5.4 is supported by the table in Appendix 3, documented in footnote 242, where non-leasing companies exhibit generally higher debt ratios (for the three measures of debt ratio used) than leasing companies, a result that was not consistent with the findings of Ang and Peterson [1984].[287] Although not consistent with either work, the results are what one would expect from the hypothesised substitutional relationship between the use of finance leases and debt.

The results for the expected growth variable (PE) show that non-leasing companies generally exhibit lower price-earnings ratios than leasing companies and lower than the sample average across all three years. This result is consistent with the positive relationship between the growth variable and the lease ratio (LR1) reported above in Table 5.1 toTable 5.3. It is not however consistent with the findings of Adedeji and Stapleton, who largely record the opposite. The mean values of both the

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[287] *Op cit.*, pp. 1057-1058.

liquidity (LQ) and size (TA) variables are higher for non-leasing than leasing companies in general and higher than the sample average. These results are as hypothesised, however only the liquidity variable records a similar result to that of Adedeji and Stapleton. The mean values of the tax variable (TR) are generally similar across all groups of leasing and non-leasing companies, with a few extreme values for leasing groups containing a relatively small number of companies.

The results from Table 5.4 are to be expected if the negative relationships recorded between both the debt ratio and size variables and the lease ratio in Table 5.1 to Table 5.3 are caused by the distribution of the values of these variables between leasing and non-leasing companies. Appendices 5 and 6 record the use of Spearman's correlation procedure to investigate the effect of excluding non-leasing companies from the sample on the relationships between the lease ratio and the other variables in Equation (5). Appendix 5 summarises the correlation estimates for the full sample, with the estimates for the sample of leasing companies only appearing in Appendix 6. They report similar results and are generally consistent with the results of the earlier regression tests: they report a generally significant negative correlation between the debt ratio (DR1) and the lease ratio (LR1) for both the full sample and the sample of leasing companies.[288]

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[288] The results also show a significant negative relationship between the lease ratio and almost all the other variables as predicted. The exception is the expected growth variable (PE) as reported in the regression results. Of interest for later is the significant positive correlation recorded between the debt ratio (DR1) and the size variable (ln(TA)) which is consistent with the findings of Table 5.6 and Table 5.9 below.

Table 5.4 Analysis of the use of finance leases

	Values of LR1	No. of companies	Mean value of DR1	Mean value of PE	Mean value of LQ	Mean value of TA	Mean value of TR
1993	0	100	0.1893	31.81	1.7060	679018	0.3571
	> 0 - 0.01	123	0.1603	32.08	1.4808	625615	0.3496
	0.01- 0.05	85	0.1552	34.05	1.4606	296416	0.3333
	0.05 - 0.10	27	0.1255	47.08	1.2539	723078	0.4644
	0.10 - 0.40	16	0.0812	59.10	1.0127	81494	0.5218
	Total	351	0.1610	34.86	1.5013	543803	0.3645
1994	0	104	0.1824	25.61	1.6578	681674	0.3465
	> 0 - 0.01	115	0.1681	21.99	1.6038	675651	0.3368
	0.01- 0.05	90	0.1484	34.82	1.4014	264905	0.3722
	0.05 - 0.10	32	0.1175	32.58	1.1612	661576	0.3917
	0.10 - 0.40	10	0.0601	57.89	1.3731	31488	0.1319
	Total	351	0.1596	28.34	1.5210	552481	0.3479
1995	0	100	0.1679	21.44	1.5851	751051	0.3307
	> 0 - 0.01	123	0.1665	20.31	1.5365	636399	0.3367
	0.01- 0.05	94	0.15040	22.44	1.4093	359001	0.3203
	0.05 - 0.10	23	0.14584	29.97	1.1783	807799	0.3235
	0.10 - 0.40	11	0.10433	45.79	1.3568	42885	0.3333
	Total	351	0.15930	22.63	1.4871	587406	0.3296

Notes: LR1 = Capitalised value of finance leases and hire purchase contracts divided by total assets; DR1 = Debt (Total loan capital plus subordinated debt minus capitalised value of finance leases and hire purchase contracts) divided by total assets; PE = the PE ratio, measured by dividing share price by earnings per share; LQ = Current Assets/Current Liabilities; TA = Book value of total assets (measured in £ millions); TR = Total tax charge for the current year/Profit before tax for the current year. All the data were obtained from Datastream and the estimates reported in the table were obtained using the cross-tabulation and frequency procedures in SPSS.

As a result of the above evidence, I split the full sample into leasing and non-leasing groups and used only the leasing sample in the remaining analysis. The ordinary least squares (OLS) regression technique was used to estimate Equation (5) since the leasing company sub-sample is no longer a censored sample. The results obtained from the regression are contained in Table 5.5 below.

The explanatory power of the equation is rather low, with reported R^2 values of between 8 and 22 per cent, however, all variables are of the predicted sign and most are significant. The coefficient of the debt ratio variable (DR1) is thus consistently negative across all three years although it is generally not significant (it is significant at the 5.1 per cent level only in 1993). It therefore does not offer the same level of support for our hypothesis of a substitutional relationship between finance leases and debt as reported by Adedeji and Stapleton, despite the relatively more favourable results reported in Table 5.1, using the tobit estimation procedure.

The results provide support for the prediction that size (ln(TA)) and liquidity (LQ) have a negative influence on the decision to use finance leases. The significant positive coefficient of the expected growth variable (PE) provides support for the view of a positive relationship between the variable and leasing.[289] The results for the tax variable (TR) are rather mixed although, overall, they provide support for the hypothesis of a negative tax effect on leasing. A comparison between Table 5.1 and Table 5.5 shows that most variables are of a similar sign and degree of significance. The tobit regression estimates of Equation (5) provide slightly more support for our hypotheses than the ordinary least squares estimates, with the main difference between the tables being the generally more significant negative coefficients of the debt (DR1) and tax (TR) variables in the former table.

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[289] Adedeji and Stapleton [1996] record the opposite relationship, confirming the difficulty in interpreting the relationship between a company's P/E ratio and its use of finance leases.

Table 5.5 OLS Regression estimates (leasing company sub-sample)

Model: $LR1 = \beta_0 + \beta_1(DR1) + \beta_2(PE) + \beta_3(LQ) + \beta_4(\ln(TA)) + \beta_5(TR) + \varepsilon$

Variables	Coefficients	1993	1994	1995
Constant	β_0	0.07491	0.1158	0.0792
		(3.91)*	(5.43)*	(4.86)*
DR1	β_1	-0.0406)	-0.0252	-0.0028
		(-1.96)	(-0.97)	(-0.15)
PE	β_2	0.0002	0.0006	0.0002
		(1.85)	(5.40)*	(2.15)*
LQ	β_3	-0.0166	-0.0113	-0.0061
		(-3.60)*	(-2.92)*	(-1.82)
ln(TA)	β_4	-0.0033	-0.0047	-0.0042
		(-2.01)*	(-2.48)*	(-2.95)*
TR	β_5	0.0348	-0.0937	-0.0078
		(3.05)*	(-5.05)*	(-0.63)
Adjusted R^2		16.2%	21.6%	8.2%
No. of companies		251	247	251

Notes: T-statistics in parentheses. * indicates significance at the 5 per cent level. LR1 = Capitalised value of finance leases and hire purchase contracts divided by total assets; DR1 = Debt (Total loan capital plus subordinated debt minus capitalised value of finance leases and hire purchase contracts) divided by total assets; PE = the PE ratio, measured by dividing share price by earnings per share; LQ = Current Assets/Current Liabilities; TA = Book value of total assets (measured in £ millions); TR = Total tax charge for the current year/Profit before tax for the current year. All the data were obtained from Datastream and the estimates reported in the table were obtained using the OLS regression procedure in TSP (version 4.2).

The OLS regression technique was also used to estimate Equation (7) above in order to further investigate industry effects on the decision to lease. The results of the regression, to be found in Appendix 7, strongly support the above conclusions with little difference between the signs, magnitude and significance of the coefficients of the variables, although the coefficient of the debt variable (DR1) is significantly negative in one of the years. In addition, the results indicate that industrial classification has little or no effect upon the leasing decision, a similar conclusion as reached by Adedeji and Stapleton and supportive of the earlier test on industry influence.[290]

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[290] See footnote 285 regarding the earlier comments on the industry dummy variables pertaining to Table 5.3.

In order to test the structural stability of the regression models presented in Table 5.5, I undertook the Chow test. This tests whether there is structural change in the leasing functions expressed by Equation (5) over the period 1993-95. I therefore undertook two separate tests, comparing the OLS regressions of 1993 with 1994, and 1994 with 1995. The Chow test assumes that the error terms in the two equations are normally and independently distributed.[291] Given the assumptions of the Chow test it can be shown that:

$$F = \frac{S_5 / k}{S_4 / (n_1 + n_2 - 2k)}$$

follows the F distribution with (k, $n_1 + n_2 - 2k$) degrees of freedom.

where : $S_4 = S_2 + S_3$;

$S_5 = S_1 - S_4$;

S_1 = residual sum of squares (RSS) of the combined regression (period 1 and 2);

S_2 and S_3 = RSS for regression periods 1 and 2, respectively;

n_1 and n_2 = number of observations in sample 1 and 2, respectively; and

k = number of parameters estimated.

The results of the test show that there is parameter instability over the three-year period and that one should reject the null hypothesis that the leasing functions for 1993 and 1994, 1994 and 1995 are the same.[292] These results should be borne in mind when interpreting the OLS regression results presented in this study.

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[291] For a more detailed overview of the Chow test and how it is calculated, see Gujarati [1995], pp.262-5.

[292] The F-statistics are as follows:

1993 – 94: $F_{6,486} = \frac{0.0838/6}{1.0043/486} = 6.7587$ > critical value (2.10). Therefore reject null hypothesis.

2.1.4 Debt/Lease Displacement Ratio

The results reported in Table 5.5 above for the restricted sample of leasing firms provided some support for the hypothesis that leasing and debt are substitutes and diverge from the less ambiguous findings of Adedeji and Stapleton [1996]. However, in order to investigate further the relationship between the use of leasing and debt finance, I undertook an additional test, to estimate the debt-to-lease displacement ratio. This measures the amount of debt finance which decreases with each additional £1 of lease finance used and is the value of the following partial derivative:

$$\frac{\delta \text{Debt}}{\delta \text{Finance Leases}} = \text{Debt} - \text{to} - \text{Lease displacement ratio}$$

A direct estimate of the value of the debt-to-lease displacement ratio is made by reversing the debt and lease ratios in Equation (5) above, with the debt ratio now acting as the dependent variable in the following equation:

$$DR1 = \gamma_0 + \gamma_1(LR1) + \gamma_2(PE) + \gamma_3(LQ) + \gamma_4(\ln(TA)) + \gamma_5(TR) + \varepsilon \qquad (8)$$

The OLS regression technique is once more used to estimate the equation, using the restricted sample with the results contained in Table 5.6 below. The estimate of γ_1 is the measure of the empirical value of the debt-to-lease displacement ratio. The estimated values of the parameter are approximately -38 per cent in 1993, -15.4 per cent in 1994 and -3.3 per cent in 1995. On average, therefore, £1 of finance leases displaced about 19p of debt during 1993-95. This is lower than the figures reported by Adedeji and Stapleton, who found that £1 of finance lease displaced approximately 55p of debt for the period 1990-92.[293] As an extra test, a t-test was

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1994 - 95: $F_{6,486} = \frac{0.0402/6}{0.8824/486} = 3.69$ > critical value (2.10). Therefore reject null hypothesis.

[293] The addition of the industry dummy variables to Equation (8) above and reported in Appendix 8 did not significantly change the coefficients of any of the variables, although here the debt-to-lease

performed to determine whether the estimates of γ_1, reported in Table 5.6, are significantly different from -1. The t values obtained were 3.1922 (1993), 5.324 (1994) and 4.401 (1995). All three values are significantly greater than minus one. The results therefore show that the amount of debt displaced by an additional £1 of finance lease is significantly less than £1 during the period 1993-95.

Other points worthy of mention from Table 5.6 are that the results of the test of the debt-to-lease displacement ratio are a result of the lack of significance in the coefficient of the lease ratio variable (LR1), unlike the findings of Adedeji and Stapleton [1996]. Furthermore, although the signs of most of the other variables are consistent with the findings of Table 5.5, they are generally not significant as reported in Table 5.6, indicating that although the decision to use debt and lease finance may be influenced by similar factors they are not influenced to the same extent. The exception is the size variable (ln(TA)), which has a significantly positive coefficient and provides evidence of the positive influence of size on the use of debt. It also supports Marsh's [1982] study, which reported that size is a positive determinant of debt in the UK.

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displacement ratio rose to an average of -22.5 per cent. Once again the industry dummy variables were largely insignificant.

Table 5.6 OLS Regression estimates (finance lease companies only)

Model: $DR1 = \gamma_0 + \gamma_1(LR1) + \gamma_2(PE) + \gamma_3(LQ) + \gamma_4(\ln(TA)) + \gamma_5(TR) + \varepsilon$

Variables	Coefficients	1993	1994	1995
Constant	γ_0	-0.1325	-0.0836	-0.1733
		(-2.21)*	(-1.50)	(-3.01)*
LR1	γ_1	-0.3804	-0.1540	-0.0331
		(-1.96)	(-0.97)	(-0.15)
PE	γ_2	0.0004	-0.0000	0.0001
		(1.63)	(-0.06)	(0.18)
LQ	γ_3	-0.0090	-0.0148	-0.0130
		(-0.62)	(-1.52)	(-1.12)
ln(TA)	γ_4	0.0261	0.0240	0.0327
		(5.50)*	(5.38)*	(7.20)*
TR	γ_5	0.0027	-0.0147	-0.0568
		(0.07)	(-0.31)	(-1.34)
Adjusted R^2		12.1%	11.9%	18.1%
No. of companies		351	351	351

Notes: T-statistics in parentheses. * indicates significance at the 5 per cent level. DR1 = Debt (Total loan capital plus subordinated debt minus capitalised value of finance leases and hire purchase contracts) divided by total assets; LR1 = Capitalised value of finance leases and hire purchase contracts divided by total assets; PE = the PE ratio, measured by dividing share price by earnings per share; LQ = Current Assets/Current Liabilities; TA = Book value of total assets (measured in £ millions); TR = Total tax charge for the current year/Profit before tax for the current year. All the data were obtained from Datastream and the estimates reported in the table were obtained using the OLS regression procedure in TSP (version 4.2).

2.1.5 A further investigation of debt-lease substitutability using the operating lease sample

Regression equations (5a) and (8) were also estimated using the smaller operating lease sample in order to undertake a further, more comprehensive test of the substitutability of leasing and debt finance in the UK during this period. Equation (5a) was estimated first, with both the operating lease variable (OLR) and total lease variable (TOLR) substituting for the finance lease variable (LR1), with the results presented in Table 5.7 and Table 5.8, respectively. The ordinary least squares regression method was chosen, as was the case with the leasing company sub-sample

noted above, since all companies in the operating lease sample recorded annual operating lease liabilities.

If one compares the results of Table 5.7 and Table 5.8 with those of Table 5.5, one can see that the results of the estimation of Equation (5) are similar, regardless of the lease ratio measure used. As with the results reported where the finance lease ratio is used as the dependent variable, the tables show that the signs of most of the coefficients are as hypothesised, with many of them exhibiting a significant relationship with the lease variable used. The coefficient of the debt ratio variable (DR1) is thus consistently negative across all three years for both the operating lease and total lease ratios, although not significantly so.

The results once again provide support for the hypotheses that size (ln(TA)) and liquidity (LQ) have a negative influence on the decision to use leasing. It thus appears that both finance and operating leases offer a means of financing the use of new assets for (particularly small) companies suffering from problems of liquidity. The coefficient of the variable used as a proxy for growth, (PE), does not appear to be a significant factor behind the decision to use operating leases, although this may have something to do with difficulties in the interpretation of the ratio itself, as discussed in section 2.1.1. The results for the tax variable (TR) are rather interesting as it appears that taxation is not a significant factor behind the decision to use operating leases, reporting a non-significant coefficient for all three years.[294]

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[294] The results of similar tests on annual and pooled regressions using a comprehensive lease ratio (incorporating both finance and operating leases) undertaken by Beattie et al. [2000] are broadly in line with the results recorded in Table 5.8. Where the regressions utilise industry classification, Beattie et al. report a significantly negative relationship between leasing and debt finance. See *ibid*, Tables 6 and 7, pp. 454-5.

Table 5.7 OLS Regression estimates (operating leasing sub-sample) OLR

Model: $OLR = \beta_0 + \beta_1(DR1) + \beta_2(PE) + \beta_3(LQ) + \beta_4(\ln(TA)) + \beta_5(TR) + \varepsilon$

Variables	Coefficients	1993	1994	1995
Constant	β_0	0.18551 (4.65)*	0.16864 (4.36)*	0.13595 (3.25)*
DR1	β_1	-0.02502 (-0.69)	-0.02476 (-0.68)	-0.03573 (-0.92)
PE	β_2	0.00015 (0.82)	0.000407 (1.85)*	0.000196 (0.67)
LQ	β_3	-0.02069 (-2.61)*	-0.0252 (-3.01)*	-0.0252 (-2.84)*
ln(TA)	β_4	-0.00794 (-2.55)*	-0.00714 (-2.34)*	-0.00625 (-1.97)*
TR	β_5	-0.04031 (1.59)	-0.01341 (-0.44)	-0.06785 (1.57)
Adjusted R^2		7.4%	10.0%	8.7%
No. of companies		184	187	186

Notes: T-statistics in parentheses. * indicates significance at the 5 per cent level. OLR = annual commitment under operating leases divided by total assets; DR1 = Debt (Total loan capital plus subordinated debt minus capitalised value of finance leases and hire purchase contracts) divided by total assets; PE = the PE ratio, measured by dividing share price by earnings per share; LQ = Current Assets/Current Liabilities; TA = Book value of total assets (measured in £ millions); TR = Total tax charge for the current year/Profit before tax for the current year. All the data were obtained from Datastream and the estimates reported in the table were obtained using the OLS regression procedure in Minitab (version 10).

Table 5.8 OLS Regression estimates (operating leasing sub-sample) TOLR

Model: $TOLR = \beta_0 + \beta_1(DR1) + \beta_2(PE) + \beta_3(LQ) + \beta_4(\ln(TA)) + \beta_5(TR) + \varepsilon$

Variables	Coefficients	1993	1994	1995
Constant	β_0	0.24278	0.24253	0.19275
		(5.38)*	(5.31)*	(4.13)*
DR1	β_1	-0.0333	-0.0443	-0.04252
		(-0.82)	(-1.03)	(-0.99)
PE	β_2	0.00017	0.0006	0.0002
		(0.80)	(2.39)*	(0.66)
LQ	β_3	-0.02728	-0.03337	-0.03627
		(-3.04)*	(-3.38)*	(-3.66)*
ln(TA)	β_4	-0.01119	-0.01028	-0.00964
		(-3.18)*	(-2.85)*	(-2.72)*
TR	β_5	-0.01927	-0.04266	0.11645
		(0.67)	(-1.19)	(2.41)*
Adjusted R^2		10.5%	14.8%	15.8%
No. of companies		184	187	186

Notes: T-statistics in parentheses. * indicates significance at the 5 per cent level. TOLR = OLR + LR1; DR1 = Debt (Total loan capital plus subordinated debt minus capitalised value of finance leases and hire purchase contracts) divided by total assets; PE = the PE ratio, measured by dividing share price by earnings per share; LQ = Current Assets/Current Liabilities; TA = Book value of total assets (measured in £ millions); TR = Total tax charge for the current year/Profit before tax for the current year. All the data were obtained from Datastream and the estimates reported in the table were obtained using the OLS regression procedure in Minitab (version 10).

The estimation of the debt-lease displacement ratio (Equation (8)) was also undertaken using the operating lease sample, with the OLS regression estimates being shown in Table 5.9, below. The estimated values of the parameter γ_1 (Debt-Lease displacement ratio) are approximately -11 per cent in 1993, -10 per cent in 1994 and -13 per cent in 1995. On average, therefore, £1 of operating leases displaced about 11p of debt during 1993-95, broadly similar to the 19p recorded earlier when the lease variable used was that of the finance lease ratio.[295]

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[295] Beattie et al. [2000] report a debt-to-lease displacement ratio for their comprehensive lease variable (finance plus operating leases) of approximately –23 per cent over the period 1990-94. When the lease variable included operating leases only, the ratio was similar to that for the comprehensive measure. The ratio for finance leases was erratic over the period - as it is in this study - leading the authors to conclude that the low level of finance leases remaining on the balance sheets of UK companies '... may not be the result of systematic decisions by firm management. Rather, it may reflect a random

develop a deeper understanding of the relationship between the two forms of financing.

