A MODEL AND RESEARCH AGENDA FOR LEASE DECISION MAKING

by

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Abstract: Internationally, the accounting and finance literature provides a basis for identifying a range of rationales used in lease decision-making, and a number of accounting and financial factors purported to influence the lease versus borrow and buy decision, particularly with respect to finance leases, has been identified. In this paper the lease versus borrow and buy decision is characterised as multi-dimensional and multi-factorial. A simple trend analysis of archival, statistical data of leasing in Australia over sixteen financial years (1985-86 to 2000-01) is presented to form a basis for examining and discussing these factors within the context of the international literature on leasing. The trend analysis and literature review provided evidence to suggest that much of the conventional, theoretical wisdom concerning the factors important in lease versus borrow and buy decisions may be overemphasised, particularly that related to the influence of accounting treatments and the impact of tax regimes on leasing. Based on the review we develop and describe a constituted, multi-dimensional model of lease decision-making and offer suggestions for the development of improved lease or purchase decision frameworks and for further research in the area that will be more capable of handling this multi-dimensionality. Application of this knowledge will advance the research agenda, improve the decisions of lessees, benefit lessors who provide lease finance, and direct accounting policy makers.
1. Introduction

This paper contributes to the descriptive and theoretical literature on lease versus borrow and buy decisions, examining a range of financial, accounting, taxation, firm-specific and asset-specific characteristics affecting leasing decisions. Our analysis enables development of a multi-dimensional model of lease decision-making suggested for use in furthering the leasing research agenda.

Section 2 of the paper provides an overview of leasing in Australia and an examination of leasing trends across the 1985-2001 period. We then use the trend analysis to discuss our multi-dimensional decision and research model/framework in sections 3 through 6 of the paper, elaborating on and supporting the arguments offered on relevant decision factors and the relationships tentatively hypothesised between them. In section 7 the model is presented, and a summary of our suggestions for implementing the model and furthering the leasing research agenda are given in section 8.

