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The fixed payment financing decision: To borrow or lease

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Abstract

We first investigate the factors influencing the industrial firm's decision to use fixed payment financing or regular debt plus leasing. We find that the level of fixed financing is positively related to the portion of fixed assets in the firm and negatively related to profitability, risk, and the levels of both advertising and R&D expenditures. We then focus on the more interesting issue of why firms lease instead of use regular borrowing. Using additional variables along with the residuals from the initial regression, the firm's tax position, agency costs, and bankruptcy costs, and asymmetric information are significant factors in predicting leasing levels as others have found. We also find that firms that use more fixed form financing than predicted also use lower portions of leasing. This is consistent with leasing and regular debt being substitutes. In quartile splits on total leverage, firms with high levels of regular debt also have higher levels of leasing, which is consistent with Ang and Peterson's [J. Finance 39 (1984) 1055.] earlier empirical study on lease financing levels. Our results are robust regardless of how leasing is measured. We consider operating leases, capital leases, and all leases. For regular debt, we considered both all debt and funded debt. These values are scaled by the market value of total assets.

Introduction

American businesses acquired an estimated $691 billion in productive assets during 1998. $207 billion or 30% of these assets were leased according to U.S. Commerce Department estimates. This level of leasing obviously represents a substantial financing source. While we have a good indication how firms make the specific lease/buy decision from Mukherjee (1991), we still are not sure what factors influence overall the firms' decision whether to lease or buy assets.

To fill this void, this paper offers an empirical model of the determinants of the firms' use of fixed payment financing (e.g., regular debt and leasing). It then uses the results of that model to explain the use of leasing relative to ordinary debt. The most interesting finding is that companies that use more fixed payment financing than predicted from the initial model tend to use a lower portion of leasing relative to ordinary

debt when compared with companies using regular fixed financing levels. Or, at this particular margin, for firms using higher than “normal” levels of fixed payment financing, a degree of substitutability exists between leasing and debt financing.

As a background, two similar approaches have been developed that model the lease/buy decision: the cost of capital approach, which assumes a known capital structure (Myers, Dill, & Bautista, 1976), and the more general, adjusted present value approach (Lewellen, Long, & McConnell, 1976). Both models assume that fixed after-tax lease payments are substitutes for the sum of fixed after-tax borrowing payments and the forgone depreciation tax shield. Both models find, assuming perfect capital markets with equal corporate tax rates for lessees and lessors, that firms are indifferent between leasing an asset or borrowing to purchase it outright.

The past evidence supporting the lease/buy decision models is not clear-cut. Even the assumption that leasing and regular borrowing to buy are substitutes is not clear. For example, Lewis and Schallheim (1992) developed a model showing that with personal taxes, borrowing and leasing can be complements for the overall firm. This appears consistent with the empirical evidence in “The Leasing Puzzle” by Ang and Peterson (1984). Ang and Peterson find that large leasing firms also have more debt thus implying that debt and leasing are complements. However, Deloof and Verschueren (1999) in a recent note found them to be substitutes for Belgian firm data.

This paper takes a different approach in considering the decision to lease or borrow. We first consider the factors that determine whether a firm uses equity or fixed financing to undertake investments. This approach is basically an extension of earlier works such as Bradley, Jarrell, and Kim (1984), Long and Malitz (1985), and Titman and Wessels (1988), which consider the empirical determinants of regular debt leverage. Using their arguments, our analysis is extended to consider both regular bonds and leasing as forms of fixed financing.

However what we really want to understand better is what influences a firm's level of regular debt and leasing once it has decided to use a form of fixed financing. We therefore run a two-stage regression. The first stage predicts the firms' total use of fixed form financing. The second stage considers the specific level of lease financing. It considers the firm's tax status and finds that firms with lower projected tax rates lease more. It finds that size matters as smaller firms lease more. To measure for specific assets, a dummy variable for industry classification is added and we find that industry affects the lease level. In particular, retailing firms use substantially more leasing. Then we add the residual from the first-stage regression run. We find that firms with greater levels of total leverage in the first stage than the model predicts use significantly more regular debt than leases.

Finally, we look at quartile splits of total leverage. The quartiles also show that high total leverage firms have more leasing as a portion of total assets but leasing is a smaller portion of their fixed financing. This could be interpreted to imply that leasing and regular debts are not direct substitutes since their relative portion change with leverage levels. The changing portions seem to result from high-leverage firms being unable to find enough assets to lease forcing them to use substantially more regular debt.

The paper is organized as follows. We begin by discussing possible relationships between regular debt and leases. We identify factors that influence the fixed financing decision. Next, we similarly identify the factors that should distinguish between using regular debt and leasing. We then describe our sample, both the data and variables that influence the fixed financing levels and the leasing portion. We present our empirical findings that determine the fixed financing level and then the leasing portion of fixed financing. Possible explanations for the observed lease/buy decision process are presented before finally giving the conclusions.

Section snippets

The substitution of regular debt and leasing

In solving the lease/buy problem, the financial literature makes the implicit assumption that lease payments are substitutes for debt payments. Myers et al. (1976) assumed that the firm has a fixed capacity to undertake financing requirements. If the firm increases its obligations from leasing, the after tax cost of these lease payments exactly equals the forgone depreciation tax shield from the asset plus the after tax cost of the foregone debt payment with perfect capital markets. This…

Factors considered in affecting the fixed financing decision

We change the focus in the lease versus borrow decision to first consider the factors that determine fixed financing levels. These factors are taken as those previously used in determining the firm's regular debt usage. Specifically, they are those used in Bradley et al. (1984) and also the work of Long and Malitz (1985). Both of those studies scaled the variables by the firms estimated market value. In this study, the market value is estimated as equity's market value plus the firm's reported…

Factors considered in affecting the leasing decision

In the previous section, we cited ideas that should separate firms that use high levels of fixed form financing from those that use low levels. What we now want to review are factors that should favor a specific form of fixed financing. Why do firms choose to lease assets instead of buying them with borrowed funds? These factors result from similar but different market imperfections than those that determine the general level of fixed financing.

Taxes play a major role in all lease decisions.…

Sample selection and data description

Our data are taken primarily from the 1995 COMPUSTAT tapes for the years 1984–1993.[8] Starting with 6207 firms for 1993, we exclude foreign firms since they operate under different tax codes. This reduces our sample to 5876. We then exclude regulated firms, including financial firms, leaving 3195 firms. This data now are matched with Graham's tax rate estimates from the Internet for the tax variable.…

Empirical results

With the data identified, we now undertake the empirical tests to determine the relationship between regular debt and leasing. We assume that firms first select their desired level of total fixed financing, both leasing and bonds, and then choose the form that will minimize costs. The models reviewed earlier in the paper all take that approach. For example, leasing is preferred over borrowing when the firm cannot use its depreciation tax shield immediately. We can better understand these…

Commentary

As final observations, it is quite likely that the models selected to posit the capital structure relationship do not give enough importance to some attributes. The one that comes to mind is Myers (1985) "Pecking Order Hypothesis." Here internally generated funds are used first and then debt funds are raised if needed for planned investments. The overall financing decision is not so much planned, but rather depends on available cash flow and the level of investment. Our results are consistent…

Conclusions

In conclusion, this paper empirically tested the firm's decision to lease assets using a two-step approach. It first explains the fixed financing portion of total value. Firms having greater levels of fixed assets use more fixed financing. On the other side, fixed financing decreases with risk levels, cash flow being generated, advertising expense and R&D expenditures. These factors have been found before considering only reported debt. However, they still hold when capitalized operating leases …

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