2.2 Analysing changes in the levels of leasing and debt finance

In this section I utilised the data, covering the sample period from 1991 to 1995, as outlined in Chapter 4 section 3.2.2.2 and set out in Table 4.3 Variable Definitions and Descriptive Statistics. A preliminary assessment of the degree of substitutability between leasing and debt financing was undertaken in which the sample was partitioned according to increases or decreases in the proportion of assets financed via either leasing or non-leasing debt. The results are recorded in Table 5.10. If the two forms of financing are substitutes, one would expect that companies that increase their use of leasing would decrease their use of non-leasing debt, and vice versa. We can see from the table that this is the case: a chi-square test indicates that the distribution across the cells is significantly different from that of a uniform distribution as would be expected if leasing and non-leasing debt had no degree of substitutability. This result is similar to that reported using US data by Marston and Harris [1988]. The number of companies along the diagonal, at over 58 per cent,[296] is greater than the number on the off-diagonal, although less significantly so than was the case for Marston and Harris. Table 5.10 therefore supports the hypothesis that leasing and non-leasing debt are substitutes, and is consistent with our examination of the leasing puzzle discussed in the previous section.

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operating lease formats.' *Ibid.* p. 462.
[296] Representing 204 companies out of a total of 351.

One further point worthy of mention from Table 5.9 is the result for the estimated relationship between debt finance and the size variable (ln(TA)). There is a significantly positive relationship between the two variables throughout the period 1993-95, providing further evidence of the positive influence of size on the use of debt.

Table 5.9 OLS Regression estimates (operating lease sub-sample)

Model: $DR1 = \gamma_0 + \gamma_1(OLR) + \gamma_2(PE) + \gamma_3(LQ) + \gamma_4(\ln(TA)) + \gamma_5(TR) + \varepsilon$

Variables	Coefficients	1993	1994	1995
Constant	γ_0	-0.1929 (-2.23)*	-0.1205 (-1.46)	-0.1908 (-2.34)*
OLR	γ_1	-0.1075 (-0.69)	-0.1025 (-0.68)	-0.1324 (0.356)
PE	γ_2	0.0009 (2.36)*	0.0004 (0.92)	-0.0005 (-0.85)
LQ	γ_3	-0.0071 (-0.42)	-0.0192 (-1.11)	0.0050 (0.29)
ln(TA)	γ_4	0.0305 (4.95)*	0.0265 (4.43)*	0.0316 (5.52)*
TR	γ_5	-0.0103 (-0.19)	0.0131 (0.21)	0.0019 (0.02)
Adjusted R^2		11.9%	8.7%	15.4%
No. of companies		184	187	186

Notes: T-statistics in parentheses. * indicates significance at the 5 per cent level. DR1 = Debt (Total loan capital plus subordinated debt minus capitalised value of finance leases and hire purchase contracts) divided by total assets; OLR = annual commitment under operating leases divided by total assets; PE = the PE ratio, measured by dividing share price by earnings per share; LQ = Current Assets/Current Liabilities; TA = Book value of total assets (measured in £ millions); TR = Total tax charge for the current year/Profit before tax for the current year. All the data were obtained from Datastream and the estimates reported in the table were obtained using the OLS regression procedure in Minitab (version 10).

The following section investigates further the relationship between leasing and debt finance. Instead of focusing on absolute levels of leasing and debt finance, as in the above study, the focus is on changes in the levels of finance, in order to

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"residual" resulting from managers' inability to restructure some old contracts from finance to

Table 5.10 Changes in the Proportion of Financing Done by Leasing and Non-Leasing Debt

Proportion of Assets Financed by Non-leasing Debt ($n = NLD/A$)	Proportion of Assets Financed by Leasing ($\ell = L/A$)		Total
	Decrease	Increase	
Increase	117	71	188
Decrease	76	87	163
Total	193	158	351

Notes: L = Capitalised value of finance leases; NLD = Total non-leasing debt = all non-leasing dent less minority interests and long term provisions; E = Shareholders' equity; A = Total assets = $L + NLD + E$. Increases and decreases are determined by comparing the average annual ratio of the period 1991-95 to the period 1988-90. The χ^2 test was performed using MINITAB. $\chi^2 = 8.593$ p-value = 0.003

The next step was to examine the changes in debt and leasing finance over the sample period. To do this, Equation (6) was estimated using the ordinary least squares procedure, the results being reported in Table 5.11, below. Following the discussion in Chapter 4 section 3.2.2.2, if leases and debt are substitutes one would expect β to be positive, which is indeed what we find. The value of the coefficient of substitutability, β, is significantly positive at 2.69, which implies that a one unit increase in the amount of lease finance undertaken leads to a 2.69 unit decrease in non-leasing debt.[297]

A further t-test was performed, to examine whether the value of the coefficient was significantly above unity, and showed a t-statistic of 3.71, indicating that leases displace debt finance at a rate significantly greater than one-to-one. This result is at variance with previous tests of the substitution hypothesis[298] and also with the results of Marston and Harris [1988], who showed that the rate of substitution, although positive, was at a rate significantly less than one-to-one.[299] The divergence between the results reported here and those reported in section 2.1.4 above is of

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[297] Furthermore, although the value of the intercept is negative, implying a decrease in non-leasing debt independent of changes in leasing, it is not significant.
[298] From the analysis of the debt-to-lease displacement ratio using only data for the period 1993-5 as detailed in section 2.1.4, it was estimated that £1 of leasing finance displaced only 19p of debt finance.
[299] Marston and Harris' coefficient of substitutability is 0.629. *Ibid.* p. 158.

interest as it suggests that the debt-lease displacement ratio might not simply be sample specific but may vary over time, since the two samples differ only in the addition of two years' data. It also supports Beattie et al.'s observation, reported above, of the erratic nature of companies' use of finance leases in this period.

Table 5.11 Results of Regression Analysis for Shifts in Leasing and Non-Leasing Debt Financing

Model: $(\Delta NLD_j - n_j \Delta A_j) = \alpha + \beta(\ell_j \Delta A_j - \Delta L_j) + \varepsilon_j$

Intercept, α (t value)	Coefficient of Substitutability, β (t value[a])	t value for Hypothesis β = 1.0[b]	R^2	F Value for Model
-4620 (-0.62)	2.6902 (5.91*)	3.7131*	0.088	34.93*

Notes: *L* = Capitalised value of finance leases; *NLD* = Total non-leasing debt = all non-leasing dent less minority interests and long term provisions; *E* = Shareholders' equity; *A* = Total assets = *L* + *NLD* + *E*. a: t value for hypothesis that coefficient equals zero. b: since β may be either less or greater than one, a two-tailed test is appropriate. * denotes F values or t values (two-tailed test) significant at the 95 per cent confidence level. The F value tests the overall significance of the sample regression. Number of companies = 351. All the data for the five-year period 1991-95 were obtained from Datastream and the estimates reported in the table were obtained using the OLS regression procedure in TSP (version 4.2).

Ang and Petersons' [1984] controversial result, that leasing companies had higher debt-equity ratios than non-leasing companies, was interpreted as conflicting with the theory of the substitutability of leasing and non-leasing debt. In Table 5.12 I divided the sample into two sub-samples based on the degree of corporate financial leverage, as measured by the proportion, *c*, of assets financed by leasing plus non-leasing debt. The partitioning uses the gearing ratios of 1988-1990. The table shows that high-debt companies had higher leasing and non-leasing debt ratios as a proportion of total assets than their low-debt counterparts and is consistent with the findings of Marston and Harris [1988].[300] These results are also consistent with Ang and Peterson's findings that the use of leasing tends to be associated with the use of

[300] The lease ratio for high-debt companies is 2.16 per cent compared to 1.8 per cent for low-debt companies. However, a t-test performed to test whether there was a significant difference in the mean lease ratios of the two groups was not significant at the five per cent level. The figures for the ratio of

non-leasing debt. However, unlike Marston and Harris, the low-debt companies had significantly higher levels of leasing as a proportion of total debt than had high-debt companies (28 per cent compared to 11.5 per cent).[301]

If the results of Table 5.11 and Table 5.12 are taken together, there is support for the observation by Smith and Wakeman [1985] that certain firm characteristics simultaneously provide for the use of both leasing and non-leasing debt (as recorded in Table 5.12). At the same time, however, Table 5.11 shows that the estimated coefficient of substitution (β) between leasing and non-leasing debt is significantly positive, demonstrating that, at the margin, use of lease financing substitutes for other forms of debt. Therefore, it seems that although high-debt companies on average use more leasing finance, they do so at the cost of reducing their capacity for using non-leasing debt.

Table 5.12 Descriptive Statistics for High-Debt and Low-Debt Firms

Variable[b]	High Debt[a] N=176	Low Debt[a] N=175
Total Assets (£millions)	£778.414	£286.678
Leverage ratio (1988-1990)	0.2614	0.0691
Leasing to total debt: L/(L+NLD)	0.1153	0.2836
Leasing to assets: L/A	0.0216	0.0179
Non-leasing debt to assets: NLD/A	0.2209	0.1001

Notes: a. The sample companies were ranked by the average value of the gearing ratio *c* (leasing plus non-leasing debt divided by total assets) over the period 1988-1990. The high-debt group contains the 176 companies with the highest gearing ratios; the low-debt group makes up the remainder of the sample.
b. Average for 1991-1995 unless otherwise stated. Averages are defined as the simple average of the variable in the beginning (1991) and ending (1995) periods.

non-leasing debt to total assets are 22 per cent and 10 per cent respectively, the difference in the means being significant at the five per cent level.
[301] A t-test was performed to investigate whether there was a significant difference in the mean values. The result showed that the difference was significant at the five per cent level.

The next section develops the analysis of the determinants of the use of leasing finance further by investigating the impact of certain company and asset characteristics on the corporate use of finance leases.

3. Company and asset characteristics as determinants of the use of lease finance

3.1 Initial examination of industry effects

The hypotheses set out in Chapter 4 section 2.2 were developed to investigate the relationship between the use of leasing finance in the UK and both the nature of the company and the type of assets employed. The initial test was of Hypotheses 3 and 4: that companies employing firm-specific assets are less likely to be financed by leases and that manufacturing companies make greater use of such assets.

One measure of asset-specificity is the ratio of research and development (R&D) to sales or total assets. R&D expenditure is undertaken by companies to create new technologies or products. By their nature such assets created are likely to be highly firm-specific and will have less recovery value in case of default by the company and are therefore less suitable for lease financing. The sample was split into six broad industry groups as detailed in Appendix 4 and the ratios R&D to sales and R&D to the book value of total assets were calculated for each group, with the results shown in Table 5.13 Research and Development Expenditure relative to Sales and Assets by Industry Groups, 1993-1995.. Since the focus is on research and development expenditure as an indicator of asset specificity it is anticipated that the higher the R&D expenditure, the more likely that assets thus created will be specific to the company.

Table 5.13 Research and Development Expenditure relative to Sales and Assets by Industry Groups, 1993-1995.

Industry Group	No of Firms	Companies Reporting R&D Expense	Mean RD1*	Standard Deviation RD1	Mean RD2*	Standard Deviation RD2
Manufacturing	197	112	0.0182	0.0237	0.0390	0.0466
Mining & Extractive Industries	18	11	0.0099	0.0071	0.0165	0.0180
Construction	41	7	0.0065	0.0061	0.0133	0.0087
Wholesale Trade	19	2	0.0005	0.0003	0.0012	0.0005
Retail Trade	31	2	0.0011	0.0009	0.0038	0.0035
Services	45	14	0.0220	0.0190	0.0596	0.0374

* RD1 = ratio of research and development to sales, RD2 = ratio of research and development to the book value of total assets.

The results show that firstly, the proportion of companies reporting expenditure on research and development is greatest for the mining and manufacturing industry groups at 61 and 57 per cent respectively, with no other industry group recording a proportion of greater than 50 per cent. The result for the manufacturing group is similar to that found by Krishnan and Moyer [1994] (at 67 per cent), although the proportion of mining companies reporting R&D expense is significantly lower in their study (at 21 per cent). Turning to the ratios, one can see that for both measures of R&D expense only the service and manufacturing industry groups record an average level of R&D expense to sales in excess of one per cent and of R&D to total assets greater than two per cent.[302]

Comparisons between the proportion of companies within each industry group undertaking expenditure on research and development and the average amounts spent on R&D by industry group show the manufacturing group recording the second highest percentage in both categories. The results are therefore broadly supportive of the hypothesis of asset-specificity differing across industry groups. Furthermore, the results are not significantly different when one looks instead at individual years (contained in Appendix 9), except to observe that service sector

companies increased their spending on R&D on both definitions over the three years. In accordance with these results, the same industry classification groups are used as a proxy for leasing potential due to the presence of firm-specific assets.

3.2 Analysis of Industry Effects

The sample was split into two sub-samples of companies that recorded finance leases on the balance sheet and those that did not. Each sub-sample was then divided into the same six industry groups as outlined in the previous section and the frequency distributions across the different groups are tabulated in Table 5.14 below. It shows that every industry group contains a majority of leasing over non-leasing companies. This result is in contrast to the findings of Krishnan and Moyer [1994], who found the opposite to be generally the case. Furthermore, the figures of the sample as a whole record 270 companies using finance leases during the three-year period 1993-95 and 81 companies that did not.[303]

Table 5.14 Distribution of Leasing versus Non-Leasing Firms by Industry Group, 1993-1995

	Leasing		Non-Leasing		Total
Industry Group	Number	Percent	Number	Percent	Number
Manufacturing	156	79.19	41	20.81	197
Mining & Extractive Industries	11	61.11	7	38.89	18
Construction	30	73.17	11	26.83	41
Wholesale Trade	14	73.68	5	26.32	19
Retail Trade	22	70.97	9	29.03	31
Services	37	82.22	8	17.78	45
Total	270	76.92	81	23.08	351

$\chi^2 = 4.873$ p-value = 0.432

A casual glance at the table shows that the percentage of companies reporting finance leases is largely similar across the different broad industry groups. This is confirmed by a chi-square test of the variation across the industry groups, reported in

[302] The results are similar to the findings of Krishnan and Moyer [1994].

Table 5.14 which indicates that we cannot reject the null hypothesis of no significant difference across the groups of the dominance of leasing companies over non-leasing companies. This can be contrasted with the study of Krishnan and Moyer [1994], who report significant differences across industry groups of the use of capital leases.

The table also shows that the manufacturing industry group records a higher proportion of companies that use lease financing than is the case for the whole sample and, at 79 per cent, it contains a far higher proportion of leasing companies than is the case for Krishnan and Moyer (11 per cent). This result is unexpected given our hypothesis that companies exhibiting a high proportion of organisation-specific assets are less likely to use finance leases.[304,305]

Table 5.15, below, presents the lease ratio (LR) for each industrial group and for the different sub-samples of leasing and non-leasing companies for the individual years 1993-95 and for the whole sample period. The results record the low incidence of leasing across the groups with only the mining and extractive industry group reporting lease ratios in excess of five percent (in 1993 and 1994), with most groups reporting ratios of between approximately one and three percent. These ratios are much lower than those reported by similar industry groups in the Krishnan and Moyer [1994] study which had an average lease ratio of five percent, and ranged from three to twelve percent, compared to an average of 2.5 per cent for 1993-95 and a range of between 1.5 per cent and 4.4 per cent in my sample. This suggests that whilst US firms are less likely to lease than their UK counterparts, firms that do use leases finance a larger proportion of their assets through long term leases than UK firms and confirms the findings of Chapter 4 section 3.2.2.2 in relation to the Marston and Harris [1988] study.

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[303] The figures for Krishnan and Moyer are 98 and 410, respectively. *Ibid.* Table 2, p. 37.
[304] This high level of lease finance being used by manufacturing companies is supported by the Equipment Leasing Association's 1991 Annual Report, which reported that approximately one-third of leasing in 1990 was by manufacturing companies (excluding the financial sector and central and local government). See Soper et al. [1993], Table 3.4, p. 12.
[305] Two other industry groups which record results very different to those of Krishnan and Moyer are the service and construction industrial groups (for the latter group, Krishnan and Moyer report no company using capital leases).

Turning to the results of the individual industrial groups, it is clear that the average lease ratio for the manufacturing sector in the period 1993-95 is close to the average for the sample as a whole and much higher in relation to the sample average than was the case in Krishnan and Moyers' sample. Furthermore, as most groups report similar ratios it cannot be argued that manufacturing companies are less inclined to obtain lease financing as Krishnan and Moyer do[306]. Taking Table 5.14 and Table 5.15 together one can see that, unlike Krishnan and Moyers' sample, which found that industry groups recording the highest percentage of leasing companies reported the highest lease ratios, here no such conclusion can be drawn: only the service industry group records above average proportion of Taking Table 5.14) and use of leasing (Table 5.15)[307].

Table 5.15 Lease Ratios by Industry Groups, 1993-1995

	1993		1994		1995		1993-95	
Industry Group	No of cos	Lease ratio*	No of cos	Lease ratio*	No of cos	Lease ratio*	No of cos	Lease ratio*
Manufacturing	149	0.0256	146	0.0295	145	0.0267	156	0.0256
Mining & Extractive Industries	10	0.0557	10	0.0687	10	0.0215	11	0.0442
Construction	27	0.0167	27	0.0166	27	0.0183	30	0.0155
Wholesale Trade	13	0.0204	13	0.0189	14	0.0154	14	0.0173
Retail Trade	21	0.0246	20	0.0176	21	0.0230	22	0.0205
Services	31	0.0453	31	0.0374	34	0.0278	37	0.0316
Total	251	0.0314	247	0.0315	251	0.0221	270	0.0258

* Lease ratio = Capitalised value of finance leases and hire purchase contracts divided by total assets

[306] The erratic results of the mining and extractive industry group over the three years is the result of the small number of companies reporting finance leases. Thus, the decrease in the average lease ratio for the industry group from 5.57 per cent in 1993 and 6.87 per cent in 1994 to 2.15 per cent in 1995 is largely due to the decrease in the lease ratio of the Walter Hall Group, a mining company, from 40 per cent in 1993 and 55 per cent in 1994 to 9.6 per cent in 1995.
[307] Similar conclusions can be reached for the individual years, 1993-95.

3.3 Test for Normality

The previous section highlighted the difficulty in drawing firm conclusions when the sample groups are small in size together with the accompanying problem of outlying observations that have an exaggerated effect on the group. In order to illustrate this problem and to decide on the appropriate types of univariate and multivariate tests to perform on the sample, I examined the extent to which the ratios approximated the normal distribution for the sample after splitting each sample into a leasing and a non-leasing sub-sample. The correlation between each ratio and a normally distributed set was thus estimated with the results shown in Table 5.16.

Table 5.16 Test for Normality 1993-95

Ratio	Leasing Companies	Non-Leasing Companies
LR	0.773	*
ETA	0.955	0.987
RET	0.678	0.953
MB	0.928	0.940
EBTI	0.662	0.388
LDA	0.976	0.969
EVAR	0.512	0.525
ZSCORE	0.498	0.423
TAG	0.886	0.988
TR	0.869	0.818
Number	270	81
NSCORE (10%)[308]	0.994	0.989
NSCORE (5%)	0.993	0.986
NSCORE (1%)	0.990	0.981

Notes: LR = Capitalised value of finance leases and hire purchase contracts divided by total assets; ETA = ratio of earnings before interest and taxation to total assets; RET = ratio of retained earnings to total assets; MB = ratio of market value of equity to book value of equity; EBTI = ratio of earnings before interest and taxation to total interest payments; LDA = ratio of long term debt to total assets; EVAR = Coefficient of variation of earnings before interest and taxation over the previous seven years. ZSCORE = Altman's Z-score; TAG = geometric mean of the growth in total assets over the previous six years (1987-92); TR = ratio of total tax charge to pre-tax profit. The figures represent the correlation coefficient between the distribution of values of each variable and that of a normally distributed set. The data for the variables was obtained from Datastream and the test was performed using the NSCORE test procedure in Minitab (version 10).

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[308] These figures represent the cut-off point for samples of 200 observations (roughly corresponding to the leasing sub-sample) and 100 observations (non-leasing) approximating normality and are taken from Cryer [1986], Table 3.1, p. 43.

The table shows that among non-leasing companies only the measures of current profitability (ETA) - at the five per cent level - and the growth variable (TAG) exhibit distributions approximating a normal distribution. Most other ratios exhibit a high degree of non-normality. Furthermore, among leasing companies, no ratio approximates a normal distribution. These conclusions remain valid when the sample is split into individual years (see Appendix 11).[309]

3.4 Univariate Hypothesis Tests

In this section I test whether there are significant differences in the bankruptcy and growth potential variables between the leasing and non-leasing company sub-samples. From the previous section it was found that very few of the variables exhibited near-normal distributions. Therefore, following the approach adopted by Krishnan and Moyer [1994], I utilised the non-parametric Mann-Whitney test instead of performing a student t-test for differences in the means between the two variables.[310] The former test does not rely on the assumption of normality as it is based on a ranking procedure rather than on elements of the distribution of the variables, such as the mean and the variance. It examines differences in the whole distribution rather than just the mean (as in the standard t test) and is therefore a more general test. It can, however suffer from this generality as one does not know which element(s) is/are different. The results for the Mann-Whitney test appear in Table 5.17 below.