2. Leasing in Australia An overview

The lease industry has been active in Australia since the 1950s (see Bennett 1991) and lease finance continues to play an important role in the Australian corporate sector. For example, while hire-purchase, asset purchase and chattel mortgage collectively make up roughly 50% of the volume of capital equipment financing in Australia, leasing accounts for the remaining 50% (Bennett, Hardaker and Worrall 1997, p.274). Lease finance commitments made in Australia by lenders to trading and financial enterprises, non-profit organisations, governments, public authorities and individuals, by type of goods leased during the 1985-86 to 2000-01 financial years, are provided in Table 1.
<table>
<thead>
<tr>
<th>Year</th>
<th>Vehicles &amp; transport equipment</th>
<th>Construction &amp; earth moving equipment</th>
<th>Agricultural machinery &amp; equipment</th>
<th>Automatic data processing equipment &amp; office machinery</th>
<th>Shop &amp; office furniture, fittings &amp; equipment</th>
<th>Other goods</th>
<th>Total $m (100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>85-86</td>
<td>3084.2</td>
<td>(55.1%)</td>
<td>444.2</td>
<td>216.6</td>
<td>439.7</td>
<td>(7.9%)</td>
<td>450.8</td>
</tr>
<tr>
<td>86-87</td>
<td>2939.1</td>
<td>(53.3%)</td>
<td>317.4</td>
<td>150.3</td>
<td>765.5</td>
<td>(13.9%)</td>
<td>580.8</td>
</tr>
<tr>
<td>87-88</td>
<td>3504.1</td>
<td>(51.6%)</td>
<td>306.6</td>
<td>183.3</td>
<td>841.8</td>
<td>(12.4%)</td>
<td>652.0</td>
</tr>
<tr>
<td>88-89</td>
<td>4845.9</td>
<td>(55.0%)</td>
<td>439.3</td>
<td>243.0</td>
<td>1138.9</td>
<td>(13.0%)</td>
<td>674.9</td>
</tr>
<tr>
<td>89-90</td>
<td>4641.7</td>
<td>(49.2%)</td>
<td>402.4</td>
<td>233.9</td>
<td>1369.9</td>
<td>(16.7%)</td>
<td>572.7</td>
</tr>
<tr>
<td>90-91</td>
<td>2933.5</td>
<td>(56.3%)</td>
<td>260.5</td>
<td>125.9</td>
<td>884.1</td>
<td>(17.0%)</td>
<td>404.1</td>
</tr>
<tr>
<td>91-92</td>
<td>2733.7</td>
<td>(61.1%)</td>
<td>205.9</td>
<td>131.3</td>
<td>643.2</td>
<td>(14.4%)</td>
<td>251.1</td>
</tr>
<tr>
<td>92-93</td>
<td>3070.3</td>
<td>(62.9%)</td>
<td>235.2</td>
<td>182.7</td>
<td>754.6</td>
<td>(15.4%)</td>
<td>217.1</td>
</tr>
<tr>
<td>93-94</td>
<td>3654.9</td>
<td>(62.5%)</td>
<td>279.4</td>
<td>238.5</td>
<td>805.5</td>
<td>(13.8%)</td>
<td>233.7</td>
</tr>
<tr>
<td>94-95</td>
<td>3992.1</td>
<td>(60.8%)</td>
<td>434.1</td>
<td>243.5</td>
<td>988.1</td>
<td>(15.0%)</td>
<td>250.6</td>
</tr>
<tr>
<td>95-96</td>
<td>4715</td>
<td>(59.3%)</td>
<td>352.4</td>
<td>396.4</td>
<td>1122</td>
<td>(15.3%)</td>
<td>260.0</td>
</tr>
<tr>
<td>96-97</td>
<td>4216</td>
<td>(57.1%)</td>
<td>346.6</td>
<td>489.5</td>
<td>1139</td>
<td>(15.5%)</td>
<td>278</td>
</tr>
<tr>
<td>97-98</td>
<td>5122</td>
<td>(57.0%)</td>
<td>409.1</td>
<td>534.6</td>
<td>1591</td>
<td>(17.7%)</td>
<td>378</td>
</tr>
<tr>
<td>98-99</td>
<td>5283</td>
<td>(55.4%)</td>
<td>387.6</td>
<td>584.9</td>
<td>1610</td>
<td>(17.1%)</td>
<td>332</td>
</tr>
<tr>
<td>99-00</td>
<td>3639</td>
<td>(64.1%)</td>
<td>319.5</td>
<td>328.3</td>
<td>1996</td>
<td>(25.3%)</td>
<td>454</td>
</tr>
<tr>
<td>00-01</td>
<td>2732</td>
<td>(42.9%)</td>
<td>216.2</td>
<td>208.0</td>
<td>1924</td>
<td>(32.0%)</td>
<td>342</td>
</tr>
</tbody>
</table>


It is apparent from an examination of Table 1 that in Australia the volume of leasing has exhibited a generally continuous, upward trend from 1985-99, with the exception of the 1991-92 period. However, from 1999-2000 through to 2000-01, there was a marked decline in leasing activities in the economy.

1 Figures and totals, except percentage calculations, were taken from sources cited. In the source materials raw data for individual types of goods appears to have been rounded, although grand totals appear to have been derived from unrounded data. Consequently, in some cases there is a $0.1-0.2 million discrepancy between the sums of individual values for different types of goods and the grand total for all types.

1 There was a $600 million discrepancy in the source data total (ABS 1992) of $8201.7m compared to the source data sum for individual types of goods for this year. Based on a crosscheck of other data, the cause of the discrepancy appears to be a misprint in the source materials relating to the 'Shop & office furniture, fittings & equipment' category. This error was corrected and percentages were calculated on the basis of the corrected total of $8,801.7m provided above.
Lease commitments increased from $4.5 billion in 1991-92 to $9.5 billion in 1998-99, and then dropped down to $6 billion in 2000-01. As the figures used for comparison purposes are expressed in nominal dollars, rather than real dollars, the decline in leasing commitments in latter periods is understated in real terms, given steady inflationary price increases over the 1985 to 2001 period. Table 1 also shows that in the earlier periods considered most leasing in Australia related to motor vehicles. While motor vehicle and transport equipment leasing continued to dominate in subsequent periods, the total dollar amount decreased from $3 billion to $2.5 billion over the entire period and the relative share of this equipment type also declined from 55.1% to 42% during the period. Computers and office machinery constituted the second largest group of lease finance commitments from 1987 onwards, when personal computers became generally available, and the dollar value of leasing of this technology continuously increased, aside from a slump in the early 1990s. Computers and office equipment comprised approximately 15% of total lease finance commitments until 1999-2000 when this category increased to 25% and then to 32% in 2000-01. These trend analyses indicate that for Australian organisations, leasing decisions have altered over time, not only in overall dollar terms of lease commitments, but also with respect to changes in the composition of the pool of leased assets.