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[309] A further indication of lack of normality in the ratios is apparent when one compares Table 5.17 which shows the median value for each ratio with Appendix 13 which reports the mean value with larger differences between the two signifying a more skewed and, therefore, a worse approximation to the normal distribution, especially true for the ratios EBTI, EVAR and ZSCORE.

[310] I also performed a two-sample t-test to compare the results with the Mann-Whitney test and to test whether the breaking of the normality principle is crucial. From Appendix 13 the results of the t-test are, on the whole, consistent with those in Table 5.14, with the exception of the ratio TAG which in Appendix 13 is in the direction hypothesised and significant at the ten per cent level.

Table 5.17 Univariate Tests of Bankruptcy and Growth Potential Hypotheses 1993-95

	Median Value		Mann-Whitney	
Variable	Leasing Company	Non-Leasing Company	W	p-value
ETA	0.1387	0.1500	47032	0.2714
RET	0.0281	0.0441	45543	0.0068*
MB	1.5244	1.8714	45988	0.0279*
EBTI	4.7420	6.9000	46181	0.0473*
LDA	0.1399	0.1607	45941	0.0244*
EVAR	0.3720	0.2534	50504	0.0001*
ZSCORE	9.4400	10.710	47490	0.4853
TAG	1.1093	1.1138	47683	0.4196
TR	0.3317	0.3299	47856	0.3379

Notes: LR = Capitalised value of finance leases and hire purchase contracts divided by total assets; ETA = ratio of earnings before interest and taxation to total assets; RET = ratio of retained earnings to total assets; MB = ratio of market value of equity to book value of equity; EBTI = ratio of earnings before interest and taxation to total interest payments; LDA = ratio of long term debt to total assets; EVAR = Coefficient of variation of earnings before interest and taxation over the previous seven years. ZSCORE = Altman's Z-score; TAG = geometric mean of the growth in total assets over the previous six years (1987-92); TR = ratio of total tax charge to pre-tax profit. The level of significance is represented by the p-value. The data for the variables was obtained from Datastream and the test was performed using the Mann-Whitney univariate test procedure in Minitab (version 10). The Mann-Whitney statistic (W) is derived from the following relationship: $W = n_1n_2 + [n_1(n_1 + 1)]/2 - R_1$ where n_1 and n_2 are the number of observations in the leasing and non-leasing sub-sample, R_1 denotes the sum of the ranks for the first population.

Taking the performance measure variables first, the ratio of earnings to total assets (ETA) has a lower median value for leasing companies than for non-leasing companies, consistent with Hypothesis 1, but is not significant. The ratio of retained earnings to total assets (RET) and the market-to-book ratio (MB) both have a significantly lower median value for leasing companies and are consistent with our hypothesis. Overall, the results suggest that leasing companies do not have significantly lower current earnings,[311] but have lower relative levels of accumulated past earnings and a lower relative market valuation than non-leasing companies.

The ratio EBIT to total interest (EBTI), an indication of the ability of the firm to meet current debt obligations is significantly lower (4.7 times) for leasing firms

[311] Krishnan and Moyer [1994] recorded values opposite to that hypothesised.

than non-leasing firms (6.9 times). The variability of leasing companies' earnings (EVAR) is significantly greater than non-leasing firms, indicating the greater operating risk facing leasing companies. The results of both these variables are as expected and are consistent with the findings of Krishnan and Moyer. Furthermore, leasing companies have a significantly lower proportion of debt, measured by the ratio of long-term debt to total assets (LDA), than their non-leasing counterparts. This result is as hypothesised and is consistent with the earlier results (see in particular Appendix 3) that leasing and debt are at least partial substitutes. However, it is inconsistent with the results of Ang & Peterson [1984] and Krishnan and Moyer.

The Z-SCORE variable is a multivariate measure of bankruptcy potential. A company recording a lower score than 2.675 is predicted to be facing financial difficulties. One would therefore expect that leasing companies would record lower Z-scores than their non-leasing counterparts. This is found to be the case and, although not significantly so, it is consistent with the results of the other risk potential variables.

The tax variable (TR) is not significantly different across the two sub-samples and, following the results from Section 2.1.1, further reinforces the impression that tax-based reasons for leasing are much less important than they were in the 1960s and 70s, before the government abolished 100 per cent first-year allowances. Furthermore, as can be seen from Appendix 14 the correlation between the tax rate and the Z-score variables is 0.03, indicating a weak association between tax rates and bankruptcy potential, similar to the findings of Krishnan and Moyer.

The variable TAG measures the growth opportunities facing the company. From our hypothesis, leasing companies can be expected to record a higher level of growth than non-leasing companies as leasing is hypothesised to be a way of solving the asset substitution problem, as discussed in Chapter 3 section 8. The results of the univariate test are not however conclusive, reporting no significant difference in the median values for the two samples.

3.5 Multivariate Analysis

The multivariate analysis was undertaken in order to control for interactions among the variables. The tests that follow are based on ordinary least squares (OLS) regression models with the lease ratio (LR) as the dependent variable. As discussed in section 2.1.1, the truncated nature of the dependent variable (its value cannot be negative, with non-leasing companies reporting lease ratios of zero) could lead to biases in the OLS measures. Therefore, I additionally undertook a logistical regression model with the dependent variable being qualitative in nature. The OLS method is reported first, followed by the results of the logistical regression analysis.

Details of the OLS regression models can be found in Table 5.18. The first model regresses the dependent variable, the lease ratio (LR), against the seven ratios and five industry group dummy variables and corresponds to Krishnan and Moyer's OLS regression model. The dummy variables are set equal to one if a company is a member of that industry group and zero otherwise. The manufacturing industry group is the omitted class and is represented by α in the regression equation. The second model includes the two variables, ZSCORE and TR, left out of Krishnan and Moyer's model[312]. Two further models were developed, as models one and two but without the industry dummy variables, and are included for comparison purposes. The regression results for the first two models are presented in Table 5.19 with the results for models three and four in Appendix 15.

Table 5.18 Details of OLS regression models used:

Model 1

$$LR_i = \alpha_i + \beta_1 TAG_i + \beta_2 RET_i + \beta_3 EBTI_i + \beta_4 ETA_i + \beta_5 LDA_i + \beta_6 EVAR_i + \beta_7 MB_i + \beta_8 D_{1i} + \beta_9 D_{2i} + \beta_{10} D_{3i} + \beta_{11} D_{4i} + \beta_{12} D_{5i} + \varepsilon_i$$

[312] Krishnan and Moyer [1994] included a tax variable in one model but the results were not reported since the ratio was insignificant and had no qualitative impact on other variables. This is unsurprising,

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Model 2

$$LR_i = \alpha_i + \beta_1 TAG_i + \beta_2 RET_i + \beta_3 EBTI_i + \beta_4 ETA_i + \beta_5 LDA_i + \beta_6 EVAR_i + \beta_7 MB_i + \beta_8 ZSCORE + \beta_9 TR + \beta_{10} D_{1i} + \beta_{11} D_{2i} + \beta_{12} D_{3i} + \beta_{13} D_{4i} + \beta_{14} D_{5i} + \varepsilon_i$$

Model 3

$$LR_i = \alpha_i + \beta_1 TAG_i + \beta_2 RET_i + \beta_3 EBTI_i + \beta_4 ETA_i + \beta_5 LDA_i + \beta_6 EVAR_i + \beta_7 MB_i + \varepsilon_i$$

Model 4

$$LR_i = \alpha_i + \beta_1 TAG_i + \beta_2 RET_i + \beta_3 EBTI_i + \beta_4 ETA_i + \beta_5 LDA_i + \beta_6 EVAR_i + \beta_7 MB_i + \beta_8 ZSCORE + \beta_9 TR + \varepsilon_i$$

Notes: LR = capitalised value of finance leases and hire purchase contracts divided by total assets, TAG = geometric mean of the growth in total assets over the six years 1987-92, RET = ratio of retained earnings to total assets, EBTI = ratio of earnings before interest and taxation to total interest payments, ETA = ratio of earnings before interest and taxation to total assets, LDA = ratio of long term debt to total assets, EVAR = coefficient of variation of earnings before interest and taxation over the seven years 1986-92, MB = ratio of the market value of equity to the book value of equity, ZSCORE = Altman's [1968] multivariate measure of bankruptcy potential, D_1 to D_5 are dummy variables and are set equal to 1 if the company is a member of an industry group, 0 otherwise. D_1 = Mining & Extractive Industries, D_2 = Construction, D_3 = Wholesale Trades, D_4 = Retail Trades, and D_5 = Services

A significantly positive (negative) coefficient for a variable, represented by a p-value of less than 0.05, indicates that the probability of a firm undertaking lease financing is positively (negatively) related to that variable. Turning to the results of Models 1 and 2 in Table 5.19 it is apparent that, in general, the signs of the coefficients are of a similar sign to those observed from the Mann-Whitney test in Table 5.17, although fewer of the variables are significant.

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given that Krishnan and Moyers' sample was restricted to firms that report capital leases, which do not qualify as true leases under the US Internal Revenue Code.

The measure of current profitability (ETA) reports inconclusive results: the coefficient is close to zero under both regression models and is not significant.[313] The coefficients of the profitability (RET) and gearing (LDA) variables are significantly negatively related to the lease ratio (LR) in both models. They are both consistent with our hypotheses and with the results obtained under the Mann-Whitney test. The latter variable is thus consistent with the hypothesis of a substitutional relationship between finance leases and debt.

The performance (MB) and interest coverage (EBTI) variables have coefficients under both models that are in the direction hypothesised, i.e. the relationship between both variables and the lease ratio (LR) is negative. However, unlike the results of the Mann-Whitney test, they are not significant. The measure of operating risk (EVAR) records a positive but insignificant relationship with the lease ratio (LR) under both models. It therefore provides weak support for the result of the univariate test and for the hypothesis of a positive relationship between operating risk and the increased use of financial leases. The variable measuring the growth in total assets (TAG) supports the findings of the Mann-Whitney test as it records a negative coefficient under both models, although insignificant. It is thus offers little support for the hypothesis that fast-growing companies are more likely to resort to lease finance.

Turning to the two additional variables that are part of Model 2 only, ZSCORE and TR, they both record negative coefficients as hypothesised, although only the former variable is significant, signalling that bankruptcy potential may be a factor behind the decision to use lease finance.

The industry dummy variables are testing the hypothesis that, firstly, companies making heavy use of non-firm specific-assets (such as the retail, wholesale and construction sectors) are more likely to use finance leases than debt

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[313] Krishnan and Moyer reported an (unexpected) significant positive relationship between ETA and the lease ratio (LR).

and, secondly manufacturing companies, with their higher use of firm-specific assets, are less likely to use lease finance. From Table 5.14 and Table 5.15 above it was shown that the manufacturing industry group seemed no more nor less likely to use finance leases than other industries. The results of Table 5.19 seem to provide some support for this result as they show that the coefficients of the dummy variables are mainly negative and insignificant (rather than the positive and significant coefficients that would indicate a greater use of finance leases among these groups). They also show, however, that the intercept, representing the manufacturing group, has a positive and significant coefficient, indicating a greater likelihood of using finance leases among companies in this sector, as discussed above (see footnote 304)[314].

Table 5.19 Multivariate Tests of Bankruptcy, Growth and Industry Effects Hypotheses: OLS Method. 1993-95

	Model 1			Model 2		
Variable	Coefficient	t-ratio	p-value	Coefficient	t-ratio	p-value
Intercept	0.0345	2.68*	0.008	0.0411	3.01*	0.003
ETA	-0.0000	-0.00	1.000	0.0026	0.13	0.900
RET	-0.0935	-9.59*	0.000	-0.0933	-9.58*	0.000
MB	-0.0008	-0.53	0.597	-0.0007	-0.46	0.648
EBTI	-0.0000	-0.92	0.356	-0.0000	-0.85	0.397
LDA	-0.0509	-3.66*	0.000	-0.059	-4.11*	0.000
EVAR	0.0007	0.77	0.442	0.0009	0.94	0.348
ZSCORE	-	-	-	-0.0000	-2.22*	0.027
TAG	-0.0041	-0.37	0.714	-0.0041	-0.37	0.711
TR	-	-	-	-0.015	-1.10	0.271
Mining & Extractive Industries	0.0009	0.12	0.906	0.0026	0.33	0.740
Construction	-0.0073	-1.31	0.192	-0.0078	-1.40	0.163
Wholesale Trade	-0.0038	-0.50	0.618	-0.0045	-0.60	0.549
Retail Trade	-0.0074	-1.22	0.225	-0.0077	-1.27	0.205
Services	0.0050	0.95	0.345	0.0062	1.17	0.244
	Adjusted R^2 = 26.4%			Adjusted R^2 = 27.3%		
	F-statistic = 11.45			F-statistic = 10.38		
	p-value = 0.000			p-value = 0.000		

[314] The results for the individual years 1993-95, contained in Appendix 16 are similar with one or two variables being significant in individual years but with the same sign as is reported in Table 5.19. Appendix 15 also reports the results for Models 3 and 4. Unsurprisingly, the results are largely the same as for Models 1 and 2.

Notes: * indicates significance at the 5 per cent level. LR = Capitalised value of finance leases and hire purchase contracts divided by total assets; ETA = ratio of earnings before interest and taxation to total assets; RET = ratio of retained earnings to total assets; MB = ratio of market value of equity to book value of equity; EBTI = ratio of earnings before interest and taxation to total interest payments; LDA = ratio of long term debt to total assets; EVAR = Coefficient of variation of earnings before interest and taxation over the previous seven years. ZSCORE = Altman's Z-score; TAG = geometric mean of the growth in total assets over the previous six years (1987-92); TR = ratio of total tax charge to pre-tax profit. The level of significance is represented by the p-value. The data for the variables was obtained from Datastream and the test was performed using the OLS regression procedure in Minitab (version 10).

From our earlier discussion it was suggested that the OLS results may be biased due to the truncated nature of the lease ratio as the dependent variable. Therefore, I undertook a logistical regression analysis of the above Models 1, 3 and 4 in order to test the robustness of the results. This method of regression analysis was adopted as the lease ratio was bounded in the range 0,1 and therefore a qualitative classification variable, GROUP, could be substituted and serve as the dependent variable (GROUP =1 for leasing companies, GROUP = 0 for non-leasing companies).

The model that was estimated was:

$$Li = \ln\left[Pi(Group_i = 1 \mid X_i)/(1 - Pi)(Group_i = 0 \mid X_i)\right] = \alpha + X_i\beta \quad (9)$$

where: Li = the logit, the natural log of the odds ratio;

X_i = the vector of independent variables;[315]

β = the vector of coefficients;

Pi (1 – Pi) = the probability of a company using (not using) finance leasing; and

ln = the natural logarithm.

The expression on the left-hand side of the equation is the natural log of the ratio of the firm being either a leasing or a non-leasing firm. The slope coefficient, β, measures the change in L for a unit change in X, i.e. it indicates how the log-odds in

favour of using finance leases change as the independent variable changes. The intercept, α, is the value of the log-odds in favour of using finance leases independently of the variables included in the model.[316]

The results of the regressions for Models 1, 3 and 4 appear in Table 5.20 for the year 1993-95 with those for the years 1993, 1994 and 1995 appearing in Appendix 17. A significantly positive (negative) coefficient indicates that the probability of a company using lease finance is an increasing (decreasing) function of that variable.

Table 5.20 Multivariate Tests of Bankruptcy, Growth and Industry Effects Hypotheses: Logistics Regression Method. 1993-95

	Model 1		Model 3		Model 4	
Variable	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	-0.4471	0.7349	-0.5291	0.6799	-0.5561	0.6661
ETA	4.0942	0.0804	4.3726	0.0564	4.3387	0.0589
RET	-5.7485	0.0250*	-5.7520	0.0223*	-5.7278	0.0230*
MB	-0.2172	0.0863	-0.1836	0.1319	-0.1821	0.1352
EBTI	-0.0077	0.1932	-0.0088	0.1301	-0.0086	0.1466
LDA	-3.1534	0.0064*	-3.4066	0.0025*	-3.424	0.0028*
EVAR	0.1076	0.3365	0.1000	0.3413	0.1026	0.3306
ZSCORE	-	-	-	-	-0.0000	0.8899
TAG	2.0375	0.0900	1.9598	0.0909	1.9676	0.0905
TR	-	-	-	-	0.0731	0.7961
Mining & Extractive Industries	-0.8112	0.1445	-	-	-	-
Construction	-0.2738	0.5243	-	-	-	-
Wholesale Trade	-0.1723	0.7725	-	-	-	-
Retail Trade	-0.5461	0.2241	-	-	-	-
Services	0.2314	0.6163	-	-	-	-
	$\chi^2 = 31.625$		$\chi^2 = 27.704$		$\chi^2 = 27.804$	
	p-value = 0.0016		p-value = 0.0002		p-value =0.001	

Notes: * indicates significance at the 5 per cent level. LR = Capitalised value of finance leases and hire purchase contracts divided by total assets; ETA = ratio of earnings before interest and taxation to total assets; RET = ratio of retained earnings to total assets; MB = ratio of market value of equity to book

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[315] Three different models (Models 1, 3 and 4 in Table 5.19) were estimated as via the OLS method and are shown in Table 5.18)

[316] For a breakdown of the features of the logit model, the reader is referred to Gujarati [1995], pp. 555-6.

value of equity; EBTI = ratio of earnings before interest and taxation to total interest payments; LDA = ratio of long term debt to total assets; EVAR = Coefficient of variation of earnings before interest and taxation over the previous seven years. ZSCORE = Altman's Z-score; TAG = geometric mean of the growth in total assets over the previous six years (1987-92); TR = ratio of total tax charge to pre-tax profit. The level of significance is represented by the p-value. The data for the variables was obtained from Datastream and the test was performed using the logistical regression procedure in TSP (version 4.2).

From the table it is clear that across all three models estimated the measure of current profitability (ETA) records coefficients with signs opposite to that hypothesised and opposite to that recorded under the univariate tests earlier. The coefficients are significant at the ten per cent level and are also consistent with the findings of Krishnan and Moyer. This result is not consistent with that of the measure of past profitability, the coefficient of the variable RET being significantly negative for all three models as hypothesised. Furthermore, the proxy variable for company performance (MB) records coefficients in support of the hypothesis of lower performance for companies using finance leases, but which are not significant.

The coefficient of the gearing variables (LDA) is significantly negative for all three models and provides support for the hypothesised substitutional relationship between finance leases and long-term debt. The remainder of the variables common to the three models, EBTI, EVAR and TAG, report insignificant coefficients, although those for the growth variable (TAG) are significant at the 10 per cent level and provide some support for the hypothesis that finance leases provide a source of finance for rapidly growing companies.[317]

Model 4 contained the two additional variables, ZSCORE and TR. Although the signs of the coefficients of the two variables were consistent with the results of the OLS model, neither coefficient was significant. Thus, tax once again seems unlikely to be a major factor behind the company's decision to use lease finance. Turning to the industry dummy variables, the results of Model 1 in Table 5.17 show that none of the dummy variable coefficients are significant, as was the case for the

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[317] As the results of the logit test for the growth variable, TAG, are not consistent with the OLS tests nor with the earlier univariate tests, caution should be used in interpreting this as any more than weak evidence in support of this hypothesis.

OLS estimation. This time, however, the intercept is negative and insignificant unlike the result for the OLS regression (positive and significant) with the conclusion that manufacturing companies are neither more nor less likely to use lease finance than other industry groups. This latter result is not consistent with Krishnan and Moyers' study, but confirms the earlier investigation into industry influence, discussed in section 2.1.2.

In conclusion, the results of this part of the study indicate that, as expected, there is evidence of a substitutional relationship between finance leases and debt. In addition, it appears that fast growing companies may resort to finance leasing to finance their growth. The evidence relating to performance is mixed, companies using finance leases have higher current profitability, contrary to our hypothesis, yet have lower retained earnings. It appears, however that bankruptcy potential, corporate tax rates and industrial classification are less important factors. The next section develops the analysis related to the financial position of companies to examine the role of financial contracting costs on the financial leasing decision.

4. The influence of financial contracting costs on the decision to lease

4.1 Results

In this section, I examine whether companies facing greater financial constraints are likely to lease a greater proportion of fixed assets. It is an attempt to assess whether the findings of Sharpe and Nguyen [1995], using US data, are relevant to the UK, in recognition of the different institutional setting in which the two leasing industries operate. In a strict sense, however, this test should only be conducted if the decision to acquire assets under a finance lease is independent of the potential benefits of operating leases, i.e. it assumes that the operating lease option can be ignored when estimating the decision whether to buy an asset outright or finance it using a finance lease.

I initially undertook the following test to explore the determinants of the decision to use finance leases. Once again, owing to the truncated nature of the dependent variable, the determinants are estimated using a Tobit specification, that is the following equation is estimated using maximum likelihood under the assumption of normality:

$$\frac{\text{capitalised value of finance leases and HP contracts}_i}{\text{total assets}_i} = \beta' x_i + u \quad \text{if RHS} \geq 0, \qquad (10)$$

$$= 0 \qquad \text{otherwise}$$

where x_i is a vector containing proxies for the company's external funding premium as well as control variables. The variables used in the regression equation are detailed in Chapter 4 section 3.2.4.1.

The results are shown in Table 5.21 Tobit regression estimates of the finance lease share of total assets, which contains the results for the three individual years 1993-95. The coefficient estimate of the no-dividend variable (DD) is interesting as it has the expected significantly positive relationship with the dependent variable in 1994 but almost the reverse in 1995 (coefficient significant at the 10 per cent level). Thus, whereas in 1994 the coefficient estimate indicates that, all else equal, companies that pay no dividends have a finance lease proportion of total assets 5.5 percentage points higher than companies that offer a dividend payment, in 1995 the same companies' lease share is 4.5 percentage points lower.

The coefficient estimates for the cash flow variable (CF) are worthy of mention. In this study they indicate that the propensity to use finance leases is negatively related to cash flow as hypothesised, indicating that cash-strapped companies (often fast-growing firms) resort to lease financing.[318] The coefficient estimates of the other variable developed as a proxy of marginal funding costs, company returns volatility (VOL), are also of the sign hypothesised, although only

the estimate of 1995 is significant. The debt ratings proxies developed by Sharpe and Nguyen were insignificantly related to the capital lease ratio. Overall, the variables developed as proxies of asymmetric information costs are of the sign expected and some are significantly so, implying that such costs impact on the company's ability to raise external finance in the UK, leading to greater use of finance leases.

The coefficients of the tax variable are similarly ambiguous to those reported in previous sections (see sections 2.1 and 3 above). On the whole, however, there is some evidence of a negative relationship between a company's tax status and the use of finance leases (the coefficient is significant and negative in one of the years), offering some support for our tax-based hypothesis. The results of Sharpe and Nguyen[319] suggest that the use of tax-loss carry forward variables would throw more light on the influence of tax on the decision to lease. The results of the size (FS, FS2), capital intensity (CI) and variance of sales growth (SV) variables are largely as hypothesised but not significant. Thus, firm size as measured by the natural logarithm of the number of employees does not appear to be related to the decision to use finance leases in the UK, unlike that shown in the US study. It is also at variance with the results in section 2.1.1 which show a significant negative relationship between company size, as measured by total assets, and the use of finance leases. From the discussion in Chapter 4 section 3.2.4.1, which questioned the use of book assets as a proxy for firm size, size may be a less important factor than suggested earlier.

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[318] This contrasts with the results of Sharpe and Nguyen [1995], who report the reverse relationship.
[319] See Chapter 3 section 3 for a review of their results and how they contrast with those of previous studies, notably Krishnan and Moyer [1994].

Table 5.21 Tobit regression estimates of the finance lease share of total assets

Variable	1993	1994	1995
No dividend (DD)	0.0172	0.0569	-0.0488
	(0.8247)	(2.4670)*	(-1.8492)'
EBITDA/sales (CF)	-0.2121	-0.2418	-0.1901
	(-2.4383)*	(-2.0140)*	(-1.6758)'
Volatility (VOL)	0.0055	0.0040	0.0093
	(1.5383)	(1.0413)	(2.3690)*
Tax rate (TR)	0.0199	-0.0804	-0.0535
	(0.0907)	(-2.2522)*	(-1.5673)
Firm size (FS)	-0.0183	0.0529	-0.0744
	(-0.0677)	(0.1745)	(-0.2614)
Firm size squared (FS2)	-0.0038	-0.0077	-0.0007
	(-0.2318)	(-0.4184)	(-0.0398)
Capital intensity (CI)	-0.0002	-0.0001	-0.0001
	(-1.0334)	(-0.4374)	(-0.2188)
Variance of sales growth (SV)	0.0115	0.0167	0.0433
	(0.3806)	(0.4361)	(1.2371)
No. observations	330	330	330

Notes: T-statistics are shown in parentheses. * denotes significant at the 5 per cent level, 'denotes significant at the 10 per cent level. Leasing propensity = capitalised value of finance leases and hire purchase divided by total assets; No Dividend = dummy set to one if firm paid no dividend that year, zero otherwise; EBITDA/Sales = operating profit divided by total sales; Volatility = standard deviation of daily returns; Tax rate = ratio of total tax charge to pre-tax profit; Firm size = natural log of the number of full-time employees; Capital intensity = total capital costs divided by number of employees; Variance of sales growth = variance of annual change in ln(sales). The data used were obtained from Datastream. The estimates reported in this table were obtained using the tobit heteroscedastic regression procedure in TSP (version 4.2). I also carried out the above regressions with industry dummy variables; as they produce similar results they are not included.

In order to estimate the same equation substituting both the operating lease ratio variable (OLP) and the total lease ratio variable (TOLP) for the finance lease ratio, I used the OLS regression method, with the results contained in Table 5.22 and Table 5.23. From the tables, one can see that similar factors seem to be influencing the corporate decision to utilise both finance and operating leases and to a similar extent. This observation is at slight variance with the comparison made earlier in the study (compare the estimates recorded in Table 5.5 and Table 5.7 discussed earlier). The decision to use operating leases does appear to be driven by liquidity problems, as shown by the coefficients (CF) and (DD), with taxation being an insignificant factor as before. It is interesting to note that, as is the case for finance leases, the

change in the proxy for firm size (to number of employees) has reduced the significance of this variable.

Table 5.22 OLS regression estimates of the operating lease share of total assets (OLP) for the operating lease sub-sample

Variables	1993	1994	1995
Constant	0.0356	0.0480	0.0010
	(0.96)	(1.27)	(0.03)
No dividend (DD)	0.0209	0.0062	0.1013
	(0.65)	(0.23)	(2.46)*
EBITDA/sales (CF)	-0.2168	-0.3088	-0.3170
	(-2.22)*	(-3.30)*	(-3.01)*
Volatility (VOL)	0.0005	0.0004	0.0004
	(1.23)	(1.19)	(0.94)
Tax rate (TR)	-0.0532	-0.0561	0.0173
	(-1.94)'	(-1.64)	(0.44)
Firm size (FS)	0.0035	0.0031	0.0060
	(0.94)	(0.92)	(1.71)'
Capital intensity (CI)	-0.00003	-0.00002	-0.000004
	(-1.66)'	(-1.15)	(-0.18)
Variance of sales growth (SV)	0.0218	0.0326	0.0159
	(0.73)	(0.96)	(0.45)
Adjusted R^2	5.4%	8.0%	10.2%
No. observations	174	177	176

Notes: T-statistics are shown in parentheses. * denotes significant at the 5 per cent level, 'denotes significant at the 10 per cent level. Leasing propensity OLP = annual commitment under operating leases divided by total assets; No Dividend = dummy set to one if firm paid no dividend that year, zero otherwise; EBITDA/Sales = operating profit divided by total sales; Volatility = standard deviation of daily returns; Tax rate = ratio of total tax charge to pre-tax profit; Firm size = natural log of the number of full-time employees; Capital intensity = total capital costs divided by number of employees; Variance of sales growth = variance of annual change in ln(sales). The data used were obtained from Datastream. The estimates reported in this table were obtained using the OLS regression in Minitab (version 10).

Table 5.23 OLS regression estimates of the total lease share of total assets (TOLP) for the operating lease sub-sample

Variables	1993	1994	1995
Constant	0.0949	0.1219	0.0264
	(2.06)*	(2.55)*	(0.53)
No dividend (DD)	0.0053	0.0364	0.0842
	(0.13)	(1.08)	(1.65)
EBITDA/sales (CF)	-0.3082	-0.4357	-0.4081
	(-2.53)*	(-3.70)*	(-3.12)*
Volatility (VOL)	0.0005	0.0006	0.0008
	(0.96)	(1.21)	(1.64)
Tax rate (TR)	-0.0213	-0.0913	0.0886
	(-0.62)	(-2.12)*	(1.80)'
Firm size (FS)	-0.0011	-0.0008	0.0020
	(-0.24)	(-0.19)	(0.46)
Capital intensity (CI)	-0.00003	-0.00002	-0.000002
	(-1.47)	(-0.98)	(-0.09)
Variance of sales growth (SV)	0.0155	0.0317	0.0240
	(0.42)	(0.74)	(0.55)
Adjusted R^2	3.8%	11.0%	14.1%
No. observations	174	177	176

Notes: T-statistics are shown in parentheses. * denotes significant at the 5 per cent level, 'denotes significant at the 10 per cent level. Leasing propensity TOLP = annual commitment under operating leases plus capitalised value of finance leases and hire purchase divided by total assets; No Dividend = dummy set to one if firm paid no dividend that year, zero otherwise; EBITDA/Sales = operating profit divided by total sales; Volatility = standard deviation of daily returns; Tax rate = ratio of total tax charge to pre-tax profit; Firm size = natural log of the number of full-time employees; Capital intensity = total capital costs divided by number of employees; Variance of sales growth = variance of annual change in ln(sales). The data used were obtained from Datastream. The estimates reported in this table were obtained using the OLS regression in Minitab (version 10).

Partly as a response to the difficulty in interpreting some of the alternative proxy variables, particularly those measuring company size, taxation and corporate performance, I performed a more comprehensive study, this time investigating the decision to use finance leases on a wider, pooled sample of companies. The focus of the study, contained in the following section, was on the effect of the different characteristics of small and large companies on the corporate use of finance leases in order to provide more information on the leasing decision in the UK.

5. The leasing decision of small and large companies

5.1 Univariate tests

In this section the data outlined in Chapter 4 section 3.2.5.1 was utilised to perform a series of univariate and multivariate tests to provide a comprehensive analysis of the determinants of the leasing decision in the UK. The following five tables show mean values and t-statistics of differences in means between companies reporting finance leases on their balance sheets and those that do not. The tests analyse the leasing decision of groups of differently sized companies under separate hypotheses. The sample data is pooled, resulting in 1246 usable observations. It is then split into deciles according to the size of total assets, with the results for the large (decile 10), medium-sized (decile 5) and small companies (decile 1) being reported in the tables below.

5.1.1 Leasing and company size

Table 5.24 summarises the size differences between lessee and non-lessee companies. The table shows that the proportion of companies using finance leases for the sample as a whole is 67.42 per cent.[320] The distribution of leasing propensity is not homogeneous across firm size, however: the proportion of the sample using finance leases increases from 61.6 per cent for the large company decile to 79.2 per cent for the small company group. The figures recorded are generally higher than Lasfer and Levis [1998] and this trend is more pronounced than in their sample.

Two definitions of the propensity to use lease finance were used. The lease percentage variable (LP) conforms to Lasfer and Levis' definition, whereas the lease ratio variable (LR) is based on that used in previous sections. Turning to the lease percentage variable (LP) first, we see that the average for the whole sample is 32.1 per cent, rising from 11.28 per cent for the large decile to 56.8 per cent for small companies. The average for all companies is higher than the 20 per cent reported by

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[320] Table 4.7 presents a time-series distribution of leasing and non-leasing companies for the sample.

Lasfer and Levis, although they also record the same increase in the lease variable from large to small companies. The figures for the lease ratio (LR) are much lower (2.48 per cent overall) and are similar to the results from the previous studies, reported above.[321] However the same trend between large and small companies is discernible.

Looking at the sample as a whole, lessee companies are as expected smaller (though not significantly) by sales and total assets than non-lessee companies. However, for each decile the opposite is the case, with medium-sized and small companies recording significantly greater sales and assets than non-lessee companies.[322] The results for the market value of equity show that, with the exception of the small decile, lessee companies are generally significantly smaller than non-lessee companies. Overall, there is some support for the hypothesis that size is negatively related to the use of finance leases, with the exception of the smallest companies which are less likely to rely on leasing, a result perhaps of their lower growth potential which is discussed in 5.1.3 below.

Table 5.24 Size differences between lessee and non-lessee companies

	All companies		Large companies		Medium-sized companies		Small companies	
	Lessee	Non-lessee	Lessee	Non-lessee	Lessee	Non-lessee	Lessee	Non-lessee
N	840	406	77	48	87	38	99	26
%	67.42	32.58	61.60	38.40	69.60	30.40	79.20	20.80
LP	0.3210	0.00	0.1128	0.00	0.1917	0.00	0.5680	0.00
LR	0.0248	0.00	0.0120	0.00	0.0140	0.00	0.0496	0.00
Total assets	352.27	485.10 (-1.94)	2,978.25	2,929.49 (0.12)	70.11	69.97 (0.07)	4.64	4.14 (1.41)
Sales	713.69	914.85 (-1.23)	5,398.99	5,226.25 (0.14)	190.49	137.48* (2.55)	19.50	12.77* (2.21)
MV of equity	551.49	824.93* (-2.04)	4,641.78	5,108.05 (-0.53)	122.04	176.34* (-3.00)	9.86	5.97* (2.51)

[321] For example Table 4.1 reports that the average value of the lease ratio (LR1) is in the range 1.8 to 2.1 per cent for the separate years 1993-95.
[322] Lasfer and Levis' study shows mainly the opposite to be the case.

Notes: Total assets, sales and market value of equity in £m. ** denotes significant at the 1 per cent level, * denotes significant at the 5 per cent level. The table shows mean values and t statistics for differences in the means. The table reports results for the pooled observations over the period 1992-95, resulting in 1246 observations. The sample was also split into deciles, the results of deciles 10 (large companies), 5 (mid-sized) and 1 (small companies) are reported in the table. N = number of observations in each sub-sample; % = proportion of observations in each sub-sample; LP = the ratio of the capitalised value of finance leases to total debt (defined as total loan capital and subordinated debt); LR = the ratio of the capitalised value of finance leases to total assets. The data used were obtained from Datastream

5.1.2 Leasing and corporate taxable capacity

In this section the impact of tax on the decision to use leasing finance is analysed further, using more comprehensive measures of corporate taxation than in the previous studies. This is undertaken by comparing the tax position of companies reporting finance leases in their accounts with those that did not. The results of the univariate tests are presented in Table 5.25. It is hypothesised that if leasing is motivated by a company's tax position as suggested in the literature the tax charge variables (TC and TR) should be lower for lessee companies.

The average tax charge (TC) for lessee companies is 37.13 per cent, slightly (although not significantly) higher than for non-lessee companies and higher than the level of corporation tax at 35 per cent in this period. This is neither consistent with the hypothesis nor with Lasfer and Levis [1998]. None of the size deciles report significantly different rates of tax charge between lessee and non-lessee companies. If we turn to the tax ratio variable (TR) we notice a problem of an outlier within the large decile non-lessee sub-sample where one company has a negative tax ratio of -1,211.1 per cent. The rest of the results once again show no significant difference between lessee and non-lessee companies, with non-lessee companies generally recording lower tax ratios than lessee companies. These results are to be expected given the results of the tests of the tax impact on leasing analysed above in sections 2 and 4.

It is assumed that recoverable Advance Corporation Tax (ACT) is the result of tax losses; companies with high ACT recoverable are likely to use leases to save taxes. If the recoverability of ACT is not certain in the foreseeable future, companies

are allowed to write off ACT against reserves.[323] Such companies are likely to be tax exhausted and hence predicted to use leasing finance. The results in Table 5.25 are as hypothesised. For the whole sample, lessee companies have significantly more irrecoverable ACT than non-lessee companies. This result is true also for the medium-sized companies. The table therefore highlights the importance of using more comprehensive estimates of the effects of taxation on the leasing decision.

Table 5.25 Tax differences between lessee and non-lessee companies

	All companies		Large companies		Medium-sized companies		Small companies	
	Lessee	Non-lessee	Lessee	Non-lessee	Lessee	Non-lessee	Lessee	Non-lessee
TC	37.13	36.61 (0.44)	33.24	36.52 (-1.54)	35.46	32.59 (1.62)	45.92	37.00 (1.28)
IACT	0.0013	0.0005* (2.50)	0.0008	0.0001 (1.02)	0.0021	0.0000* (3.03)	0.0020	0.0000 (1.61)
TR	31.42	20.73 (1.49)	34.95	6.90 (1.06)	38.10	32.28 (0.65)	31.05	26.84 (0.34)

Notes: ** denotes significant at the 1 per cent level, * denotes significant at the 5 per cent level. The table shows mean values and t statistics for differences in the means. The table reports results for the pooled observations over the period 1992-95, resulting in 1246 observations. The sample was also split into deciles, the results of deciles 10 (large companies), 5 (mid-sized) and 1 (small companies) are reported in the table. TC = the ratio of tax charge to profit before tax; TR = the ratio of the total tax charge to pre-tax profit (including pre-tax profit of associates); IACT = the ratio of irrecoverable advance corporation tax to total assets. The data used were obtained from Datastream.

5.1.3 Leasing and the firm's growth opportunities

Following the discussion detailed in Chapter 3 section 8, it is hypothesised that a company is more likely to lease than buy if the asset is not specific to the company and is easily redeployable. Thus, large companies, less concerned with external redeployment possibilities, are less likely to lease, whilst companies with high growth opportunities are likely to rely more on leasing to finance this growth. Table 5.26 contains the results of the univariate tests carried out to examine this hypothesis.

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[323] As discussed in Chapter 2 Part C section 1.6, the system of advance corporation tax was abolished with effect from 6th April 1999. As the sample data cover the period up to the end of 1995, the former system of paying advance corporation tax was still in operation.

Turning to the first proxy for growth opportunities, the ratio of fixed assets payments to total assets (FAPTA), it is expected that the larger the variable, the higher the growth and, hence, such companies are more likely to be lessees. The results are generally supportive of the hypothesis: lessee companies exhibit significantly higher levels of fixed asset payments than non-lessee companies in general and also for the small company decile. The results for the large and medium-sized companies are not significant. The hypothesis for the research and development variable (RDSA) is complex. On the one hand, a high level of R&D could signify a high level of growth and therefore a company more likely to use leasing finance. On the other hand, as discussed in Chapter 4 section 2.2, it may signify high asset specificity and hence a lower likelihood of using leasing finance. The results are generally insignificant, with the medium decile offering support for the asset-specificity hypothesis: non-lessee companies report significantly higher RDSA than lessee companies.

One would expect lessee companies to have higher sales growth (SG) than non-lessee companies. Although the results are consistent with the hypothesis, like Lasfer and Levis they are mainly insignificant with only the small decile recording a significantly higher growth in sales for lessee companies. Following the discussion in Chapter 4 section 2.3 regarding the study undertaken by Sharpe and Nguyen [1995] and the use of a dividend dummy variable, one would expect growth firms to pay less in dividends (PO) than mature firms. The results contained in Table 5.26 however are mixed. The only significant difference is that for large companies where it is opposite to that hypothesised. All other deciles and the sample as a whole, whilst reporting results as expected, are insignificant. A possible reason for the mixed result is that, due to the high information content contained within the dividend payout decision, managers may not have total discretion over the payout.

The higher a company's Tobin's *q* (TQ) the higher its expected growth opportunities, hence the more likely its propensity to lease. For the sample as a whole

and for large companies there is no significant difference in Tobin's q between lessee and non-lessee companies. However, growth opportunities do seem to drive the lease decision for small companies, backing up the results for the variables FAPTA and SG: lessee companies exhibit significantly higher values of Tobin's q than non-lessee companies (with the opposite being the case for medium-sized companies).

Overall, there appears to be only limited support for the growth hypotheses for the sample as a whole. For the small company decile, for which growth is perhaps more of an issue in terms of their funding requirements, there is some evidence to support the hypothesis that fast-growing small companies are likely to resort to finance leasing to finance their growth, once internal sources of funds have been exhausted.

Table 5.26 Growth differences between lessee and non-lessee companies

	All companies		Large companies		Medium-sized companies		Small companies	
	Lessee	Non-lessee	Lessee	Non-lessee	Lessee	Non-lessee	Lessee	Non-lessee
FAPTA	0.0984	0.0782** (3.66)	0.0908	0.0962 (-0.55)	0.0874	0.0823 (0.54)	0.1148	0.0719* (2.29)
RDSA	0.0054	0.0072 (-1.64)	0.0063	0.0152 (-1.52)	0.0061	0.0132* (-2.06)	0.0069	0.0000 (0.00)
SG	0.1590	0.1122 (1.41)	0.0835	0.0687 (0.83)	0.1504	0.1232 (0.64)	0.1114	0.0355* (2.06)
PO	0.3809	0.4901 (-0.46)	0.6827	0.4449* (2.28)	0.4472	0.5387 (-0.75)	-1.4380	0.5102 (-1.01)
TQ	2.0128	2.0311 (-0.19)	2.3259	2.3174 (0.03)	2.0240	3.0996** (-3.08)	3.0879	1.7309** (3.04)

Notes: ** denotes significant at the 1 per cent level, * denotes significant at the 5 per cent level. The table shows mean values and t statistics for differences in the means. The table reports results for the pooled observations over the period 1992-95, resulting in 1246 observations. The sample was also split into deciles, the results of deciles 10 (large companies), 5 (mid-sized) and 1 (small companies) are reported in the table. FAPTA = the ratio of fixed assets payments to total assets; RDSA = the ratio of research and development expenditure to total sales; SG = the percentage change in turnover over the previous two years; PO = the ratio of dividends to earnings; TQ = the ratio of the market value of equity to shareholders' fund. The data used were obtained from Datastream.