3. Availability of funds

It is frequently argued that funds are available more easily and in greater quantity for the lessee, as compared to the purchaser (Sykes 1976; Herst 1984; Krishnan & Moyer 1994; Schallheim 1994). The principal financial factors for this availability are that leasing provides increased (100%) financing and has lower bankruptcy cost.

**Increased (100%) financing**

When leasing, the full cost of an asset normally can be borrowed and secured on that asset (Sykes 1976; Bennett 1991). On the other hand, the secured lender usually will not be prepared to lend more than 60-70% of the full value of the asset. There are legal considerations giving rise to this schism between lease versus buy financing. The lessor has more direct security through ownership of the asset, as opposed to a lien, and has 'the right to regain possession pending

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1. However, the effects of price changes on different categories of leased assets vary. In particular, computers and some other technical equipment experienced deflationary price changes across some of the periods, while specific price changes affecting other categories outstripped the general inflation rate. It is for this reason that the authors have not attempted to adjust the nominal dollar values to real dollar values.
payment of arrears, thus saving the need for a court case to authorise access to the user's premises to recover the asset if necessary (Sykes 1976, p.19). It is also argued in the literature that leasing effectively provides less than 100% of the purchase price of an asset, because lease rentals are usually payable in advance (Peirson et al. 1998). However, where this is the case, the reduction in the percentage of financing on the asset is marginal and financing usually remains much higher than would be the norm under a mortgage arrangement. Sykes' (1976) survey of 202 British firms revealed that over two-thirds of all respondents acknowledged that an important advantage of leasing was that it did not utilise existing working capital. However, only about a quarter of respondents using hire purchase, and about a third of those using leasing, acknowledged 100% financing as an important attribute of these alternatives to borrow and buy. On the contrary, in Dietz's research (1977) (cited in Herst 1984, pp.203-204) respondents in West Germany mentioned 100% financing as the most important reason for leasing, while 100% financing was revealed to be less significant for Swiss respondents. Herst (1984) explained the disparity as resulting from differences in the price structure of the German and Swiss capital markets as well as differences in relevant national tax regulations. However, we argue that the difference in the importance attached to 100% financing may also be due to differentials in the financial position of organisations. For example, a firm having sufficient available funds will not consider increased (100%) financing as an important factor in favour of leasing, whereas a firm with limited funds may well consider 100% financing important and attractive. Thus, such firm-specific financial characteristics may also impact lease versus buy decisions, as modelled in Figure 1, presented in section 7 of this paper.

**Lower bankruptcy cost**

In addition to the possible benefits derived from 100% financing through leasing arrangements, it is evidenced in the literature that funds are more easily available for leasing because of lower bankruptcy costs, when compared to secured loan finance. The legal aspects of the argument are that:

leases have lower expected bankruptcy costs for the lessor than secured debt has for the lender, thereby making leasing a preferred financing alternative for firms with a higher potential for financial distress. The legal treatment of the claims of secured creditors is different from the treatment of the claims of secured lenders in bankruptcy. The claims of secured creditors are diluted considerably more than comparable claims of lessors in bankruptcies followed by reorganization (Krishnan and Moyer 1994, pp.32-33).
The preferential treatment of lessors in the event of bankruptcy occurs because ownership of an asset financed through conventional borrowing remains with the borrower, while a lessor retains the ownership rights to an asset during the lease term. Lower bankruptcy costs, seen from the lessor's perspective compared to that of the secured lender result from the lessee compensating the lessor for anticipated bankruptcy costs. Firms that are high-risk with 'significant bankruptcy potential' can, however, secure lease finance at lower cost than debt finance. 'In such circumstances, lease financing may be the only form of long-term financing available to a high-risk firm' (Krishnan and Moyer 1994, pp.32-33). Krishnan and Moyer's (1994) US study found that firms using lease finance exhibited different financial characteristics to firms that did not. The authors concluded that as bankruptcy potential increases, lease financing becomes an increasingly attractive financing option, offsetting the higher transaction costs that normally accompany lease agreements versus secured debt agreements. This finding leads to the expectation that because of lower bankruptcy cost, leasing will be preferred by firms having financial problems, while firms which are more financially sound would be less likely to prefer the lease alternative. This relationship is modelled in Figure 1. Further to this finding, we argue that, on a macro level, if an economy is growing and business flourishing, then leasing per se will become less attractive. This argument is supported in the Australian context by the overall decline in leasing commitments during the economically prosperous 1999-2001 period (see Table 1).

While financial factors relating to 100% financing and lower bankruptcy costs impact the leasing decision, researchers suggest that the accounting treatments of leases also have economic consequences for decision-making.

4. Accounting regulations
To understand how the lease versus borrow and buy decision is influenced by the accounting treatment of the lease transaction, it is useful to compare the two options in the light of relevant accounting standards. Prior to the introduction of Australian lease accounting standards, lessees recognised lease payments as expenses over the lease term and all leasing obligations, whether operating or finance lease arrangements, were kept off the lessee's balance sheet (Kenley & Middleton 1967). The introduction of accounting standards AASB1008 'Accounting for Leases', and AAS17 'Leases', require finance leases to be capitalised, involving recognition of a lease liability and associated leased asset in the lessee's balance sheet. However, in the case of operating leases, lessees can treat lease payments as expenses over the lease term and these leases need
only be disclosed by way of footnote to the published accounts. AAS17 and AASB1008 (para.iv) provide, inter alia, that a lease is normally considered to be a finance lease where it is noncancellable and the lease term is at least 75% of the useful life of the leased asset, or the 'present value, at the beginning of the lease term, of the minimum lease payments equals or exceeds 90 percent of the fair value of the leased property to the lessor at the inception of the lease'. The introduction of lease accounting standards has resulted in the loss of potential advantages accruing to firms by using finance leases as off-balance sheet financing. This loss of benefits is twofold; the accounting standards reduce the ability of firms to circumvent debt covenants through undisclosed lease commitments and secondly, the potential for income smoothing, by expensing rather than depreciating items under lease is foregone (McGregor 1996, p.2). However, there is no clear disadvantage in terms of financial reporting requirements if an asset is acquired by signing a financial lease instead of by borrow and buy which requires mortgage finance to be disclosed, although operating leases still retain debt disclosure advantages.

Various commentators assert that lease finance is often chosen because of its off-balance sheet characteristics (Sykes 1976; Narayanaswamy 1992). It is also frequently argued that accounting requirements for capitalising finance leases impact adversely on lease attractiveness and use (Taylor & Turley 1985; Imhoff & Thomas 1988; El-Gazzer 1993; Godfrey & Warren 1995).

Drury and Braund (1990) studied the impact of off-balance sheet financing in the UK, questioning respondents about the extent to which they believed that companies, other than their own, would seek to structure new lease contracts in a way which did not require capitalisation. 'A sizeable proportion of the respondents (44%) supported the view that firms would replace finance leases with operating leases' (p.188). However, when Drury and Braund 'related this question to the respondents' own company ... the respondents indicated that their firms would not engage in such activities' (p.188). It appears paradoxical that respondents supported the view that other companies would replace finance leases with operating leases, but that their own companies would not. On the basis of these results Drury and Braund (1990) argued that 'many financial managers may think that the market can be misled by off-balance sheet financing' (p.188). Godfrey and Warren (1995) considered the economic implications of lease capitalisation by examining reactions of lessee firms to Australian lease accounting standards during 1984-88. They found that lease capitalisation had an adverse impact on financial leverage and return on assets and that 'firms reduced their reliance upon finance leases and increased their reliance upon non-lease debt and shareholders' funds' (p.226) during the
transition period. While capitalisation of financial leases appeared to have adversely affected the use of these leases, there was no corresponding, positive affect on operating leases.