5.1.4 Leasing and the firm's debt capacity

The discussion of the relationship between leasing and debt capacity contained in Chapter 3 section 4, and the results of previous tests in this study, leads us to hypothesise that if leasing is a substitute for debt lessee companies should have significantly lower levels of gearing than non-lessee companies. By incorporating an additional proxy variable on the pooled sample data, I am testing the robustness of the earlier results.

From Table 5.27 the results for the ratio of long-term debt (excluding leases) to capital employed (LDCE) for the sample as a whole are consistent with the hypothesis: lessee companies have significantly lower gearing than non-lessee companies. This confirms the earlier results in section 2 that found a substitutional relationship between leasing and debt finance. However, this result is not consistent across companies: although the results are generally as expected, none of the deciles report significant differences. The second proxy developed was the ratio of bank loans and overdrafts to total debt (BLTD). The results show that for the sample as a whole and for small companies, lessees have significantly higher bank commitments than non-lessees. These results are in contrast to those recorded by Lasfer and Levis [1998]. Once again, this result is not consistent across companies, as the large and medium-sized deciles record contrasting results although the differences are not significant.

Overall, the results provide support for the substitutional relationship between leasing and debt finance. They also show, however, that companies that use finance leases finance a higher proportion of their debt via bank loans. As one might expect this is concentrated in the smaller decile: companies that may lack sources of raising external finance.[324] This also highlights the importance of focusing on different sub-samples of companies, ranked according to size.

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[324] See Berry et al. [1990] for a review of the long-standing problem of the provision of finance for small companies in the UK.

Table 5.27 Gearing differences between lessee and non-lessee companies

	All companies		Large companies		Medium-sized companies		Small companies	
	Lessee	Non-lessee	Lessee	Non-lessee	Lessee	Non-lessee	Lessee	Non-lessee
LDCE	0.1314	0.1645** (-4.12)	0.2046	0.2330 (-1.25)	0.1347	0.1221 (0.55)	0.1007	0.1027 (-0.08)
BLTD	19.1510	6.0034** (2.75)	0.6918	0.7581 (-0.39)	8.8787	4.1129 (0.81)	29.3220	2.4339* (2.38)

Notes: ** denotes significant at the 1 per cent level, * denotes significant at the 5 per cent level. The table shows mean values and t statistics for differences in the means. The table reports results for the pooled observations over the period 1992-95, resulting in 1246 observations. The sample was also split into deciles, the results of deciles 10 (large companies), 5 (mid-sized) and 1 (small companies) are reported in the table. LDCE = the ratio of long-term debt (excluding leases) to capital employed; BLTD =: the ratio of bank loans and overdrafts over total debt (defined as for the lease percentage variable). The data used were obtained from Datastream.

5.1.5 Leasing and firm's profitability

Following the discussion on the influence of financial distress on the corporate financing decision, contained in Chapter 3 section 5, leasing is hypothesised to be used by less profitable companies, companies that can expect to face higher premiums for external funds. In order to test this hypothesis, a number of proxies for profitability were developed with the results contained in Table 5.28.

For the sample as a whole, lessee companies record significantly lower earnings (EBIT, EBTa), earnings per share (EPS) and dividends per share (DPS) than non-lessee companies, supporting our hypothesis. Only the sign of the dividend yield (DY) variable is not as expected, although the difference is not significant. This result is generally supported by each of the deciles, although the differences between lessee and non-lessee companies is not always significant.

Overall, the results suggest that leasing is associated with low profitability: lessee companies exhibit lower earnings, earnings- and dividends per share and accounting rates of return than non-lessee companies, implying that leasing

contributes to the survival of such companies, which are faced by constraints on their ability to raise external finance.

Table 5.28 Profitability differences between lessee and non-lessee companies

	All companies		Large companies		Medium-sized companies		Small companies	
	Lessee	Non-lessee	Lessee	Non-lessee	Lessee	Non-lessee	Lessee	Non-lessee
EBIT (£m)	56.51	89.24* (-1.99)	482.44	581.48 (-0.86)	10.37	14.80** (-3.14)	0.4378	0.4715 (-0.18)
EBTa (£m)	52.38	83.96* (-2.02)	450.51	549.99 (-0.91)	9.417	14.77** (-3.89)	0.2521	0.4848 (-1.19)
EBTb (£m)	56.24	86.27 (-1.87)	488.51	562.82 (-0.66)	9.965	15.56** (-3.78)	0.2476	0.4807 (-1.19)
ROE	10.069	30.725 (-1.32)	17.311	170.31 (-1.17)	10.497	19.414** (-3.38)	1.6401	9.7254 (-1.32)
EPS (p)	11.758	15.712** (-4.69)	22.073	34.633** (-3.41)	10.746	18.051** (-4.10)	3.3512	15.042** (-3.47)
DPS (p)	5.6415	7.2018** (-4.20)	12.293	16.882** (-3.13)	6.4893	7.6371 (-1.33)	1.3642	4.8827** (-3.73)
DY	0.0366	0.0316 (1.39)	0.0495	0.0343 (1.30)	0.0312	0.0288 (1.02)	0.0168	0.0285** (-2.67)

Notes: ** denotes significant at the 1 per cent level, * denotes significant at the 5 per cent level. The table shows mean values and t statistics for differences in the means. The table reports results for the pooled observations over the period 1992-95, resulting in 1246 observations. The sample was also split into deciles, the results of deciles 10 (large companies), 5 (mid-sized) and 1 (small companies) are reported in the table. EBIT = Earnings before interest and taxation; EBTa = Pre-tax profit excluding associates; EBTb = Pre-tax profit including associates; ROE = Return on shareholders equity; EPS = Earnings per share; DPS = Dividends per share; DY = the ratio of dividends to market value of equity. The data used were obtained from Datastream.

In order to provide a robust examination of the various hypotheses under investigation, I undertook a series of multivariate tests, the results of which are detailed in the following section.

5.2 Multivariate tests

Table 5.29 and the following four tables report the multivariate tests carried out on the sample. Lasfer and Levis [1998] carried out logit regressions on the whole sample, the large decile of companies and the small decile. Due to constraints on

computing power, I was unable to undertake a logit regression using the whole sample in SPSS. Instead I carried out a Tobit regression on the whole sample in TSP. The following equation was therefore estimated using maximum likelihood under the assumption of normality:

$$\begin{aligned} \textit{Lease}\ \text{Ratio} &= \beta' x_i + u \quad \textit{if}\ \ \textit{RHS} \geq 0, \\ &= 0 \qquad\qquad \text{otherwise} \end{aligned} \tag{11}$$

where Lease Ratio represents one of the two lease measures, as detailed in the next section and x_i is a vector containing proxies for the various possible influences on a company's decision to use leasing finance. The variables used in the regression equation are detailed in Chapter 4 section 3.2.5.2.

For the sake of comparison I carried out both logit and Tobit regressions on the large decile of companies (Table 5.30 and Table 5.31 respectively) and on the small decile (Table 5.32 and Table 5.33 respectively). I also carried out a logit regression on the medium-sized company decile (Appendix 18). This method of regression analysis was adopted as both measures of the lease ratio were bounded in the range 0,1 and therefore a qualitative classification variable, GROUP, could be substituted and serve as the dependent variable (GROUP =1 for leasing companies, GROUP = 0 for non-leasing companies).

The model that was estimated was:

$$Li = \ln\left[Pi(Group_{\ i} = 1 \mid X_i)/(1 - Pi)(Group_{\ i} = 0 \mid X_i)\right] = \alpha + X_i\beta \tag{11}$$

where: Li = the logit, the natural log of the odds ratio;

X_i = the vector of independent variables;

β = the vector of coefficients;

Pi (1 – Pi) = the probability of a company using (not using) finance leasing; and

ln = the natural logarithm.

The expression on the left-hand side of the equation is the natural log of the ratio of the firm being either a leasing or a non-leasing firm. The slope coefficient, β, measures the change in L for a unit change in X, i.e. it indicates how the log-odds in favour of using finance leases change as the independent variable changes. The intercept, α, is the value of the log-odds in favour of using finance leases independently of the variables included in the model.

The difference between the two types of regression lie in the way the dependent variable is treated. In a logit regression the dependent variable is a dummy variable equal to 1 if the firm (in this case) uses leasing and equal to 0 otherwise. In a Tobit regression the dependent variable is assigned a value of 0 if it does not use leasing, but if it does its value can take any value between 0 and 1.

5.2.1 Multivariate tests using the whole sample

Table 5.29 reports the results of 14 regression models, using the Tobit estimation method. Models 1-4 report the results for the tax hypothesis (Lease percentage (LP) is the dependent variable for models 1 and 2, with Lease ratio (LR) performing the same role in models 3 and 4). Models 5 and 6 test the financing of growth potential (Model 5 = LP, 6 = LR). Models 7-10 test for size differences (Models 7 and 9 = LP, 8 and 10 = LR). Finally, Models 11-14 test all hypotheses (Models 11 and 13 = LP, 12 and 14 = LR).

Starting with the test of the tax hypothesis, we find that the coefficient of the tax rate variable (TR) is not significant. The tax charge variable (TC), however, is significantly positively related to leasing propensity in all models, opposite to that hypothesised and at variance with the non-significant results of Lasfer and Levis. The results for the irrecoverable ACT variable (IACT) are partially supportive of the hypothesis and confirms the results of the univariate test contained in Table 5.25, being significantly positively related to the lease percentage (LP) variable, although the results for the leasing variable LR are not conclusive.

Turning to the test of the growth hypothesis, it follows from our previous discussion that we would expect a positive relationship between growth and leasing propensity. The ratio of fixed assets payments to total assets (FAPTA) records results as hypothesised and significantly so for all models and both dependent variables, consistent with the findings of Table 5.26 and also with the study of Lasfer and Levis [1998]. The Ratio of R&D to sales (RDSA) records contrasting results to those found from the univariate test. The coefficient is generally significantly negative, indicating that the growth hypothesis may be more important than the asset specificity hypothesis, especially for models with the lease ratio (LR) as the dependent variable (Models 6, 12 and 14). The results for the sales growth (SG) and dividend payout (PO) variables record no significant relationship on the decision to lease and are consistent with the univariate tests reported in Table 5.26. The variable Tobin's *q* (TQ) records results (with LR as the dependent variable) which support the hypothesis of a positive relationship between growth opportunities and the decision to lease.[325] Where the dependent variable is the lease percentage (LP) the results are less conclusive and less significant.

For the test of the relationship between company size and leasing, the hypothesis is that large firms are less likely to use lease finance than small companies, since the latter may have fewer sources from which to raise external finance. The variables, natural logarithm of total assets (ln(TA)), of market value (ln(MV)), and of sales (ln(Sales)) offer support for our hypothesis: all models consistently record a negative relationship and most are significant at the five per cent level.

The results of the test of the gearing hypothesis are interesting. The significance of the sign of the ratio of long term debt to capital employed (LDCE) variable supports the hypothesis of a substitutional relationship between leasing and debt finance and, not surprisingly given the similar sample periods, confirms the

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[325] The results are also consistent with those reported in Table 5.26 and by Lasfer and Levis.

results of the previous tests conducted of this hypothesis. However, this result is in contrast to the results reported by Lasfer and Levis who report a generally positive relationship. The ratio of bank loans to total debt (BLTD) variable reports mixed results, depending on the dependent variable used. The results with lease percentage (LP) as the dependent variable (Models 11 and 13) support the findings reported in Table 5.27, that lessees have higher bank commitments than non-lessees.

The results of the analysis of the relationship between profitability and leasing are disappointing. Although one would expect a negative relationship between the profitability variables and leasing, the results are mainly insignificant and not supportive of the univariate results reported in Table 5.28, with only EBIT being significantly negatively related to leasing.

The results of the various models provide significant support for the hypothesis that firms that use finance leases tend to be, on the average, faster growing, smaller in size, have lower earnings per share, employ less debt in their capital structure (but employ a higher proportion of bank loans out of the debt which they do raise), and have a higher tax charge than companies that do not. In order to test these hypotheses further, the sample was split into deciles, with models 1-14 being performed on the largest and smallest decile, the results being the focus of the next two sections.

Table 5.29 Tobit regressions of the probability of using leasing by all companies in the 1992-95 periods

	1 (LP)	2 (LP)	3 (LR)	4 (LR)	5 (LP)	6 (LR)	7 (LP)	8 (LR)	9 (LP)	10 (LR)	11 (LP)	12 (LR)	13 (LP)	14 (LR)
Constant	0.0289	0.1001*	-0.0078*	0.0041*	0.0851*	-0.0046‘	1.1619*	0.0822*	0.9528*	0.0697*	0.5971*	0.0175	0.6492*	0.0283*
	(1.07)	(6.86)	(-2.73)	(2.62)	(3.66)	(-1.90)	(14.48)	(9.15)	(12.65)	(8.40)	(5.99)	(1.39)	(6.72)	(2.30)
TC	0.2019*	-	0.0334*	-	-	-	-	-	-	-	0.1071*	0.0219*	-	-
	(3.25)		(5.06)								(2.08)	(3.41)		
TR	-	0.0001	-	0.0000	-	-	-	-	-	-	-	-	0.0000	0.0000
		(0.82)		(0.49)									(0.57)	(0.80)
IACT	5.5252*	6.0029*	0.1294	0.2065	-	-	-	-	-	-	2.6851 ‘	-0.1597	2.8000 ‘	-0.1369
	(2.94)	(3.18)	(0.65)	(1.02)							(1.76)	(-0.83)	(1.83)	(-0.71)
FAPTA	-	-	-	-	0.5034*	0.0764*	-	-	-	-	0.2729*	0.0689*	0.2958*	0.0733*
					(4.37)	(6.36)					(2.91)	(5.85)	(3.15)	(6.19)
RDSA	-	-	-	-	-0.9848	-0.2561*	-	-	-	-	-1.4555 ‘	-0.2501*	-1.4970 ‘	-0.2588*
					(-1.03)	(-2.49)					(-1.86)	(-2.47)	(-1.91)	(-2.53)
SG	-	-	-	-	0.0033	0.0004	-	-	-	-	0.0033	0.0004	0.0019	0.0001
					(0.18)	(0.22)					(0.23)	(0.22)	(0.13)	(0.06)
PO	-	-	-	-	0.0003	-0.0002	-	-	-	-	0.0002	-0.0001	0.0002	-0.0001
					(0.12)	(-0.64)					(0.13)	(-0.50)	(0.11)	(-0.53)
TQ	-	-	-	-	-0.0087	0.0019*	-	-	-	-	0.0123 ‘	0.0031*	0.0119 ‘	0.0030*
					(-1.04)	(2.18)					(1.81)	(3.61)	(1.74)	(3.48)
ln(TA)	-	-	-	-	-	-	-0.0946*	-0.0070*	-	-	-	-	-	-
							(-13.11)	(-8.68)						
ln(MV)	-	-	-	-	-	-	-	-	-0.0744*	-0.0058*	-	-	-	-
									(-11.23)	(-7.90)				
LDCE	-	-	-	-	-	-	-	-	-	-	-1.6490*	-0.0568*	-1.6512*	-0.0569*
											(-17.66)	(-5.00)	(-17.60)	(-4.96)
BLTD	-	-	-	-	-	-	-	-	-	-	0.0004*	-0.0000*	0.0004*	-0.0000*
											(4.68)	(-2.20)	(4.60)	(-2.27)
EBIT	-	-	-	-	-	-	-	-	-	-	0.0000	0.0000	0.0000	0.0000
											(0.44)	(0.46)	(0.51)	(0.58)
EPS	-	-	-	-	-	-	-	-	-	-	-0.0044*	-0.0003 ‘	-0.0048*	-0.0004*
											(-2.76)	(-1.67)	(-3.00)	(-2.04)
DPS	-	-	-	-	-	-	-	-	-	-	0.0020	-0.0007	0.0021	-0.0007
											(0.54)	(-1.51)	(0.57)	(-1.45)
DY	-	-	-	-	-	-	-	-	-	-	0.1022	-0.0004	0.0838	-0.0041
											(0.75)	(-0.02)	(0.61)	(-0.24)

ln(Sales)	-	-	-	-	-	-	-	-	-	-	-0.0244* (-2.82)	-0.0013 (-1.14)	-0.0253* (-2.91)	-0.0014 (-1.30)
N	1246	1246	1246	1246	1246	1246	1246	1246	1246	1246	1246	1246	1246	1246
Log of likelihood function	-852.41	-857.29	1056.79	1044.35	-852.29	1071.37	-780.46	1081.11	-801.494	1074.73	-650.543	1117.07	-652.52	1111.65

Notes: T statistics in parentheses. * denotes significant at the 5 per cent level, ' denotes significant at the 10 per cent level. The variables are as defined in tables 5.19 - 5.23. The data used were obtained from Datastream. The estimates reported in this table were obtained using the Tobit heteroscedastic regression procedure in TSP (version 4.2).

5.2.2 Multivariate tests using the sample of large companies

Table 5.30 and Table 5.31 report the logit and Tobit regression estimates, respectively, using the large company decile. For the logit regressions the dependent variable is the lease percentage (LP). Overall, the results of both tables are generally supportive of Table 5.29, which used the whole sample, although fewer variables are significant. The following provides a brief summary of the different models estimated.

Unlike the results reported in Table 5.29, the tax variables are generally not significant for all models estimated using either the Tobit or the logit estimation method, indicating that tax is not a significant factor for large companies. Turning to the tests of the growth hypothesis, the variable of fixed assets as a proportion of total assets (FAPTA) is significantly positively related to the dependent variable LR. Its relationship to the lease percentage variable (LP) is mixed and insignificant. As reported in Table 5.29 there is a significantly negative relationship between the R&D variable (RDSA) and both lease measures under most models and both types of test. The sales growth variable (SG) is not significant, and is similar to the result reported by Lasfer and Levis. The results for the dividend payout variable (PO) are not as hypothesised, and significantly so when the variable LR is used as the dependent variable. Unlike for the sample as a whole, the Tobin's *q* variable is not significant at all for the large company sample. Overall, for the large company decile, the growth hypothesis receives mixed support.

For tests of the gearing hypothesis, the tables report a significant negative relationship between the long-term debt variable (LDCE) and the leasing percentage (LE). The results thus supports the hypothesis of a substitutional relationship between leasing and debt finance and confirms the results of Table 5.29. The results for the ratio of bank loans to total debt (BLTD) are not however significant. The results of the size variables are not generally significant, suggesting that for large companies at least, size is not an important factor behind the decision to lease. The profitability variables are, as for the sample as a whole, generally insignificant,

Table 5.31 Tobit regressions of the probability of using leasing by large companies in the 1992-95 periods

	1 (LP)	2 (LP)	3 (LR)	4 (LR)	5 (LP)	6 (LR)	7 (LP)	8 (LR)	9 (LP)	10 (LR)	11 (LP)	12 (LR)	13 (LP)	14 (LR)
Constant	0.1068	-0.0121	0.0071	0.0009	0.0243	-0.0143*	-0.0925	0.0129	0.3386	0.0205	0.8269	-0.0011	0.9315	-0.0015
	(1.07)	(-0.44)	(0.99)	(0.37)	(0.36)	(-2.48)	(-0.19)	(0.34)	(0.88)	(0.69)	(1.25)	(-0.02)	(1.44)	(-0.03)
TC	-0.3202	-	-0.0148	-	-	-	-	-	-	-	-0.0905	-0.0291	-	-
	(-1.11)		(-0.72)								(-0.34)	(-1.33)		
TR	-	0.0003	-	0.0000	-	-	-	-	-	-	-	-	-0.0006	0.0000
		(0.85)		(0.90)									(1.05)	(1.01)
IACT	0.0508	-0.0079	0.2003	0.0207	-	-	-	-	-	-	0.0684	-0.4716	0.0612	-0.4746
	(0.01)	(-0.00)	(0.53)	(0.55)							(0.02)	(-1.34)	(0.01)	(-1.36)
FAPTA	-	-	-	-	-0.3973	0.0811*	-	-	-	-	-0.1900	0.0925*	-0.1906	0.0925*
					(-0.98)	(2.70)					(-0.54)	(3.10)	(-0.54)	(3.14)
RDSA	-	-	-	-	-2.4133	-0.1901 ‘	-	-	-	-	-3.2011*	-0.1571	-3.3851*	-0.1744 ‘
					(-1.59)	(-1.91)					(-2.17)	(-1.60)	(-2.24)	(-1.76)
SG	-	-	-	-	0.0135	0.0104	-	-	-	-	0.0680	0.0234	0.0676	0.0224
					(0.06)	(0.65)					(0.38)	(1.55)	(0.38)	(1.50)
PO	-	-	-	-	0.0790	0.0178*	-	-	-	-	0.0746	0.0116*	0.0859	0.0139*
					(1.35)	(3.29)					(1.34)	(2.12)	(1.40)	(2.57)
TQ	-	-	-	-	-0.0083	-0.0005	-	-	-	-	0.0068	-0.0002	0.0091	0.0002
					(-0.46)	(-0.37)					(0.41)	(-0.14)	(0.57)	(0.18)
ln(TA)	-	-	-	-	-	-	0.0062	-0.0007	-	-	-	-	-	-
							(0.18)	(-0.28)						
ln(MV)	-	-	-	-	-	-	-	-	-0.0227	-0.0012	-	-	-	-
									(-0.88)	(-0.62)				
LDCE	-	-	-	-	-	-	-	-	-	-	-0.9929*	-0.0169	-1.0141*	-0.0195
											(-5.28)	(-1.07)	(-5.41)	(-1.26)
BLTD	-	-	-	-	-	-	-	-	-	-	-0.0148	-0.0030 ‘	-0.0155	-0.0030 ‘
											(-0.76)	(-1.79)	(-0.80)	(-1.81)
EBIT	-	-	-	-	-	-	-	-	-	-	0.0000	0.0000	0.0000	0.0000
											(0.26)	(0.24)	(0.47)	(0.48)
EPS	-	-	-	-	-	-	-	-	-	-	-0.0018	-0.0008*	-0.0016	-0.0007*
											(-0.67)	(-3.25)	(-0.43)	(-2.92)
DPS	-	-	-	-	-	-	-	-	-	-	-0.0042	0.0005	-0.0058	0.0004
											(-0.71)	(1.18)	(-0.96)	(0.79)
DY	-	-	-	-	-	-	-	-	-	-	0.3900 ‘	0.0033	0.3813 ‘	0.0029
											(1.78)	(0.18)	(1.75)	(0.16)

although the variable EPS is significantly negatively related to leasing across the models and test used. With most of the other variables being negative but not significant, there is some weak support for the hypothesis that less profitable companies are more likely to use lease finance.