We find these results contradictory and instead argue that there may not be strong support for the proposition that off-balance sheet financing influences managers’ financing decisions. We suggest that if finance leases are adversely affected because of capitalisation requirements, then the impact of capitalisation can be offset only by an off-balance sheet debt. In other words, if firms are not using finance leases largely because of capitalisation on the balance sheet, then firms would need to replace finance leases with operating leases, rather than non-lease debt which would need to be disclosed in financial statements. However, the results of Godfrey and Warren's (1995) study are based on lessees' reactions during the transition period for implementation of Australian lease accounting standard AAS17 and so it would have been difficult to predict the impact of AAS17 beyond 1988 when mandatory requirements took effect.

Lucia (1993) also claimed the decline in Australian lease commitments in the 1991-92 period (see Table 1) was caused by the market's response to AAS17 and ASRB1008. However, if that reduction were because of the implementation of the accounting standard, then either a declining, static or marginally increasing trend would, presumably, have continued into the future as well. Instead, the strong, continuous increase in lease commitments during 1992-93 to 1998-99 provides evidence that the temporary decline was more likely a result of the country's economic recession, rather than the effect of lease accounting standards.

While the economic implications of off-balance sheet assets and/or liabilities, such as operating leases, cannot be ignored, it seems unlikely that off-balance sheet financing can easily fool sophisticated financial analysts just because it results in more favourable numbers on financial statements. We conclude that the off-balance sheet nature of leasing does not have the degree of impact on the lease versus buy decision emphasised in the accounting literature and recommend further research of the issue.

Apart from the accounting treatment of leases, financial cost, tax benefits and risk aversion may also impact lease evaluation and can assist in explaining why leasing decisions vary at the micro-level between firms.

5. Net advantage of leasing (NAL)/Net present value (NPV)
In evaluating the advantage of leasing over outright purchase the present values of the streams of future cash flows associated with each alternative are compared. As a lessee, the firm saves the initial outflow of funds associated with
purchase and instead makes a series of lease payments. While interest on the loan and depreciation on the asset are usually tax deductible for the purchaser, the lessee is generally able to deduct the cost of the lease payments. The residual or salvage value of the asset will represent a future cash inflow for the purchaser, but not for the lessee. Where an incremental approach to capital budgeting is used, 'if the NPV is positive, the present value of leasing is superior to purchasing; if the NPV is negative, the present value of purchasing is superior to leasing' (Schallheim 1994, pp.113). Accordingly, there are several factors associated with NAL and NPV analysis that influence the lease versus buy decision, including the interest rate, tax consequences, and residual value analysis.

**Interest rate**

Within an NPV/NAL context, the interest rate implicit in a lease contract provides a basis for discounting and NPV assessment of the lease. The implicit interest rate is also used in accounting treatments for finance leases. At the time of making a lease versus borrow and buy decision, interest rates play a significant role. If an asset is purchased by debt finance, then the owner (borrower) has to pay interest on the amount borrowed. However, if an asset is leased, the lessee is required to make lease payments. When interest rates are high, buying an asset will be considered costlier and less flexible than leasing that asset, while lower interest rates will place leasing at a relative disadvantage. The decline in leasing activities in Australia during 1999-2001 (Table 1) provides some evidence to support this observation, given cuts in interest rates during these periods.

**Tax consequences**

One of the main economic factors, if not the main economic factor, that favours leasing is the tax law. A leasing contract provides the opportunity for a low tax-paying firm to transfer tax shields to a high taxpaying firm where the value of the tax shields is higher. The low tax-paying firm or lessee will benefit by paying lower lease payments (Schallheim 1994, p.62).

When the tax rates of lessors and lessees differ, it is possible to transfer tax benefits through leasing transactions. One of the arguments found in the literature is that if a firm in a net operating loss position decides to purchase an asset, it cannot make use of the depreciation tax shields/deductions in the current year. However, if the firm decides to lease the asset from another firm (lessor) which has sufficient taxable income, the benefit can be transferred from the
lessee, who cannot use the depreciation tax deductions, to the lessor, who can make use of the deductions immediately against higher marginal tax rates. Through a lease transaction, the firm in a net operating loss position can sell the accelerated depreciation tax shields by paying a reduced lease payment. This argument is supported by empirical studies in the US and Canada (Latha 1997; Graham, Lemmon & Schallheim 1998) evidencing that marginal tax rates and the use of leases are inversely related and that tax motivations can underline lease transactions. Thus, there is a potential interplay between tax consequences and the financial characteristics of firms in lease decision-making as shown in Figure 1.

Lucia (1993, p.42) explained the drop in leasing activity in Australian in the 1991-92 period (see Table 1) as being 'not only caused by the recession but also by lessor tax accounting changes introduced in July 1990, a more flexible and popular commercial hire purchase product and the distorting impact of state stamp duties'. However, if that decline was a result of the tax and other reasons proffered by Lucia (1993), then that downward trend should have continued into the future. Rather, continuous increases in lease commitments during 1992-99, as shown in Table 1, provides support for our interpretation that the decline in 1991-92 was primarily the result of the recession. Nevertheless, we posit that the later slump in leasing activity in the 1999-2001 period may have been related to the replacement of wholesale sales tax with the introduction of the Goods and Services Tax (GST). The GST served to lower the prices of some capital items, such as motor vehicles, making the 'buy' option more affordable. Continued monitoring of leasing trends and further research on the impact of the new tax on leasing is warranted.

**Residual value analysis**

When a debt contract is paid in full, the asset, along with the ownership rights to the residual value, belong entirely to the borrower. On the contrary, when a lease contract is paid in full, ownership of the asset usually rests with the lessor. At the time a lease contract is signed, the residual value at maturity is uncertain.

Several researchers argue that because of uncertainty surrounding the residual value, decision-makers may select leasing over purchasing (Lease, McConnell & Schallheim 1990; Schallheim 1994). We accept this argument in the case of high-technology assets, such as computers, where obsolescence is rapid and residual value is uncertain and relatively insignificant. However, researchers appear to have over emphasised residual risk and underestimated the benefits of residual value. For example, in the case of land, residual value is expected to be high and relatively certain and so decision-makers may opt to
purchase an asset simply because of its high residual value. Thus, the higher the expected residual value of an asset, the higher the preference for buying the asset and conversely, the more uncertain the residual value of the asset, the more likely the decision-maker will opt for leasing. On the basis of this discussion, we also argue that the impact of residual value in lease versus buy decision making is dependent on the nature, type or class of the asset, which plays a part in circumscribing uncertainty and an asset’s rate of obsolescence, as shown in Figure 1.

**Technological obsolescence and options value**

Lessees may have various options available to them under different lease contracts, including those to purchase the asset for a fixed price at the expiry of the lease, renew the lease for a fixed period of time, and/or cancel the lease prior to maturity of the lease contract. These options enable lessors to achieve a degree of control over technological obsolescence and provide greater flexibility for lessees to cope with future uncertainties. However, 'leasing contracts on assets that involve operating options are likely to be misvalued without proper recognition of the option value, particularly when the leased asset life is long, when the rate of obsolescence is high and unknown (e.g. as in computer), or when there is high technological or market uncertainty' (Trigeorgis 1996, pp.315-316). With an operating lease, the lessee has a right to cancel the lease before the expiry of the lease period and this right may be exercised with or without penalty, depending upon the specific clauses written into the lease contract. Therefore, by opting to use operating leases, firms may be able to transfer the risk of technological obsolescence to the lessor, while at the same time, reaping benefits from having the latest technology. Thus 'the idea that the lease options have value should not be ignored' and decision-makers can implicitly factor the options into the lease or borrow and buy decision (Schallheim 1994, p.181). These observations lead to an argument that in the case of high risk related to anticipated technological and market uncertainty; lease finance may be preferred to buying because of the options value. This position is supported by Ferrara, Thies and Dirsmith (1980) whose survey research revealed that in Canadian and US industrial firms, computers, vehicles and duplicating equipment were the most heavily leased items due to obsolescence and high service/maintenance characteristics. Their research found that obsolescence was among the top three factors impacting leasing decisions. In US industrial corporations alone, Mukherjee (1991) reported that 82% of firms recognised that avoiding the risk of obsolescence was the most important advantage of leasing relative to other sources of financing. We argue
that uncertainty and the rate of technological obsolescence of particular assets also have a strong influence on the lease versus buy decision in the Australian context. This is revealed by examination of the data provided in Table 1, which shows that computers and motor vehicles, assets of relatively high, future technological uncertainty and rapid obsolescence, constitute about 70% of total lease finance commitments across the 1985-2001 period. Furthermore, despite a 17% decline in overall lease activities in 1999-2000 compared to the previous year, the share of computers increased by about 18% from 1998-2000, possibly because of fear of the millennium bug (Y2K); the root cause of which was technological obsolescence and uncertainty.