Table 5.30 Logit regressions of the probability of using leasing by large companies in the 1992-95 periods

	1	2	5	7	9	11	13
Constant	1.8008*	0.3539	-1.1286	4.3386	3.0742	9.8254	7.4744
TC	-3.9156	-	-	-	-	-5.8996 ‘	-
TR	-	0.0036	-	-	-	-	0.0063
IACT	44.6841	42.1693	-	-	-	-31.0269	-29.1560
FAPTA	-	-	1.0414	-	-	3.9362	2.9425
RDSA	-	-	-20.0700*	-	-	-24.0907 ‘	-26.6845*
SG	-	-	2.0155	-	-	3.9023	3.4661
PO	-	-	2.2100*	-	-	0.9043	1.4642
TQ	-	-	0.1053	-	-	0.1114	0.2324
ln(TA)	-	-	-	-0.2635	-	-	-
ln(MV)	-	-	-	-	-0.1731	-	-
LDCE	-	-	-	-	-	-4.0124 ‘	-4.7391*
BLTD	-	-	-	-	-	-0.3192	-0.3316
EBIT	-	-	-	-	-	0.0000	0.0000
EPS	-	-	-	-	-	-0.0753*	-0.0615 ‘
DPS	-	-	-	-	-	0.0070	-0.0091
DY	-	-	-	-	-	21.0157	17.8032
ln(Sales)	-	-	-	-	-	-0.4258	-0.4523
N	125	125	125	125	125	125	125
χ^2	4.418	2.974	15.536	0.88	0.653	41.561	40.143
p-value	0.11	0.23	0.01	0.35	0.42	0.00	0.00

Notes: * denotes significant at the 5 per cent level, ‘ denotes significant at the 10 per cent level. . The variables are as defined in tables 5.19 - 5.23. The data used were obtained from Datastream. The estimates reported in this table were obtained using the logistical regression procedure in TSP (version 4.2).

ln(Sales)	-	-	-	-	-	-	-	-	-	-	-0.0339 (-0.80)	0.0010 (0.30)	-0.0449 (-1.05)	0.0001 (0.04)
N	125	125	125	125	125	125	125	125	125	125	125	125	125	125
Log of likelihood function	-29.44	-29.51	164.81	165.59	-25.38	174.22	-30.11	164.45	-29.74	164.60	-2.94	186.04	-2.17	186.81

Notes: T statistics in parentheses. * denotes significant at the 5 per cent level, ‘ denotes significant at the 10 per cent level. . The variables are as defined in tables 5.19 - 5.23. The data used were obtained from Datastream. The estimates reported in this table were obtained using the Tobit heteroscedastic regression procedure in TSP (version 4.2).

5.2.3 Multivariate tests using the sample of small companies

In this section the determinants of the leasing decision of the small company decile were examined in a similar way to that of the large company decile, with the results of the logit regression contained in Table 5.32, and the tobit regression results appearing in Table 5.33. If we look first of all at the tests of the tax hypotheses, we find that, unlike the predicted relationship, the tax charge variable (TC) is generally positively related to the use of leasing, and significantly so when the dependent variable is the lease ratio (LR) (Models 3 and 12). The results for the dependent variable LP and for the other tax variables, TR and IACT, are not significant, implying that overall tax plays an insignificant role behind the decision of small companies to use finance leases, a similar conclusion to that of Lasfer and Levis [1998].

Turning to the test of the growth hypothesis, we see that, when using the logit test, the fixed asset variable (FAPTA) is not significant. However, using the tobit test and with the lease ratio (LR) as the dependent variable the relationship is as hypothesised and is significant, supporting the findings of Table 5.29. The results under both types of test for the ratio of R&D to sales variable (RDSA) are generally not significant, similarly with the sales growth (SG) and dividend payout (PO) variables. The Tobin's *q* (TQ) variable offers some weak support for the growth hypothesis, being significantly related to the dependent variable LR. Overall, there is some support for the growth hypothesis as a reason why small companies use finance leases.

The test of the substitutional hypothesis shows mixed results. For the ratio of long-term debt to capital employed (LDCE), using the tobit test there is strong support for the hypothesis of a substitutional relationship between leases and debt. Using the logit test, the variable is of the same sign but not significant. The variable BLTD offers mixed results, however and is generally not significant at the five per cent level.

The test of the size hypothesis reports results that are generally not significant, although as reported by Lasfer and Levis some of the models report a positive relationship, in contrast to that reported for the whole sample. Finally, as with the large sample the profitability variables are generally not significant. However, the earnings per share (EPS) and dividend yield (DY) variables offer significant support for the hypothesis that the decision by small companies to use finance leases is negatively related to a company's profitability.

Table 5.32 Logit regressions of the probability of using leasing by small companies in the 1992-95 periods

	1	2	5	7	9	11	13
Constant	1.0262*	1.2951*	0.3848	-2.5822	-4.7195 ‘	-4.4905	-4.2713
TC	0.7052	-	-	-	-	0.3406	-
TR	-	0.0008	-	-	-	-	-0.031
IACT	22.4046	20.2839	-	-	-	23.3133	24.4014
FAPTA	-	-	0.6991	-	-	-3.5248	-3.4358
RDSA	-	-	12807	-	-	8370.64	8726.891
SG	-	-	1.0428	-	-	2.7151 ‘	2.5737 ‘
PO	-	-	-0.0307	-	-	-0.0443	-0.0455
TQ	-	-	0.2321	-	-	0.3896	0.3826
ln(TA)	-	-	-	0.4718	-	-	-
ln(MV)	-	-	-	-	0.7022*	-	-
LDCE	-	-	-	-	-	-1.5809	-1.7338
BLTD	-	-	-	-	-	0.0477	0.0456
EBIT	-	-	-	-	-	0.0000	0.0000
EPS	-	-	-	-	-	-0.1250	-0.1352 ‘
DPS	-	-	-	-	-	-0.1331	-0.1206
DY	-	-	-	-	-	-9.2193	-9.4912
ln(Sales)	-	-	-	-	-	0.6282	0.6348
N	125	125	125	125	125	125	125
χ^2	2.063	0.834	20.864	0.929	5.469	56.864	56.889
p-value	0.36	0.66	0.00	0.34	0.02	0.00	0.00

Notes: * denotes significant at the 5 per cent level, ‘ denotes significant at the 10 per cent level. . The variables are as defined in tables 5.19 - 5.23. The data used were obtained from Datastream. The estimates reported in this table were obtained using the logistical regression procedure in TSP (version 4.2).

Table 5.33 Tobit regressions of the probability of using leasing by small companies in the 1992-95 periods

	1 (LP)	2 (LP)	3 (LR)	4 (LR)	5 (LP)	6 (LR)	7 (LP)	8 (LR)	9 (LP)	10 (LR)	11 (LP)	12 (LR)	13 (LP)	14 (LR)
Constant	0.3504*	0.3630*	-0002	0.0281*	0.3104*	-0.0070	1.1486	0.2755 ‘	0.0121	-0.0801	0.7777	-0.1152	0.7582	-0.0973
	(4.67)	(7.06)	(-0.01)	(3.24)	(4.45)	(-0.69)	(1.29)	(1.87)	(0.02)	(-0.93)	(1.58)	(-1.26)	(1.55)	(-1.01)
TC	0.0809	-	0.0646*	-	-	-	-	-	-	-	-0.0563	0.0454*	-	-
	(0.63)		(3.13)								(-0.62)	(2.72)		
TR	-	0.0008	-	-0.0000	-	-	-	-	-	-	-	-	0.0003	-0.0001
		(1.30)		(-0.06)									(0.64)	(-0.97)
IACT	0.7745	0.9673	-0.7352	-0.6803	-	-	-	-	-	-	-0.1395	-0.8790 ‘	-0.2318	-0.8508
	(0.18)	(0.23)	(-1.07)	(-0.95)							(-0.05)	(-1.64)	(-0.08)	(-1.53)
FAPTA	-	-	-	-	0.3286	0.2632*	-	-	-	-	0.1199	0.2115*	0.1089	0.2078*
					(0.88)	(4.90)					(0.45)	(4.31)	(0.41)	(4.07)
RDSA	-	-	-	-	5.7884*	-0.1662	-	-	-	-	2.1816	-0.5446	2.1373	-0.5655
					(2.16)	(-0.43)					(1.19)	(-1.61)	(1.16)	(-1.61)
SG	-	-	-	-	0.0140	-0.0102	-	-	-	-	0.0640	-0.0079	0.0817	-0.0201
					(0.08)	(-0.40)					(0.49)	(-0.33)	(0.63)	(-0.82)
PO	-	-	-	-	0.0003	-0.0002	-	-	-	-	-0.0010	-0.0003	-0.0010	-0.0003
					(0.10)	(-0.40)					(-0.56)	(-0.84)	(-0.55)	(-0.89)
TQ	-	-	-	-	0.0032	0.0033	-	-	-	-	0.0202	0.0070*	0.0201	0.0072*
					(0.19)	(1.36)					(1.58)	(2.96)	(1.57)	(2.93)
ln(TA)	-	-	-	-	-	-	-0.0912	-0.0298 ‘	-	-	-	-	-	-
							(-0.86)	(-1.69)						
ln(MV)	-	-	-	-	-	-	-	-	0.0428	0.0122	-	-	-	-
									(0.73)	(1.24)				
LDCE	-	-	-	-	-	-	-	-	-	-	-1.903*	-0.1732*	-1.8832*	-0.1799*
											(-7.94)	(-3.94)	(-7.80)	(-3.93)
BLTD	-	-	-	-	-	-	-	-	-	-	0.0006 ‘	-0.0001 ‘	0.0007*	-0.0001*
											(1.90)	(-1.77)	(2.00)	(-2.14)
EBIT	-	-	-	-	-	-	-	-	-	-	0.0000	-0.0000	0.0000	0.0000
											(1.06)	(-0.36)	(0.88)	(0.13)
EPS	-	-	-	-	-	-	-	-	-	-	-0.0240*	-0.0013	-0.0233*	-0.0019
											(-2.83)	(-0.94)	(-2.80)	(-1.26)
DPS	-	-	-	-	-	-	-	-	-	-	-0.0085	-0.0065	-0.0089	-0.0066
											(-0.38)	(-1.51)	(-0.41)	(-1.45)
DY	-	-	-	-	-	-	-	-	-	-	-4.7005*	0.0889	-4.5291*	-0.0576
											(-2.49)	(0.25)	(-2.43)	(-0.16)

ln(Sales)	-	-	-	-	-	-	-	-	-	-	-0.0051 (-0.10)	0.1308 (1.37)	-0.0071 (-0.14)	0.1389 (1.41)
N	125	125	125	125	125	125	125	125	125	125	125	125	125	125
Log of likelihood function	-100.61	-99.97	85.73	81.00	-97.79	98.33	-100.46	81.95	-100.56	81.33	-52.84	119.99	-52.82	116.92

Notes: T statistics in parentheses. * denotes significant at the 5 per cent level, ‘ denotes significant at the 10 per cent level. . The variables are as defined in tables 5.19 - 5.23. The data used were obtained from Datastream. The estimates reported in this table were obtained using the Tobit heteroscedastic regression procedure in TSP (version 4.2).

The following chapter provides a concluding summary of the study, bringing together the various issues arising from this investigation into the leasing decision of companies in the UK. The main aim will be to put the results into perspective, attempting to indicate possible corporate policy implications as well as discussing areas of future research, particularly given the rapidly changing external environment in which the leasing industry operates.

6. Conclusion

This concluding chapter aims to provide an overview of the study and to draw together the results of the tests performed therein, before setting out some of the implications for the corporate use of lease finance in the UK. The chapter will begin with a brief review of the historical development of the leasing industry in the UK, highlighting the importance of various institutional factors that have impacted on this growth. This will be followed by an overview of the main themes arising from the literature covering this area. The focus will largely be on the need to understand leasing as just one source in funding the investment in real assets and, hence, the desire to form an understanding of its growth and importance.

The main hypotheses arising from the survey of the literature will be reviewed in turn. This is followed by a summary of the methodologies adopted to test these hypotheses and an outline of the sample data used. The results of the tests performed are then outlined before identifying the implications to be drawn from the study. This will take the form of a concluding section, putting this study into the wider context of research in this area, before drawing out the implications for the leasing industry and setting out possible areas for future research.

The discussion of the historical development of the use of leasing finance in the UK, contained in Chapter 1, highlighted the importance of a number of institutional factors at work during the formative years of the industry in the 1960s and 70s. It was clear from this discussion that the growth of the leasing industry was heavily influenced by changes in the rules adopted by the accounting and taxation bodies in the UK, as well as by general rules of statute. That such rules provided stimuli as well as obstacles to growth was evident in the (often elaborate) ways sought to circumvent them. This was particularly the case with regard to the structuring of leases so as to remain off-balance sheet, or the staggering of leasing companies consolidated within a group structure to take advantage of the group relief rules of the Inland Revenue.

The fundamental changes to the system of capital allowances that took place between 1984 and 1986 were seen at the time as signalling a possible decline in the use of leasing finance, such was the focus on it as a tax-efficient form of raising finance. The fact that these changes coincided with the introduction of an accounting standard for leases, SSAP 21, and its requirement of capitalising long-term 'finance' leases in the accounts rather than as a note was discussed and was seen as a further blow to the industry. The increasing activity of accounting standard setters in the area of inclusion of items in the accounts (ranging from long-term contracts to leases), beginning with FRS 5 in the UK was also discussed. The feeling is that the leasing sector seems likely to witness substantial change over the next few years. Indeed, recent studies have shown a shift away from finance to operating leasing contracts in the UK already in the 1990s, this being particularly marked for long-term assets.

In parallel with the rapid growth in the use of leasing finance in the 1970s, there was a simultaneous increase in the interest shown by academics in the subject. The initial literature focused on the valuation of leases and on the methods of evaluating leases vis a vis other forms of raising finance. Subsequent studies brought leasing into the realms of capital structure theory by focusing on the differences and similarities between leasing and debt finance, leading to the debate over the degree of substitutability between the two. More recent studies have examined factors influencing the decision to use lease finance, both at the theoretical level and empirically via univariate and multivariate analysis. The literature has focused on the role which corporate taxation has played in the use of leasing, which it clearly had in the UK in the period of rapid growth in the 1970s. Other factors that have been suggested as potentially important in determining the use of lease finance have been based on particular characteristics of companies themselves and the types of asset leased. Thus, variables such as company size, industry classification, past and current levels of performance, future growth prospects and the possibility of financial distress have all been incorporated into the analysis.

In order to test the various hypotheses as set out in both chapters 3 and 4, a core sample of 351 UK non-financial companies for the period 1993-95 was developed. The data for the tests was company accounts data taken from the Datastream database. I also used a smaller sample of companies reporting annual operating lease commitments which was used to provide a more comprehensive analysis of the leasing decision, particularly given the increased importance of operating leases via a vis finance leases during the 1990s. In addition, a pooled sample, based on the core sample, was also utilised sample for the period 1992-95 and was a useful test of the robustness of the earlier results. The following paragraphs summarise the main findings from the tests undertaken before setting out recommendations for further study.

The importance of including operating lease data in the analysis was shown in by the fact that annual operating lease commitments were three times the capitalised value of finance leases in the period 1993 – 95.[326] In the light of recent articles in the financial press, this situation is likely to have been reinforced as companies have moved from using finance to operating leases in acquiring capital equipment.

The results of the various tests performed clearly show evidence of a substitutional relationship between the use of finance leases and debt finance among companies in the UK. In all the tests performed there was a significant negative relationship between the use of finance leases and that of debt finance, as proxied by the ratio of long term debt to total assets. The analysis was developed further, to estimate the debt/lease displacement ratio. The results of the two tests performed, using different data, revealed different results, highlighting the possibility of this relationship being sample specific and/or time varying. The two tests revealed that leasing displaces debt on a less than one-to-one basis.

Tests of the relationship between corporate taxation and finance leases were rather disappointing, particularly as taxation had played such an important role in the

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[326] As detailed in Table 4.2.

growth of leasing in the UK. The results of tests undertaken to examine the relationship between a company's propensity to use finance leases and its corporation tax ratio were largely inconclusive, although the coefficient was significantly negative for one year. This partial support for the hypothesis that leasing enables less profitable companies to finance investment was given further support when another proxy variable (a measure of irrecoverable advance corporation tax) was used. This finding demonstrates the importance of developing more comprehensive tax measures, as discussed by Smith and Nguyen [1995] and Graham et al. [1998].

The tests performed on the relationship between leasing and the company's industrial classification were generally inconclusive, little evidence being reported in support of an industry effect. Although this finding is largely consistent with previous work in the UK (in particular the study of Adedeji and Stapleton [1996]), the importance of incorporating operating leases in the analysis was demonstrated by Beattie et al. [2000] with regard to the retail sector.

The study of the relationship between leasing and the company's financial position incorporated tests that examined the impact of financial contracting costs, investment opportunities and financial distress on the use of finance leases in the UK. The results provide some support for the hypothesis that companies using finance leases face greater costs in raising external finance, this being particularly the case with small, fast-growing companies. There is also some evidence that the use of finance leasing in the UK is negatively related to corporate liquidity and also to current profitability. These results are largely supportive of earlier theoretical and empirical studies in both the US and the UK. Direct tests of the relationship between the use of finance leases and corporate financial distress, as proxied by Altman's [1968] Z Score were largely inconclusive, however.

The tests of the size hypothesis resulted in some interesting insights into the leasing decision of differently sized companies. There is supporting evidence for the hypothesis of a negative relationship between leasing and company size. Further

analysis of the leasing decision of large and small companies largely confirmed this relationship. Company size, however seemed to be acting as a proxy for profitability – small companies reported a significantly negative relationship between the use of finance leases and profitability.

The use of operating lease data provided further insights into the question as to why companies resort to leasing, and also the type of companies that do so. It appears that, unlike the case for finance leases, firms do not view operating leases as substitutes for debt finance, their being generally no significant relationship between the two. If operating leases are to be capitalised in the future (as discussed above),[327] it appears that given the possible differences in the ratio of debt displacement between finance and operating leases, the economic consequences of such a move are likely to be important for both lessors and lessees. Indeed, given the importance of leasing in the acquisition and use of new equipment, such a step is likely to have wider economic implications.

The study also provides evidence to suggest that a company's tax position plays an insignificant role in the decision to use operating leases in the UK. In the light of recent UK studies (e.g. Beattie et al. [2000]), this is likely to be a result of the type of asset leased under the two types of leasing.[328] The main factors influencing the use of operating leases established by the current study appear to be the size and overall liquidity position of the company. Firms are more likely to resort to using operating leases (and therefore not recording such leases directly in the balance sheet) if they are small and are facing liquidity/funding problems. The implications for analysts and other stakeholders is therefore clear, that to overlook the notes to the financial statements is to potentially misinterpret a company's financial position.