6. Moderating variables

There are specific characteristics of firms and assets, such as firm size, industry and asset class, which influence the lease versus buy decision (Smith & Wakeman 1985; Schallheim et al. 1987; Finucane 1988; Sharpe & Nguyen 1994; Krishnan & Moyer 1994; Schallheim 1994; Adams & Hardwick 1998).

Firm size

In an analysis of 3000 quoted and unquoted companies in the UK over the 1982-96 period, Lasfer and Levis (1998) found reasons for choosing leasing are not homogeneous across firms of differing sizes. They suggested that in large firms, profitability, leverage and taxation are positively correlated with use of leasing, while for small firms, growth opportunities, rather than profitability and taxation considerations, drive leasing decisions. Schallheim et al. (1987) found empirical evidence to support the notion of an inverse relationship between firm size and the use of leasing, due to the expected bankruptcy cost advantage of leasing among US-based companies. This finding was supported by Sharpe and Nguyen (1994, p.11) who found that leasing by small firms substantially exceeded that of large firms. This is because small firms 'are more likely to lease for financial contracting reasons and because there are significant nonconvexities, or indivisibilities, associated with the use of some fixed assets'. Compared to large firms, small firms tend to face higher uncertainty and higher transaction costs in reselling a capital item that is no longer required and have fewer alternative uses for such items.

Producing partially complementary findings, Adams and Hardwick's (1998, p.493) study of UK listed companies revealed that the propensity to lease or the share of leasing tends to decrease as company size increases, up to a certain level, but then tends to increase again as company size increases. Their results suggested that this U-shaped relationship existed because of the limited
uses to which assets could be put by very small firms, and the propensity for very large firms to engage in significant leasing activities of items such as motor vehicles and computers. The preceding discussion of the results of prior studies indicates that firm size and use of leasing are generally negatively related and that the choice of leasing is also dependent upon asset type or class, as indicated in Figure 1.

Asset class/value
Smith and Wakeman (1985, p.907) identified several non-tax incentives to lease rather than buy, and which are related to asset specificity. These incentives are that leasing may be preferred if the value of the asset is less sensitive to use and maintenance decisions, if the asset is not specialised to the firm, or if the expected period of use is short relative to the useful life of the asset. In the US context, Sharpe and Nguyen (1994) argued that when the need for assets is unpredictable or temporary, leasing is preferred to purchasing, because a lessee is better able to lock in a short term commitment, as opposed to the purchaser/borrower's longer term obligation. In general, these findings accord with precepts related to technology (see Helper 1993), asset specificity, frequency and standardisation (see Williamson 1985, 1996), as found in contracting cost theory models of make or buy decisions. It also appears that the level of leasing may vary systematically according to industry type. Finucane (1988, p.325) argued:

The specificity of an asset to a particular industry, industrywide differences in the level of investment tax credits, the availability of assets for securing mortgage debt, the rate of technological obsolescence of firm-specific assets, the characteristics of secondary asset markets, marginal tax rates, and debt capacity are examples of factors that might differ from industry to industry and might have an impact on the degree to which firms lease assets.

Krishnan and Moyer (1994) confirmed that firms operating in industries where more specific assets are required are less likely to use leasing. They found that organisations in the retail, transportation, mining and wholesale sectors are more likely to lease than those in manufacturing industries, where there is a greater degree of asset specificity.

7. Modelling the lease versus borrow and buy decision
A firm's choice of leasing depends upon the relative advantages of leasing in comparison to acquiring the asset through purchase financed by borrowing. In a
perfect capital market:
where the purchasing firm (lessee) and the lessor have the same tax status, borrow and lend at the same rate of interest, and have similar expectations regarding the salvage value of the asset, there is no advantage to leasing over purchasing. In practice, these perfect capital market conditions are not satisfied, resulting in a number of rationales for leasing (Lasfer & Levis 1998, pp.3-4).

Based on extant theoretical and empirical literature on leasing internationally, as reviewed in this paper, we hypothesise that an interplay of various accounting and financial forces, together with particular firm-specific and asset-specific characteristics, shape the lease versus buy decision, as modelled in Figure 1.

*Figure 1* Constituted, multi-dimensional model of lease decision making

The leasing decision model (*Figure 1*) encompasses a range of multi-dimensionalities, recognising that alternative strategies can be evaluated along more than one dimension, even where net economic benefit is the primary objective of lease decision-making. There are multiple factors involved in determining the advantages or disadvantages of leasing over borrowing and buying and some factors may need to be traded-off against one another to determine net effect. This multi-dimensionality adds to the complexity of lease versus buy decision-making and to research of this choice process.
8. Conclusions
Our review of relevant accounting and finance literature leads to several conclusions regarding the lease versus buy decision and the future direction of lease decision making research. Of particular importance is the observation that lease decision-making is multi-dimensional. Research on lease decision-making, including investigations which relate leasing behaviour to accounting standard capitalisation requirements or to taxation advantages, often fails to recognise the effects of a range of other economic, firm-specific and asset-specific variables which confound the lease versus borrow and buy decision. Uni-dimensional studies suggesting causal relationships between accounting asset capitalisation requirements and leasing, or tax benefits and leasing, may inadvertently lead to misunderstandings about leasing decisions. Instead, we conclude that the impact of availability of funds, off balance sheet characteristics of operating leases and tax effects vary according to the financial characteristics of the firm and that the impact of residual value, technological obsolescence and optional pricing is influenced by the nature of the asset, as shown in Figure 1. Improved knowledge of the role of these factors in lease decision-making will allow for increased scrutiny of financial devices by lessees and lessors alike and could lead to improved practice.

Secondly, the view that accounting numbers have a significant influence at the time of making a lease versus buy decision is questioned. It seems that in practice leasing decisions may be more heavily influenced by financial factors and technological considerations, including availability of funds, interest rates, option pricing and obsolescence, than by the off-balance sheet characteristics of operating leases. The literature is not complete with respect to the economic and technical impacts of accounting standards for leases in decisions concerning the choice of operating leases versus finance leases versus borrow and buy. Increased knowledge of how various accounting ratios and earnings are used in the decision would provide further understanding of the effects of lease accounting practices useful in training investors, promoting the supply of relevant accounting information and informing accounting standard policy makers.

The impact of moderating variables such as firm size and asset class/value on the lease versus buy is at an early stage of development. The identification of firm-specific characteristics associated with the choice of

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*For an introductory discussion of multi-dimensional decision-making in an accounting and decision-making context, see Fatsas, Bisman & Williams 2001, pp.55-58.*
operating leases, financial leases or purchase will serve as a reference base from which more advanced study can be made. This information would also serve a more immediate need in helping to better describe the characteristics and needs of lessees for those entities that provide finance for asset acquisitions. This knowledge may also lead to the development of alternative leasing practices where the lessee’s financial cost and risk concerns can be alleviated or where the benefit/attraction of leasing can be optimised. Inquiry into the affects of individual firm-specific and asset-specific characteristics on leasing may help to explain inter-firm variations in adoption and use of different types of leases and ultimately lead to improvements in decision making by investors. Lastly, while the current paper has interpreted the existing international research on leasing using Australian data on lease commitments, similar studies conducted in other countries would be of great benefit in advancing the lease decision making research agenda.

References


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