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[327] See footnote 56

[328] The authors highlighted the case of the importance of operating leases in the use of retail assets, with the emphasis being on the tax-paying position of the lessor not, as traditionally supposed, of the lessee.

This study has aimed to bring together the various analyses of the corporate decision to use finance and operating leases as a method of funding their asset use and acquisition requirements. Prior to recent studies in the late 1990s[329] this was a relatively undeveloped area in the UK, particularly in terms of empirical work utilising UK data. Whilst concentrating largely on finance leases, this study has provided insights into the decision to utilise both forms of leasing by UK companies. This leads one to the conclusion that factors such as the debt capacity of a company, its current and prospective future performance may all play an important role in the use of finance leases, although less so for operating leases where liquidity issues are more important. Such factors furthermore show evidence of assuming different prominence according to company size.

This study, together with the more recent studies in the US and the UK, has therefore highlighted the multi-faceted nature of the corporate leasing decision. The recent utilisation of more comprehensive measures of taxation and debt, alongside the inclusion of operating lease data have proved an important step forward towards a fuller understanding of this area. More robust testing of the estimation procedures undertaken, together with the use of more recent data from the later 1990s, encompassing the recent changes in corporate taxation, and also the move away from finance towards operating leases would, I think, be a useful addition to these studies.

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[329] The studies undertaken by Adedeji and Stapleton [1996], Adams and Hardwick [1998], and Beattie et al. [2000] were discussed in Chapter 3.

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8. Appendix

1. Industry analysis of the sample

	Total	1993 Leasing	1993 Not Leasing	1994 Leasing	1994 Not Leasing	1995 Leasing	1995 Not Leasing
Control Group							
Chemicals	14	10	4	11	3	10	4
Oil	8	4	4	4	4	3	5
Food Manufacturers	14	10	4	10	4	10	4
Household Goods	9	6	3	6	3	6	3
Health	6	5	1	5	1	4	2
Services	10	7	3	9	1	9	1
Media	13	8	5	6	7	9	4
Mining & Metallurgy	10	6	4	6	4	7	3
Transport	3	1	2	1	2	1	2
Sub-Total	87	57	30	58	29	59	28
Test Group							
Diversified Inds.	15	12	3	12	3	13	2
Brewery	16	6	10	5	11	6	10
Building	41	27	14	27	14	27	14
Distribution	19	13	6	13	6	14	5
Electronics	27	20	7	19	8	21	6
Engineering	59	49	10	50	9	47	12
Leisure	16	11	5	11	5	12	4
Printing & Packaging	19	17	2	16	3	17	2
Retail	31	21	10	20	11	21	10
Textiles	21	18	3	16	5	14	7
Sub-Total	264	194	70	189	75	192	72
Total	351	251	100	247	104	251	100

Note: The industries are based on Datastream industry classifications.

2. Distribution of the values of the PE ratio

PE Ratio Values	1993	1994	1995
0 - 1	1	1	0
1 - 5	5	4	5
5 - 10	16	27	43
10 - 20	179	204	238
20 - 50	74	63	28
50 - 100	9	7	9
100	67	45	28
< 0	56	35	26
>100	11	10	2
Total	351	351	351

3. Further analysis of different measures of Debt Ratio

Mean Values

	1993		1994		1995	
Variable	Leasing companies	Non leasing companies	Leasing companies	Non leasing companies	Leasing companies	Non leasing companies
DR1	0.2214	0.2820	0.2172	0.2786	0.2287	0.2509
DR2	0.2272	0.2553	0.1744	0.2463	0.2541	0.2058
DR3	0.1498	0.1893	0.1500	0.1824	0.1559	0.1679

Notes: DR1 = (long term loans + short term loans and overdrafts - (finance leases, hire purchase and short term investments)) divided by total assets (the debt ratio used in Equation 5); DR2 = Debt (as above) divided by book value of equity (corresponds to Ang and Peterson's debt ratio, used in Equation 4); DR3 = Debt (as above) divided by market value of equity.

4. Classification of industry groups

Industry Group	Industries contained
Manufacturing	Chemicals, Diversified Industries, Brewing, Food, Manufacturers, Household Goods, Electronics, Engineering, Printing & Packaging, Textiles, Transport
Mining & Extractive Industries	Oil, Mining & Metallurgy
Construction	Building
Wholesale Trade	Distribution
Retail Trade	Retail
Services	Health, Leisure, Services, Media

Notes: The industries are based on Datastream industry classifications.

5. Correlation matrices (full sample)

1993

	LR1	DR1	PE	LQ	ln(TA)
DR1	-0.1868*				
PE	0.0959	0.0031			
LQ	-0.1842*	0.0097	0.0145		
ln(TA)	-0.3102*	0.3394*	-0.1339*	0.0370	
TR	0.0420	-0.0802	0.1487*	0.0136	0.0103

Number of observations = 351

1994

	LR1	DR1	PE	LQ	ln(TA)
DR1	-0.1565*				
PE	-0.0354	0.0393			
LQ	-0.2151*	-0.0354	0.0984		
ln(TA)	-0.3133*	0.3563*	0.0017	0.0728	
TR	0.0050	-0.0573	0.1320*	0.1068*	0.0241

Number of observations = 351

1995

	LR1	DR1	PE	LQ	ln(TA)
DR1	-0.0749				
PE	-0.0949	-0.0172			
LQ	-0.1888*	-0.0204	0.0229		
ln(TA)	-0.2669*	0.4325*	0.0469	0.0240	
TR	0.0039	-0.1269*	0.0687	0.0465	0.0265

Number of observations = 351

Notes: * values are significant at the 5% or higher levels. *LR1* = capitalised value of finance leases and hire purchase agreements divided by total assets; *DR1* = (long term loans + short term loans and overdrafts - (finance leases, hire purchase and short term investments)) divided by total assets; *PE* = share price divided by earnings per share; *LQ* = current assets/current liabilities; *TA* = book value of total assets (measured in £ millions); *TR* = tax charge (current and deferred)/profit before tax for the year. The data used were obtained from Datastream. The estimates reported in this table were obtained using the Spearman's correlation procedure in SPSS.

6. Correlation matrices (leasing companies only)

1993

	LR1	DR1	PE	LQ	ln(TA)
DR1	-0.1400*				
PE	0.1804*	-0.0248			
LQ	-0.1051	0.0561	0.0670		
ln(TA)	-0.2833*	0.3413*	-0.1297*	0.0240	
TR	0.1442*	-0.0957	0.1834*	0.0465	0.0265

Number of observations = 251

1994

	LR1	DR1	PE	LQ	ln(TA)
DR1	-0.1513*				
PE	0.0607	0.0167			
LQ	-0.2463*	0.0353	0.0795		
ln(TA)	-0.2961*	0.3748*	0.0513	0.1399*	
TR	-0.0085	-0.0679	0.1296	0.1455*	0.0642

Number of observations = 247

1995

	LR1	DR1	PE	LQ	ln(TA)
DR1	-0.0782				
PE	-0.0458	0.0242			
LQ	-0.1746*	0.0196	-0.0207		
ln(TA)	-0.2452*	0.4511*	0.1008	0.0425	
TR	-0.0346	-0.1297*	0.0656	0.0078	0.0702

Number of observations = 251

Notes: See Appendix 5.

7. OLS Regression estimates (finance lease companies only), including industry dummy variables

Model:

$$LR1 = \beta_0 + \beta_1(DR1) + \beta_2(PE) + \beta_3(LQ) + \beta_4(\ln(TA)) + \beta_5(TR) + \sum_{i=6}^{n+5} \beta_i(IND_{i-5}) + \varepsilon$$

Variables	Coefficients	1993	1994	1995
Constant	β_0	0.1091	0.1682	0.1130
		(3.48)*	(4.74)*	(4.14)*
DR1	β_1	-0.04722	-0.0328	0.0015
		(-2.26)*	(-1.25)	(0.08)
PE	β_2	0.0002	0.0006	0.0002
		(1.92)	(5.22)*	(1.75)
LQ	β_3	-0.0133	-0.0121	-0.0057
		(-2.76)*	(-3.07)*	(-1.62)
ln(TA)	β_4	-0.0035	-0.0046	-0.0045
		(-2.06)*	(-2.37)*	(-2.98)*
TR	β_5	0.0360	-0.0976	-0.0055
		(3.08)*	(-5.16)*	(-0.43)
Diversified Inds.	β_6	-0.0133	-0.0075	0.0078
		(-1.00)	(-0.48)	(0.72)
Brewery	β_7	-0.0278	-0.0438	-0.0227
		(-1.54)	(-1.91)	(-1.49)
Building	β_8	-0.0221	-0.0252	-0.0060
		(-2.25)*	(-2.22)*	(-0.71)
Distribution	β_9	-0.0138	-0.0258	-0.0130
		(-1.07)	(-1.71)	(-1.22)
Electronics	β_{10}	-0.0198	-0.0252	-0.0034
		(-1.80)	(-1.92)	(-0.36)
Engineering	β_{11}	-0.0201	-0.0210	-0.0041
		(-2.49)*	(-2.24)*	(-0.58)
Leisure	β_{12}	-0.0027	-0.0333	0.0009
		(-0.20)	(-2.03)*	(0.08)
Printing & Packaging	β_{13}	0.0109	-0.0012	0.0212
		(0.95)	(-0.08)	(2.17)*
Retail	β_{14}	-0.0088	-0.0271	-0.0012
		(-0.81)	(-2.13)*	(-0.14)
Textiles	β_{15}	-0.0260	-0.0215	-0.0031
		(-2.28)*	(-1.55)	(-0.29)
No. of companies		251	247	251

Notes: T-statistics in parentheses. * indicates significance at the 5% level. LR1 = Capitalised value of finance leases and hire purchase contracts divided by total assets; DR1 = Debt (Total loan capital plus subordinated debt minus capitalised value of finance leases and hire purchase contracts) divided by total assets; PE = the PE ratio, measured by dividing share price by earnings per share; LQ = Current Assets/Current Liabilities; TA = Book value of total assets (measured in £ millions); TR = Total tax charge for the current year/Profit before tax for the current year. All the data were obtained from Datastream and the estimates reported in the table were obtained using OLS regression procedure in TSP (version 4.2).

8. OLS Regression estimates (finance lease companies only), including industry dummy variables

Model:

$$DR1 = \gamma_0 + \gamma_1(LR1) + \gamma_2(PE) + \gamma_3(LQ) + \gamma_4(\ln(TA)) + \gamma_5(TR) + \sum_{i=6}^{n+5} \gamma_i(IND_{i-5}) + \varepsilon$$

Variables	Coefficients	1993	1994	1995
Constant	β_0	-0.2588	-0.2059	-0.4024
		(-2.65)*	(-2.24)*	(-4.30)
LR1	β_1	-0.4497	-0.2042	0.0176
		(-2.26)*	(-1.25)	(0.08)
PE	β_2	0.0005	0.0001	0.0002
		(1.85)	(0.19)	(0.75)
LQ	β_3	-0.0026	-0.0157	-0.0125
		(-0.17)	(-1.56)	(-1.03)
ln(TA)	β_4	0.0232	0.0228	0.0322
		(4.57)*	(4.83)*	(6.70)*
TR	β_5	0.0065	-0.0279	-0.0596
		(0.18)	(-0.56)	(-1.39)
Diversified Inds.	β_6	0.0341	-0.045	0.0430
		(0.84)	(-0.12)	(1.15)
Brewery	β_7	0.0210	-0.0341	0.0436
		(0.37)	(-0.59)	(0.83)
Building	β_8	-0.0285	-0.0127	0.0258
		(-0.93)	(-0.44)	(0.90)
Distribution	β_9	0.0256	0.0061	0.0476
		(0.64)	(0.16)	(1.30)
Electronics	β_{10}	-0.0866	-0.0919	-0.0424
		(-2.57)*	(-2.83)*	(-1.33)
Engineering	β_{11}	-0.0099	-0.0057	0.0319
		(-0.39)	(-0.24)	(1.33)
Leisure	β_{12}	-0.0119	-0.0300	-0.0438
		(-0.28)	(-0.73)	(-1.13)
Printing & Packaging	β_{13}	0.0251	-0.0160	0.0047
		(0.71)	(-0.46)	(-0.14)
Retail	β_{14}	-0.0185	-0.0404	-0.0289
		(-0.55)	(-1.26)	(-0.93)
Textiles	β_{15}	-0.0522	-0.0246	-0.0018
		(-1.47)	(-0.71)	(-0.05)
No. of companies		351	351	351

Notes: T-statistics in parentheses. * indicates significance at the 5% level. DR1 = Debt (Total loan capital plus subordinated debt minus capitalised value of finance leases and hire purchase contracts) divided by total assets; LR1 = Capitalised value of finance leases and hire purchase contracts divided by total assets; PE = the PE ratio, measured by dividing share price by earnings per share; LQ = Current Assets/Current Liabilities; TA = Book value of total assets (measured in £ millions); TR = Total tax charge for the current year/Profit before tax for the current year. All the data were obtained

from Datastream and the estimates reported in the table were obtained using the OLS regression procedure in TSP (version 4.2).

9. Research and Development expenditure relative to sales and assets by industry groups, 1993-1995 (individual years)

1993

Industry Group	No of Firms	Companies Reporting R&D Expense	Mean RD1*	Standard Deviation RD1	Mean RD2*	Standard Deviation RD2
Manufacturing	197	103	0.0211	0.0273	0.0439	0.0434
Mining & Extractive Industries	18	9	0.0070	0.0048	0.0169	0.0186
Construction	41	6	0.0060	0.0069	0.0106	0.0094
Wholesale Trade	19	1	0.0011	-	0.0022	-
Retail Trade	31	2	0.0029	0.0034	0.0102	0.0126
Services	45	14	0.0181	0.0183	0.0421	0.0366

* RD1 = ratio of R&D to sales, RD2 = ratio of R&D to the book value of total assets.

1994

Industry Group	No of Firms	Companies Reporting R&D Expense	Mean RD1*	Standard Deviation RD1	Mean RD2*	Standard Deviation RD2
Manufacturing	197	101	0.0191	0.0234	0.0416	0.0271
Mining & Extractive Industries	18	10	0.0123	0.0122	0.0199	0.0189
Construction	41	2	0.0068	0.0062	0.0148	0.0107
Wholesale Trade	19	7	0.0005	0.0000	0.0014	0.0003
Retail Trade	31	1	0.0005	-	0.0013	-
Services	45	13	0.0255	0.0192	0.0760	0.0490

* RD1 = ratio of R&D to sales, RD2 = ratio of R&D to the book value of total assets.

1995

Industry Group	No of Firms	Companies Reporting R&D Expense	Mean RD1*	Standard Deviation RD1	Mean RD2*	Standard Deviation RD2
Manufacturing	197	99	0.0203	0.0272	0.0441	0.0523
Mining & Extractive Industries	18	10	0.0141	0.0162	0.0193	0.0196
Construction	41	7	0.0075	0.0061	0.0160	0.0096
Wholesale Trade	19	2	0.0004	0.0002	0.0010	0.0003
Retail Trade	31	1	0.0005	-	0.0014	-
Services	45	12	0.0283	0.0198	0.0770	0.0340

* RD1 = ratio of R&D to sales, RD2 = ratio of R&D to the book value of total assets.

10. Distribution of Leasing versus Non-Leasing Firms by industry groups, 1993-1995 (individual years)

1993

	Leasing		Non-Leasing		Total
Industry Group	Number	Percent	Number	Percent	Number
Manufacturing	149	75.63	48	24.37	197
Mining & Extractive Industries	10	55.56	8	44.44	18
Construction	27	65.85	14	34.15	41
Wholesale Trade	13	68.42	6	31.58	19
Retail Trade	21	67.74	10	32.26	31
Services	31	68.89	14	31.11	45
Total	251	71.51	100	28.49	351

$\chi^2 = 4.995$ p-value = 0.417

1994

	Leasing		Non-Leasing		Total
Industry Group	Number	Percent	Number	Percent	Number
Manufacturing	146	74.11	51	25.89	197
Mining & Extractive Industries	10	55.56	8	44.44	18
Construction	27	65.85	14	34.15	41
Wholesale Trade	13	68.42	6	31.58	19
Retail Trade	20	64.52	11	35.48	31
Services	31	68.89	14	31.11	45
Total	247	70.37	104	29.63	351

$\chi^2 = 4.210$p-value = 0.520

1995

	Leasing		Non-Leasing		Total
Industry Group	Number	Percent	Number	Percent	Number
Manufacturing	145	73.60	52	26.40	197
Mining & Extractive Industries	10	55.56	8	44.44	18
Construction	27	65.85	14	34.15	41
Wholesale Trade	14	73.68	5	26.32	19
Retail Trade	21	67.74	10	32.26	31
Services	34	75.56	11	24.44	45
Total	251	71.51	100	28.49	351

$\chi^2 = 3.938$p-value = 0.559

11. Test For Normality 1993-95 (individual years)

1993

Ratio	Leasing Companies	Non-Leasing Companies
LR	0.768	*
ETA	0.967	0.991
RET	0.600	0.754
MB	0.924	0.945
EBTI	0.554	0.679
LDA	0.971	0.964
EVAR	0.331	0.416
ZSCORE	0.316	0.382
TAG	0.931	0.852
TR	0.807	0.749
Number	251	100
NSCORE (10%)	0.994	0.989
NSCORE (5%)	0.993	0.986
NSCORE (1%)	0.990	0.981

1994

Ratio	Leasing Companies	Non-Leasing Companies
LR	0.686	*
ETA	0.871	0.971
RET	0.529	0.863
MB	0.795	0.943
EBTI	0.675	0.590
LDA	0.979	0.959
EVAR	0.548	0.586
ZSCORE	0.334	0.349
TAG	0.898	0.953
TR	0.787	0.664
Number	247	104
NSCORE (10%)	0.994	0.989
NSCORE (5%)	0.993	0.986
NSCORE (1%)	0.990	0.981

1995

Ratio	Leasing Companies	Non-Leasing Companies
LR	0.809	*
ETA	0.905	0.980
RET	0.809	0.986
MB	0.892	0.921
EBTI	0.684	0.312
LDA	0.978	0.953
EVAR	0.686	0.500
ZSCORE	0.472	0.510
TAG	0.813	0.984
TR	0.788	0.807
Number	251	100
NSCORE (10%)	0.994	0.989
NSCORE (5%)	0.993	0.986
NSCORE (1%)	0.990	0.981

Notes: LR = Capitalised value of finance leases and hire purchase contracts divided by total assets; ETA = ratio of earnings before interest and taxation to total assets; RET = ratio of retained earnings to total assets; MB = ratio of market value of equity to book value of equity; EBTI = ratio of earnings before interest and taxation to total interest payments; LDA = ratio of long term debt to total assets; EVAR = Coefficient of variation of earnings before interest and taxation over the previous seven years. ZSCORE = Altman's Z-score; TAG = geometric mean of the growth in total assets over the previous six years (1987-92); TR = ratio of total tax charge to pre-tax profit. The figures represent the correlation coefficient between the distribution of values of each variable and that of a normally distributed set.

12. Univariate Tests of Bankruptcy and Growth Potential hypotheses 1993-95 (individual years)

1993

	Median Value		Mann-Whitney	
Variable	Leasing Company	Non-Leasing Company	W	p-value
ETA	0.1234	0.1349	43671	0.2783
RET	0.0218	0.0407	42375	0.0179*
MB	1.5148	1.8159	42509	0.0261*
EBTI	3.347	5.306	42082	0.0073*
LDA	0.1327	0.1543	41855	0.0034*
EVAR	0.4248	0.3030	46950	0.0006*
ZSCORE	7.96	4.295	44070	0.4511
TAG	1.1397	1.1377	44584	0.3174
TR	0.3300	0.3300	43406	0.1849

1994

	Median Value		Mann-Whitney	
Variable	Leasing Company	Non-Leasing Company	W	p-value
ETA	0.1469	0.1519	42820	0.2265
RET	0.0374	0.0472	42146	0.0634
MB	1.7725	1.8843	42249	0.0795
EBTI	4.731	6.752	41491	0.0113*
LDA	0.1377	0.1465	41862	0.0319*
EVAR	0.3838	0.2533	47005	0.0000*
ZSCORE	8.52	10.75	42838	0.2328
TAG	1.1114	1.1148	43479	0.4970
TR	0.3300	0.3300	43628	0.4296

1995

	Median Value		Mann-Whitney	
Variable	Leasing Company	Non-Leasing Company	W	p-value
ETA	0.1547	0.1564	43453	0.1999
RET	0.0422	0.0497	42826	0.0579
MB	1.5308	1.8480	42556	0.0296*
EBTI	5.425	7.380	41939	0.0046*
LDA	0.14235	0.13121	43429	0.1922
EVAR	0.3583	0.2416	46736	0.0014*
ZSCORE	8.85	11.00	43233	0.1360
TAG	1.0789	1.0912	43497	0.2197
TR	0.3299	0.3298	44595	0.3128

Notes: LR = Capitalised value of finance leases and hire purchase contracts divided by total assets; ETA = ratio of earnings before interest and taxation to total assets; RET = ratio of retained earnings to total assets; MB = ratio of market value of equity to book value of equity; EBTI = ratio of earnings before interest and taxation to total interest payments; LDA = ratio of long term debt to total assets; EVAR = Coefficient of variation of earnings before interest and taxation over the previous seven years. ZSCORE = Altman's Z-score; TAG = geometric mean of the growth in total assets over the previous six years (1987-92); TR = ratio of total tax charge to pre-tax profit. The level of significance is represented by the p-value. The data for the variables was obtained from Datastream and the test was performed using the Mann-Whitney univariate test procedure in Minitab (version 10).

13. Two-Sample t-test of Bankruptcy and Growth Potential hypotheses 1993-95

	Mean Values			
Variable	Leasing Company	Non-Leasing Company	t-statistic	p-value
ETA	0.147	0.155	-0.64	0.260
RET	-0.012	0.038	-3.33*	0.000
MB	1.84	2.15	-1.64	0.052
EBTI	10.2	*33*	-1.24	0.110
LDA	0.152	0.187	-2.08*	*0.020*
EVAR	0.73	0.51	1.19	0.120
ZSCORE	82	84	-0.03	0.490
TAG	1.144	1.123	1.50	0.067
TR	0.348	0.346	0.16	0.590

Notes: * represents values significant at the five per cent confidence level. LR = Capitalised value of finance leases and hire purchase contracts divided by total assets; ETA = ratio of earnings before interest and taxation to total assets; RET = ratio of retained earnings to total assets; MB = ratio of market value of equity to book value of equity; EBTI = ratio of earnings before interest and taxation to total interest payments; LDA = ratio of long term debt to total assets; EVAR = Coefficient of variation of earnings before interest and taxation over the previous seven years. ZSCORE = Altman's Z-score; TAG = geometric mean of the growth in total assets over the previous six years (1987-92); TR = ratio of total tax charge to pre-tax profit. The data for the variables was obtained from Datastream and the test was performed using the two sample t-test procedure in Minitab (version 10).

14. Correlation Coefficients 1993-95

	LR	ETA	RET	MB	EBTI	LDA	EVAR	TAG	ZSCORE
ETA	-0.179								
RET	-0.494	0.369							
MB	-0.075	0.554	0.117						
EBTI	-0.068	0.098	0.074	0.104					
LDA	-0.171	-0.084	-0.001	-0.001	-0.143				
EVAR	0.106	-0.210	-0.110	-0.063	-0.033	-0.007			
TAG	-0.038	0.032	-0.009	0.092	0.007	0.120	-0.044		
ZSCORE	-0.084	0.137	0.070	0.152	0.082	-0.237	0.041	-0.024	
TR	0.016	-0.069	-0.105	-0.118	-0.028	-0.015	0.083	0.008	0.003

Notes: LR = Capitalised value of finance leases and hire purchase contracts divided by total assets; ETA = ratio of earnings before interest and taxation to total assets; RET = ratio of retained earnings to total assets; MB = ratio of market value of equity to book value of equity; EBTI = ratio of earnings before interest and taxation to total interest payments; LDA = ratio of long term debt to total assets; EVAR = Coefficient of variation of earnings before interest and taxation over the previous seven years. ZSCORE = Altman's Z-score; TAG = geometric mean of the growth in total assets over the previous six years (1987-92); TR = ratio of total tax charge to pre-tax profit. The data used were obtained from Datastream. The estimates reported in this table were obtained using the Spearman's correlation procedure in SPSS.

15. Regression Results for OLS Models 3 and 4.

1993

	Model 3			Model 4		
Variable	Coefficient	t-ratio	p-value	Coefficient	t-ratio	p-value
Intercept	0.0307	2.61*	0.009	0.0213	1.74	0.083
ETA	-0.0049	-0.23	0.821	-0.0029	-0.14	0.892
RET	-0.0717	-10.30*	0.000	-0.0681	-9.71*	0.000
MB	0.0018	1.07	0.284	0.0019	1.15	0.251
EBTI	-0.0001	-1.92	0.056	-0.0001	-1.84	0.067
LDA	-0.0623	-4.53*	0.000	-0.0643	-4.70*	0.000
EVAR	0.0003	0.62	0.539	0.0002	0.36	0.718
ZSCORE	-	-	-	-0.0000	-1.44	0.150
TAG	-0.0028	-0.29	0.775	-0.0014	-0.15	0.882
TR	-	-	-	0.0222	2.78*	0.006
	Adjusted R^2 = 29.0%			Adjusted R^2 = 30.6%		
	F-statistic = 21.44			F-statistic = 18.15		
	p-value = 0.000			p-value = 0.000		

1994

	Model 3			Model 4		
Variable	Coefficient	t-ratio	p-value	Coefficient	t-ratio	p-value
Intercept	0.0186	1.08	0.279	0.0387	2.18*	0.030
ETA	0.0076	0.32	0.746	0.0011	0.05	0.963
RET	-0.0387	-4.31*	0.000	-0.0400	-4.52*	0.000
MB	0.0045	2.76*	0.006	0.0041	2.56*	0.011
EBTI	-0.0002	-2.92*	0.004	-0.0002	-2.81*	0.005
LDA	-0.0714	-3.96*	0.000	-0.0740	-4.13*	0.000
EVAR	0.0020	1.61	0.108	0.0011	0.90	0.368
ZSCORE	-	-	-	-0.0000	-1.47	0.142
TAG	0.0029	0.20	0.845	0.0030	0.21	0.834
TR	-	-	-	-0.0494	-3.60*	0.000
	Adjusted R^2 = 19.2%			Adjusted R^2 = 22.2%		
	F-statistic = 12.86			F-statistic = 12.07		
	p-value = 0.000			p-value = 0.000		

1995

	Model 3			Model 4		
Variable	Coefficient	t-ratio	p-value	Coefficient	t-ratio	p-value
Intercept	0.0461	3. 4 3*	0 . 001	0.0483	3.57*	0.000
ETA	-0.0187	-1.05	0.294	-0.0180	-1.02	0.309
RET	-0.0040	-0.24	0.808	-0.0087	-0.53	0.596
MB	-0.0003	-0.19	0.849	0.0002	0.11	0.913
EBTI	-0.0000	-0.98	0.330	-0.0000	-0.98	0.326
LDA	-0.0243	-1.86	0.064	-0.0355	-2.63*	0.009
EVAR	0.0017	1.66	0.099	0.0020	1.98*	0.048
ZSCORE	-	-	-	-0.0000	-2.96*	0.003
TAG	-0.0196	-1.66	0.097	-0.0194	-1.65	0.100
TR	-	-	-	-0.0009	-0.09	0.930
	Adjusted R^2 = 2.0%			Adjusted R^2 = 3.9%		
	F-statistic = 2.02			F-statistic = 2.59		
	p-value = 0.052			p-value = 0.007		

1993-95

	Model 3			Model 4		
Variable	Coefficient	t-ratio	p-value	Coefficient	t-ratio	p-value
Intercept	0.0322	2.52*	0.012	0.0376	2.78*	0.006
ETA	0.0033	0.16	0.872	0.0055	0.27	0.787
RET	-0.0945	-9.77*	0.000	-0.0946	-9.77*	0.000
MB	-0.0004	-0.24	0.809	-0.0002	-0.13	0.896
EBTI	-0.0000	-1.17	0.242	-0.0000	-1.12	0.263
LDA	-0.0514	-3.74*	0.000	-0.0580	-4.13*	0.000
EVAR	0.0010	1.06	0.290	0.0012	1.26	0.210
ZSCORE	-	-	-	-0.0000	-2.01*	0.045
TAG	-0.0041	-0.37	0.708	-0.0040	-0.37	0.713
TR	-	-	-	-0.0126	-0.94	0.350
	Adjusted R^2 = 27.9%			Adjusted R^2 = 27.4%		
	F-statistic = 18.97			F-statistic = 15.44		
	p-value = 0.000			p-value = 0.000		

Notes: * indicates significance at the 5 per cent level. LR = Capitalised value of finance leases and hire purchase contracts divided by total assets; ETA = ratio of earnings before interest and taxation to total assets; RET = ratio of retained earnings to total assets; MB = ratio of market value of equity to book value of equity; EBTI = ratio of earnings before interest and taxation to total interest payments; LDA = ratio of long term debt to total assets; EVAR = Coefficient of variation of earnings before interest and taxation over the previous seven years. ZSCORE = Altman's Z-score; TAG = geometric mean of the growth in total assets over the previous six years (1987-92); TR = ratio of total tax charge to pre-tax profit. The level of significance is represented by the p-value. The data for the variables was obtained from Datastream and the test was performed using the OLS regression procedure in Minitab (version 10).

16. Multivariate Tests of Bankruptcy, Growth and Industry Effects hypotheses: OLS method. 1993-95 (individual years)

1993

	Model 1			*Model 2*		
Variable	Coefficient	t-ratio	p-value	Coefficient	t-ratio	p-value
Intercept	0.0328	2.78*	0.006	0.0238	1.92	0.055
ETA	-0.0089	-0.41	0.683	-0.0058	-0.27	0.789
RET	-0.0710	-10.10*	0.000	-0.0678	-9.57*	0.000
MB	0.0011	0.65	0.514	0.0012	0.74	0.462
EBTI	-0.0001	-1.64	0.101	-0.0001	-1.56	0.121
LDA	-0.0613	-4.42*	0.000	-0.0639	-4.63*	0.000
EVAR	0.0001	0.15	0.881	-0.0000	-0.11	0.909
ZSCORE	-	-	-	-0.0000	-1.74	0.083
TAG	-0.0034	-0.35	0.727	-0.0027	-0.28	0.780
TR	-	-	-	0.0021	2.62	0.009
Mining & Extractive Industries	0.0023	0.26	0.793	0.0035	0.41	0.683
Construction	-0.0069	-1.15	0.252	-0.0050	-0.83	0.407
Wholesale Trade	-0.0021	-0.25	0.801	-0.00061	-0.07	0.941
Retail Trade	-0.0035	-0.52	0.603	-0.00189	-0.29	0.774
Services	0.0115	1.98*	0.048	0.01296	2.25	0.025
	Adjusted R^2 = 31.0%			Adjusted R^2 = 31.0%		
	F-statistic = 13.12			F-statistic = 12.21		
	p-value = 0.000			p-value = 0.000		

1994

	Model 1			Model 2		
Variable	Coefficient	t-ratio	p-value	Coefficient	t-ratio	p-value
Intercept	0.0187	1.08	0.281	0.0394	2.20*	0.028
ETA	0.0064	0.27	0.787	-0.0008	-0.03	0.973
RET	-0.0382	-4.25*	0.000	-0.0393	-4.45*	0.000
MB	0.0043	2.65*	0.009	0.0039	2.45*	0.015
EBTI	-0.0002	-2.75*	0.006	-0.0002	-2.54*	0.011
LDA	-0.0736	-4.04*	0.000	-0.0777	-4.29	0.000
EVAR	0.0022	1.73	0.085	0..0013	1.05	0.296
ZSCORE	-	-	-	-0.0000	-1.86	0.063
TAG	0.0036	0.24	0.808	0.0040	0.28	0.783
TR	-	-	-	-0.0507	-3.69*	0.000
Mining & Extractive Industries	0.0184	1.70	0.091	0.0217	2.02*	0.044
Construction	-0.0037	-0.49	0.625	-0.0043	-0.58	0.563
Wholesale Trade	-0.0010	-0.09	0.925	-0.0030	-0.29	0.774
Retail Trade	-0.0094	-1.11	0.266	-0.0109	-1.32	0.187
Services	0.0012	0.17	0.864	0.0022	0.30	0.761
	Adjusted R^2 = 19.2%			Adjusted R^2 = 22.6%		
	F-statistic = 7.91			F-statistic = 8.31		
	p-value = 0.000			p-value = 0.000		

1995

	Model 1			Model 2		
Variable	Coefficient	t-ratio	p-value	Coefficient	t-ratio	p-value
Intercept	0.0495	3.64*	0.000	0.0518	3.79*	0.000
ETA	-0.0188	-1.04	0.297	-0.0178	-1.00	0.320
RET	-0.0032	-0.19	0.847	-0.0080	-0.49	0.625
MB	-0.0009	-0.60	0.547	-0.0005	-0.33	0.740
EBTI	-0.0000	-0.74	0.460	-0.0000	-0.74	0.461
LDA	-0.0208	-1.56	0.119	-0.0319	-2.34*	0.020
EVAR	0.0018	1.74	0.083	0.0022	2.07*	0.039
ZSCORE	-	-	-	-0.0000	-3.02*	0.003
TAG	-0.0202	-1.70	0.090	-0.0202	-1.71	0.088
TR	-	-	-	-0.0005	-0.04	0.964
Mining & Extractive Industries	-0.0010	-1.20	0.230	-0.0106	-1.29	0.198
Construction	-0.0085	-1.46	0.146	-0.0086	-1.49	0.136
Wholesale Trade	-0.0086	-1.09	0.278	-0.0086	-1.10	0.274
Retail Trade	-0.0045	-0.70	0.482	-0.0039	-0.62	0.533
Services	0.0011	0.19	0.846	0.0018	0.33	0.742
	Adjusted R^2 = 1.8%			Adjusted R^2 = 3.9%		
	F-statistic = 1.54			F-statistic = 2.01		
	p-value = 0.107			p-value = 0.016		

Notes: * indicates significance at the 5 per cent level. LR = Capitalised value of finance leases and hire purchase contracts divided by total assets; ETA = ratio of earnings before interest and taxation to total assets; RET = ratio of retained earnings to total assets; MB = ratio of market value of equity to book value of equity; EBTI = ratio of earnings before interest and taxation to total interest payments; LDA = ratio of long term debt to total assets; EVAR = Coefficient of variation of earnings before interest and taxation over the previous seven years. ZSCORE = Altman's Z-score; TAG = geometric mean of the growth in total assets over the previous six years (1987-92); TR = ratio of total tax charge to pre-tax profit. The level of significance is represented by the p-value. The data for the variables was obtained from Datastream and the test was performed using the OLS regression procedure in Minitab (version 10).

17. Multivariate Tests of Bankruptcy, Growth and Industry Effects hypotheses: Logistic Regression method. 1993-95 (individual years)

1993

	Model 1		Model 3		Model 4	
Variable	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	0.3542	0.6967	0.2475	0.7782	0.1848	0.8342
ETA	2.2140	0.1961	2.6144	0.1220	2.5068	0.1365
RET	-2.9226	0.0389*	-3.1958	0.0266*	-3.1434	0.0269*
MB	-0.1556	0.1804	-0.1404	0.2101	-0.1420	0.2052
EBTI	-0.0040	0.4027	-0.0043	0.3703	-0.0046	0.3394
LDA	-2.4105	0.0108*	-2.5922	0.0051*	-2.5174	0.0072*
EVAR	0.0797	0.2653	0.0682	0.3260	0.0714	0.3121
ZSCORE	-	-	-	-	0.0002	0.5875
TAG	1.0470	0.1775	0.9129	0.2227	0.9214	0.2208
TR	-	-	-	-	0.1433	0.5890
Mining&Extractive Industries	-0.8906	0.0984	-	-	-	-
Construction	-0.5134	0.1875	-	-	-	-
Wholesale Trade	-0.3457	0.5153	-	-	-	-
Retail Trade	-0.4625	0.2841	-	-	-	-
Services	-0.3666	0.3430	-	-	-	-
	$\chi^2 = 24.335$		$\chi^2 = 19.743$		$\chi^2 = 20.884$	
	p-value = 0.0183		p-value = 0.0062		p-value = 0.0132	

1994

	Model 1		Model 3		Model 4	
Variable	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	0.1864	0.8545	0.0749	0.9393	0.0479	0.9619
ETA	2.7098	0.1144	3.0782	0.0756	3.0203	0.0839
RET	-2.1229	0.0922	-2.2468	0.0951	-2.2386	0.0976
MB	-0.1364	0.1628	-0.1305	0.1808	-0.1268	0.1944
EBTI	-0.0119	0.0231*	-0.0120	0.0205*	-0.0118	0.0224*
LDA	-2.3663	0.0152*	-2.5937	0.0070*	-2.6561	0.0063*
EVAR	0.1217	0.1562	0.1213	0.1498	0.1206	0.1580
ZSCORE	-	-	-	-	-0.0000	0.6721
TAG	1.0959	0.2174	1.0288	0.2329	1.0530	0.2251
TR	-	-	-	-	0.0532	0.9215
Mining&Extractive Industries	-0.6983	0.1934	-	-	-	-
Construction	-0.3407	0.7561	-	-	-	-
Wholesale Trade	-0.0539	0.9269	-	-	-	-
Retail Trade	-0.4282	0.3098	-	-	-	-
Services	-0.2957	0.4324	-	-	-	-
	$\chi^2 = 27.640$		$\chi^2 = 24.792$		$\chi^2 = 24.971$	
	p-value = 0.006		p-value = 0.0008		p-value = 0.003	

1995

	Model 1		Model 3		Model 4	
Variable	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Constant	1.1104	0.2643	0.9583	0.3179	1.0274	0.2885
ETA	1.5654	0.2981	1.5841	0.2820	1.9485	0.2142
RET	-3.4224	0.0501	-3.2739	0.0558	-3.8273	0.0361*
MB	-0.1632	0.1173	-0.1231	0.2164	-0.1268	0.2085
EBTI	-0.0082	0.1443	-0.0086	0.1294	-0.0079	0.1658
LDA	-0.8963	0.3541	-1.1728	0.2167	-1.2476	0.2006
EVAR	0.0456	0.5436	0.0297	0.6968	0.0293	0.7004
ZSCORE	-	-	-	-	-0.0003	0.5582
TAG	0.3369	0.7035	0.3481	0.6834	0.3952	0.6467
TR	-	-	-	-	-0.4038	0.3689
Mining & Extractive Industries	-0.8997	0.0846	-	-	-	-
Construction	-0.4701	0.2293	-	-	-	-
Wholesale Trade	0.1273	0.8297	-	-	-	-
Retail Trade	-0.3258	0.4468	-	-	-	-
Services	0.2145	0.5943	-	-	-	-
	$\chi^2 = 21.532$		$\chi^2 = 16.451$		$\chi^2 = 17.536$	
	p-value = 0.0431		p-value = 0.0213		p-value = 0.0410	

Notes: * indicates significance at the 5 per cent level. LR = Capitalised value of finance leases and hire purchase contracts divided by total assets; ETA = ratio of earnings before interest and taxation to total assets; RET = ratio of retained earnings to total assets; MB = ratio of market value of equity to book value of equity; EBTI = ratio of earnings before interest and taxation to total interest payments; LDA = ratio of long term debt to total assets; EVAR = Coefficient of variation of earnings before interest and taxation over the previous seven years. ZSCORE = Altman's Z-score; TAG = geometric mean of the growth in total assets over the previous six years (1987-92); TR = ratio of total tax charge to pre-tax profit. The level of significance is represented by the p-value. The data for the variables was obtained from Datastream and the test was performed using the logistical regression procedure in TSP (version 4.2).

18. Logit regressions of the probability of using leasing by medium-sized companies in the 1992-95 periods

	1	2	5	7	9	11	13
Constant	0.0469	0.7176*	1.6891*	-0.8835	13.0446*	-14.3709*	-15.2281*
TC	2.0063	-	-	-	-	-0.0539	-
TR	-	0.0003	-	-	-	-	-0.0068
IACT	164.6909	164.4511	-	-	-	125.4125	129.4991
FAPTA	-	-	4.4408	-	-	-1.1710	-0.8145
RDSA	-	-	-10.1453	-	-	-5.4545	-2.3270
SG	-	-	1.6844	-	-	1.7700	1.7902
PO	-	-	-0.1934	-	-	-0.4053	-0.4399
TQ	-	-	-0.5164*	-	-	-1.1141*	-1.1174*
ln(TA)	-	-	-	0.1536	-	-	-
ln(MV)	-	-	-	-	1.0425*	-	-
LDCE	-	-	-	-	-	8.8074*	9.0166*
BLTD	-	-	-	-	-	0.0060	0.0056
EBIT	-	-	-	-	-	0.0000	0.0000
EPS	-	-	-	-	-	-0.1892*	-0.1905*
DPS	-	-	-	-	-	0.1786	0.1801
DY	-	-	-	-	-	-74.6881‘	-73.5833‘
ln(Sales)	-	-	-	-	-	1.6735*	1.7598*
N	125	125	125	125	125	125	125
χ^2	7.513	6.162	17.387	0.013	11.665	50.260	50.687
p-value	0.02	0.05	0.00	0.91	0.00	0.00	0.00

Notes: * denotes significant at the 5% level, ‘ denotes significant at the 10% level.